

**PROPOSED REZONING AND SUBDIVISION OF A PORTION OF VAALEVALLEY  
219, MOSSEL BAY, WESTERN CAPE PROVINCE**

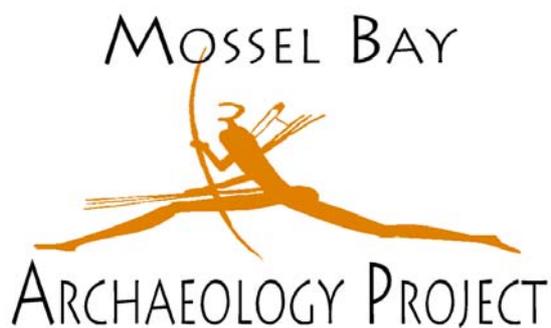
**ARCHAEOLOGICAL HERITAGE IMPACT ASSESSMENT**

**FINAL REPORT**

**Prepared For:**

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## Executive Summary

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A foot survey conducted over 5 days from 4 to 8 July 2005 on a portion of Vaalevalley 219, Mossel Bay, Western Cape Province revealed that numerous archaeological and heritage resources occur on the property. Development will certainly have a negative impact on these resources unless mitigation measures are employed. Identified materials range in age from Early Stone Age (ESA) through Middle Stone Age (MSA), Later Stone Age (LSA) and pottery/pastoralist period to historic times. A heritage consultant's investigation revealed no information of significance concerning the structures identified during the survey though they do require further research. Law protects archaeological and heritage occurrences and therefore developers must apply for permit(s) from Heritage Western Cape to damage and/or destroy such occurrences.

It is recommended that numerous occurrences require site-specific mitigation measures to be performed by professionals prior to and during construction phases of development. It is also recommended that selected occurrences be conserved and that conservation and management plans be developed and then reviewed and approved by Heritage Western Cape prior to the construction and/or operational phase of development. Because archaeological resources are known to lie sub-surface on the property and because vegetation cover significantly restricted a thorough archaeological survey, it is recommended that all vegetation clearing and earthmoving activities be monitored by or supervised by a professional archaeologist. In the event that the strip of land between the property and beach is intended for any use in connection with future development and associated use of the beach, that area requires an Archaeological Heritage Impact Assessment or, minimally, that the areas earmarked for use be surveyed for archaeological and heritage resources and that all earthmoving and vegetation clearing be monitored as described above.

Human remains may be unearthed during earthmoving activities and therefore a procedure to deal with such a scenario is given in section 5.

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## 1. Introduction

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### 1.1 Background

Due to proposed rezoning, subdivision and future development of a portion of Vaalevalley 219, Mossel Bay; Sharples Environmental Services appointed the Mossel Bay Archaeology Project: Cultural Resources Management cc (MAPCRM cc) to undertake an Archaeological Heritage Impact Assessment (AHIA) as part of the Environmental Impact Assessment (EIA).

The purpose of rezoning and subdivision of the above-named property is to develop the land for residential use that will include:

- Unknown number of residential plots (unknown area);
- Private Open Space (unknown area);
- Internal access road and roads (unknown area); and
- Associated services, e.g. electricity, water and storm water drainage, sewage.

### 1.2. Purpose and Scope of the Study

Archaeological heritage resources differ in a fundamental and crucial way from most other environmental assets; they are entirely irreplaceable and not renewable. Rapid and widespread development is a serious threat to such resources. Unless long-term conservation, mitigation and management plans are put in place, archaeological and heritage resources of the affected environment are in grave danger of being lost forever. AHIA is the first step in the endeavor to conserve and manage archaeological and heritage resources.

The objectives of AHIA are:

- To assess the study area for material traces of archaeological and heritage origin;
- To identify options for archaeological mitigation in order to minimize potential negative impacts; and
- To make recommendations for archaeological mitigation.

Terms of Reference (ToR):

- a) Locate the property boundaries of a portion of Vaalevalley 219, Mossel Bay.
- b) Conduct a foot survey of the above-named property in order to identify archaeological and heritage resources.
- c) Assess the impact of the proposed rezoning, subdivision and development on archaeological and heritage materials.
- d) Recommend mitigation measures where necessary.
- e) Prepare and submit a report to Sharples Environmental Services that meets standards required by Heritage Western Cape in terms of the National Heritage Resources Act, No. 25 of 1999.

### 1.3 Location and General Topography of the Study Area

The study area of some 430 hectares is approximately 10 km north to northwest of Mossel Bay between the Hartenbos River and Klein-Brakrivier (Figures 1 & 2). The property's western boundary runs along the eastern edge of the N2 between the above-named rivers (Figures 1 & 2 and Plate 1). The eastern border of the study area is the railway line, while the northern and southern extents verge on the Klein-Brakrivier and Hartenbos River respectively (Figure 2 and Plate 2). From the railway line at the eastern extent of the

property to approximately the eastern edges of formerly ploughed and cultivated fields are rising and undulating dunes that are often densely vegetated (Plate 3). For the most part, the vegetation in this zone is impenetrable. From the edge of the dunes, rolling hills rise to high points towards the west with the highest point being some 95 meters above mean sea level (Plate 3). From these high points, hills descend at varying degree of slope to the N2 in the west (Plate 1). At the northern extent, the topography of the study area drops to the southern banks of the Klein-Brakrivier at varying slopes including very steep to near vertical cliffs (Plate 2 [middle]).

#### **1.4 Approach to the Study**

Apart from archaeological heritage impact assessments conducted at Pinnacle Point (Kaplan 1997), Kwanonqaba and Hartenbos Heuwels (Nilssen 2005a & 2005b) and archaeological research at Cape St Blaize Cave at the point of Mossel Bay (Leith 1888; Goodman and Malan 1935) and Pinnacle Point (Marean & Nilssen 2002; Marean *et al* 2004), no archaeological investigation was conducted on or in the immediate vicinity of Vaalevalley 219, Mossel Bay. No reports were consulted, therefore, and there was no anticipation of what might be discovered prior to conducting the fieldwork. Nevertheless, because of the above-mentioned work we know that the Mossel Bay area contains an unusually rich record of human history spanning at least the last 500 000 years.

A heritage consultant, Ms Kathleen Schulz, was appointed by MAPCRM cc to investigate - via archival and/or historic research - the heritage/historic value and significance of several ruins dating to the historic period that still stand - in various stages of ruin - on the property.

Sharples Environmental Services provided a map showing the location and extent of the property as well as an aerial photograph of the study area, but coordinate data for boundary points were not obtained. Boundary points were easily located during the survey as the entire property is fenced.

The study area was accessed from its western side by using the old road connecting the R102 between Great-Brakrivier and Little-Brakrivier and the R328 between Hartenbos and Mossel Bay (Plate 3). The old road referred to above is not named on maps, but is an existing portion of the old N2 that ran between George and Mossel Bay. The property was entered by a single vehicle gravel track that runs underneath the N2 (Plate 3).

Due to the size of the study area, three people conducted the survey over a 5-day period. The strategy for maximum coverage included a mix of foot and vehicular survey. The latter was conducted where grass and scrub ground cover was very high – in formerly cultivated areas (Plate 3) - and involved traversing selected areas very slowly (5-10km/h) in about 30-50m interval transects while visually scanning the nearby ground surfaces for clearings and suspected archaeological and heritage materials. Approximately 150 hectares were covered by vehicular survey while some 160 hectares were traversed and surveyed on foot and the remaining area of about 120 hectares comprised areas covered with impenetrable vegetation. About 25% of the study area could not, therefore, be assessed in terms of archaeological and heritage resources (Plate 4).

The ground surface was inspected where possible, but due to considerable vegetation cover (grass, shrub and bush) only about 15 to 20% of the ground surface was visible and this was the greatest limitation to the study.

GPS readings of the surveyed area, archaeological and heritage occurrences as well as geological and palaeontological features were taken with a handheld instrument (Garmin Etrex Summit) using the Map Datum WGS 84 and a digital photographic record of the study was made. GPS readings were taken at landmarks that could readily be identified on maps and aerial photographs and these coordinates were used to rectify maps and aerial photographs by use of ArcView GIS (Figure 3 and Plates 4 & 5). Rectification points are indicated with red dots in Figure 2. Coordinate data were imported to ArcView GIS to

generate graphics presented here (rectified maps and aerial photographs with locations of documented archaeological and heritage occurrences), and to produce a GIS dataset for the current study as is produced for AHIA projects conducted by MAPCRM cc. Complete records of these data are available on request.

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## 2. Description of the Affected Environment

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A basic description of the location and topography of the study area and access to it are given in sections 1.3 and 1.4 above. Neither details concerning the future development and its layout were provided prior to the study and as done for all AHIA conducted by MAPCRM cc, the current study included the entire property.

A substantial portion of the study area, some 150 hectares, was formerly ploughed and cultivated, which would have included the activity of clearing stones and calcrete blocks. Activities associated with cultivation certainly impacted archaeological resources. These areas are shown in Plate 3 (outlined in green). Two sand quarries were created and worked in more recent years (Plate 3, outlined in yellow) and have exposed and certainly disturbed Stone Age materials. A considerable amount of disturbance is evident at the southern extent of the property (the first phase of development) where earthmoving, and to a lesser extent, demolition related activities have already taken place (Plate 3, outlined in red). Several mechanically excavated test pits were also recorded in the latter area and a ruin with potential heritage significance was partially damaged by bulldozer activity. While a few vehicle tracks were seen in the vegetated dunes, this part of the property is relatively undisturbed (Plate 3, outlined in orange). Apart from the above-mentioned disturbances and recent clearing of alien vegetation, the vegetated areas – other than grass-covered fields - visible in Plate 3 are relatively undisturbed and if present, archaeological occurrences in those areas are likely in tact. Unfortunately, due to thick, impenetrable vegetation, the bulk of undisturbed areas could not be accessed for inspection during fieldwork.

While vegetation cover is high, sufficient ground is visible across the property to report that; a) dense vegetation on dunes in the eastern portion of the study area are rooted in a beige to white aeolian sand, b) beneath the grass currently covering the ploughed fields in the northern and western portions of the property is a reddish sandy soil with a high component of silt, c) sometimes associated with the latter are clusters of water worn cobbles originating from Enon conglomerates and it is likely that these clusters were generated when clearing fields for cultivation – this idea is supported by occurrences of water worn cobbles in non-ploughed areas adjacent to cultivated fields as well as several exposures revealing Enon conglomerates underlying reddish sandy soil (see d in Plate 6), e) calcretes in various forms and sizes (nodules to thick beds) underlie - and sometimes protrude through - surface deposits in several parts of the property, and f) a thick body of - probably ancient - dune sands lie beneath orange sandy soil of the ploughed fields in the southern half of the property (Plate 6). In no way is the latter intended to present an accurate summary of the geology of the study area as that is beyond the expertise of the author as well as the scope of this study. Nevertheless, additional observations concerning the geological sequence and geological features are given in section 3.

A glance through the plates presented at the end of this document gives a good impression of the vegetation types and density encountered in the study area. Numerous heaps of cut Rooikranz were observed in the vegetated dunes in the eastern portion of the property as well as on the relatively even area between the vegetated dunes and the cultivated fields. Even so, Rooikranz is still plentiful in the above-named areas, but is not the dominant vegetation (Plate 7 A-F). The latter images in Plate 7 show the different types of vegetation cover in the dune area while the locations where these images were taken are indicated with corresponding capital letters in Plate 3. Coastal Fynbos is dominant and there are several stands of Milkwood thicket. In the relatively level area between the dunes and

the ploughed fields the vegetation is mostly thick and impenetrable (Plate 7 D & G), but there are areas that appear exposed on the aerial photograph (Plate 3). On closer inspection, the latter areas are covered with grass and the ground surface is rarely visible (Plate 7 H). The formerly cultivated fields are covered with grass (e.g., Plate 1). Vegetation cover is scanty in parts of the northwestern portion of the property, making the ground surface more exposed and hence archaeological “visibility” is good (Plate 7 I & J). Overall, only some 15 to 20% of the ground surface was visible in the areas that could be surveyed.

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### 3. Results

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#### 3.1. Foot and Vehicle Survey

The foot and vehicle survey focused on closer inspection of ground surfaces that were not densely covered with vegetation. As mentioned above, the surface of the ground is not visible for the vast part of the property and large areas could not be inspected due to thick and impenetrable vegetation (Plate 4). GPS readings were taken at archaeological and heritage occurrences – including geological/palaeontological features - and examples of these are presented in plates and indicated with blue dots and yellow or black numbers in Plate 5. Coordinate data are based on map datum WGS 84 and given below in decimal degrees. In excess of 80 occurrences were recorded ranging from ESA through pastoralist/pottery period to historic times and detailed information for each occurrence is available on request. Certain occurrences are lumped below to avoid repetition in descriptions. No shovel test excavations were conducted. Locations of occurrences described below are indicated in Plate 5.

##### 3.1.1. Archaeological and Heritage Occurrences

1. S34.10486 E22.12395 (Plate 8)

In dune sands at the old sand quarry an *in situ* MSA flake was recorded with a few additional artefacts – including a hammer stone of potentially ESA origin – lying nearby in secondary context.

2. S34.10513 E22.12429 (Plate 9)

Also in the old sand quarry is a medium-density scatter of MSA stone artefacts, some of which appear embedded in consolidated dune sands below looser sands. This, however, may be the result of artefacts being exposed by earth moving machinery and subsequently becoming incorporated in consolidated sands that were hardened through exposure to air.

3. S34.10827 E22.12068 (Plate 10)

Ruins of an old northwest-facing cottage constructed mostly of calcrete blocks and clay mortar. Traces of plaster remain on part of the outer walls. Window frames lying among the ruins are made of Oregon pine.

4. S34.11215 E22.12399 (Plate 11)

Two isolated stone artefacts as well as a few pieces of modern ceramic fragments in vehicle track.

5. S34.11403 E22.12256 (Plate 12)

This is a very ephemeral scatter including two quartzite artefacts, an alikreukel opercula, a few pieces of brown mussel and a single piece of Cape coastal pottery.

6. S34.11154 E22.11668 (Plate 13)

This is a developer's/contractor's test pit of some 2 to 2.5 m deep and about 3 x 1.5 m in area. The test pit and spoil heap contain paired mussels that look like cockles, which may be of some palaeontological significance. These shells derive from a horizon some 1.5 m below the surface. The spoil heap adjacent to the test pit also contained an MSA flake, cow bone and an old bottle. The sands are somewhat humic to about a meter below the surface and then pale beige and white to depth.

7. S34.11178 E22.11592 (Plate 14)

Overgrown ruins most likely of 19<sup>th</sup> century origin, but they are potentially older. Some building blocks are of cemented beach and what appears to be aeolianite material. Blocks of Enon conglomerate and calcrete were also used in the structure as well as relatively crudely made bricks of orange to red clay. Parts of the plaster and mortar consist of lime with marine shell temper while mortar of clay was also noted. A great deal of shell in the plaster and mortar is burnt and calcined. Some of the existing walls are around 50cm thick. The structure has undergone some recent, illegal damage, almost certainly by earthmoving machinery. Some artefacts seemingly of the 19<sup>th</sup> and possibly 18<sup>th</sup> century were noted in the vicinity of the ruins to the south, but no dump or midden was identified. Materials actually included a mixture of modern and older materials.

8. S34.11131 E22.11582 (Plate 15)

Additional ruins – possibly outbuildings associated with the main/large structure – to the north of occurrence 7. Bricks similar to those described for occurrence 7 are among the ruins. The structure includes vertically planted beams with what appear to be devices for tethering livestock, possibly horses and hence at least part of this structure was possibly used as a stable. These features certainly require further investigation by a historical archaeologist.

9. S34.11469 E22.11921 (Plate 16)

Medium to low density scatter of marine shell including brown mussel, alikreukel, limpets, white mussel, periwinkle and also saw a few milky quartz and quartzite stone artefacts. This scatter was exposed and damaged illegally by vegetation clearing and/or earthmoving activities. The densest part of the scatter is only some 5 x 3 m in area, but its subsurface nature and extent is currently unknown and requires investigation via shovel testing.

10. S34.11517 E22.11993 (Plate 17)

A mixture of modern and older materials including glass, plastic, bone, quartzite stone artefacts, builder's rubble and so on occur on the surface and are mixed together on the slope of a dune near the recently disturbed area. The scatter of mixed materials is some 150 m<sup>2</sup>.

11. S34.10643 E22.12231 (Plate 18)

This more recent sand quarry did not exist at the first inspection of the study area early in April 2005. It is an extensive earthmoving exercise most likely to quarry the dune sands for construction purposes. No good profiles were exposed and no *in situ* materials were seen. At various places in the quarried area was a mixture of MSA and possibly LSA artefacts, ochre, Cape coastal pottery and so on. No marine shell or bone was seen. Stone artefacts are mostly in quartzite, though a few pieces of quartz and silcrete were also observed. Disturbance of subsurface archaeological materials through quarrying is performed illegally.

12. S34.09181 E22.14157 (Plate 19)

Very low density and small (1 x 0.5 m) scatter of marine shell and flaked quartzite cobble. The materials are exposed in a very small erosion gully. Marine shell includes

alikeukel and brown mussel. The density is low enough to make a full collection, specifically for future dating of the shellfish. Shovel tests will reveal the subsurface nature if any and this occurrence indicates the need for monitoring during the vegetation clearing and earthmoving phase of development.

13. S34.09241 E22.14205 (Plate 20)

Isolated quartzite manuport.

14. S34.09279 E22.14274 (Plate 21)

Two large quartzite manuports (some 30x20x15 cm) "planted" vertically and about 5 m to the south-southeast is another vertically planted stone in calcrete. It is highly unlikely that these three manuports became positioned the way they are by natural agents and therefore it appears likely that people placed them in this fashion to signify something. Occurrence 15 below is almost certainly related to these stones.

15. S34.09278 E22.14276 (Plate 22)

About 15 to 20 m north of the above-mentioned manuports is another collection or cache of manuports in quartzite and calcrete, which cover an area of approximately 12m<sup>2</sup>. This cluster of stone is not in a pile as those associated with clearing a field of stone before plow and neither is it in the vicinity of a cultivated field. The collection of stone is also too small to be the ruins of a structure and lacks any materials that may indicate the use of the area for habitation. A few pieces of marine shell were noted among and near the cluster of manuports and these include turbo and oyster. At the northern edge of the cluster is a vertically planted block of calcrete like those seen at occurrence 14. While these occurrences require further investigation, it is possible that they are associated with burial(s).

16. S34.09241 E22.14213 (Plate 23)

Isolated and flaked quartzite cobble.

17. S34.09164 E22.13906 (Plate 24)

Isolated, broken lower grind stone and another manuport some 8 m to the north.

18. S34.09063 E22.13732, S34.09032 E22.13689, S34.09018 E22.13742, S34.09027 E22.13621 (Plate 25)

Occurrence 18 is situated near the top of a steep, sparsely vegetated slope among medium to high densities of calcrete blocks and nodules. Numerous artefacts were observed over a large area of some 120 m<sup>2</sup>, but densities are medium to low for the most part though some zones contained higher frequencies of artefacts. The artefact scatter continues some 30 m down slope where calcrete blocks and nodules are numerous and ubiquitous. Densities of artefacts drop off notably down the slope and peters out at the third GPS reading given above. The artefact scatter continues to the north to around the last GPS reading given above. Stone artefacts are mostly of MSA origin though at least one was seen that might be of ESA origin. Among the stone artefacts seen are; flakes, broken hammer stone, upper grind stone, combination hammer stone and broken upper grind stone, small, crude bifacial point, retouched silcrete and so on. Most artefacts are in quartzite, but milky quartz and silcrete were also seen. This site worth collecting and plotting as it may be very difficult to conserve. Also probably necessary to excavate a few shovel tests to investigate whether there are any *in situ* materials sub surface.

19. S34.08951 E22.13637, S34.08943 E22.13581 (Plate 26)

Several pieces of flaked stone and hammer stones were seen in an outcrop of eroding Enon conglomerates. This and other outcrops and exposures of Enon conglomerates are possibly the closest source of raw materials – mostly quartzite and quartz

- for stone tool manufacture. It is possible, therefore, that this occurrence is a low-density quarry site.

20. S34.08961 E22.13434 (Plate 27)

This is an accumulation of mostly modern materials including corrugated metal sheeting in a state of decay, plastics, glass and so on. In the vicinity of this material is an isolated quartzite stone artefact.

21. S34.08989 E22.13398 (Plate 27)

Low-density scatter of manuports and other stone artefacts was noted in a formerly cultivated area.

22. S34.09076 E22.13416 (Plate 27)

Isolated combination hammer stone, grind stone and core.

26. S34.09124 E22.14156, S34.09130 E22.14150

Immediately above and to the south of occurrence 24 are several stone artefacts in quartzite including flakes, cores and hammer stones that appear of MSA origin. It is possible that some of the quartzite cobbles are eroding from the Enon conglomerates. Nearby is an isolated limpet and stone artefact.

27. S34.10734 E22.12535 (Plate 28)

Between the two points indicated for this occurrence in Plate 5 is a disused single vehicle track in sand that is strewn with modern building rubble including corrugated and flat metal sheeting, brick, paving bricks, plaster/mortar and wood. Also noted was a small patch where the bricks appeared to be laid in the fashion of paving.

28. S34.09220 E22.13395, S34.09416 E22.13119, S34.09389 E22.13183, S34.09426 E22.13161, S34.09439 E22.13163, S34.09451 E22.13157, S34.09463 E22.13143, S34.09472 E22.13124, S34.09479 E22.13100, S34.09480 E22.13073, S34.09458 E22.13077, S34.09540 E22.12989, S34.09550 E22.12961, S34.09540 E22.12947, S34.09506 E22.12992, S34.09611 E22.12845, S34.09618 E22.12823, S34.09624 E22.12801, S34.09665 E22.12767, S34.09673 E22.12773, S34.09686 E22.12818, S34.09655 E22.12819, S34.09634 E22.12844, S34.09620 E22.12875, S34.09610 E22.12879, S34.09302 E22.13425, S34.09347 E22.13159, S34.09415 E22.13048, S34.09375 E22.13151, S34.09226 E22.13339, S34.09327 E22.13137 (Plates 5, 29 & 30)

This is an extensive scatter of predominantly ESA stone artefacts covering an area of approximately 22 000 m<sup>2</sup> (2.2 hectares). Being in formerly cultivated fields, this occurrence is not in primary context. Nevertheless, because 1) it is ESA in origin, 2) artefacts occur in medium to high densities in several areas, and 3) artefacts are relatively undamaged, this occurrence retains sufficient integrity to be of scientific and heritage value.

The scatter varies in artefact density with the densest areas containing up to 10 artefacts per 4 m<sup>2</sup>. It is estimated that, as far as ESA sites are concerned, this is a medium to high-density scatter. Since the ground is covered with grass for the most part, it is highly likely that many more artefacts lie beneath grass and possibly subsurface. This would certainly increase the artefact density. Some artefacts display fresher fracture surfaces and these may be the result of damage during plowing or the artefacts may be more recent in origin (MSA or LSA). Nevertheless, the majority of artefacts are of ESA age. It is surprising that the stones were not cleared for plowing and cultivation. No piles of stones resulting from clearing were seen in the vicinity of this field or occurrence.

Artefacts lie on and sometimes embedded in the ground that is a reddish colour with a large component of silt, unlike the beige to whitish dune sands encountered to the east of the cultivated fields.

Stone artefacts are most commonly in quartzite though pieces in milky quartz were noted. It is possible that cobbles derived from the Enon conglomerates are the source for artefact manufacture. Several un-worked, non-utilized manuports were seen. Artefact types include cores, flakes, hammer stones, choppers, crude bifacial hand axes and cleavers (Plate 30). No additional eco- or artefactual material is associated with the stone tools.

This occurrence is not in primary context and hence not worthy of conservation, but its scientific and heritage value, as described above, requires that it be mitigated in full prior to any vegetation clearing or construction activities. Mitigation should involve vegetation clearing, piece plotting and collection as performed, for example, at St Francis Links (Nilssen 2005a, b, c).

29 and 30. S34.09784 E22.12207 and S34.09615 E22.12212 respectively (Plate 31)

These are large, low to medium-density scatters (each about 3500 m<sup>2</sup>) of mostly Enon derived cobbles that also include cores, flakes and hammer stones that are probably ESA/MSA in origin. These scatters are possibly the result of clearing fields for plowing and cultivation, but similar materials were noted in vegetated areas adjacent to these fields (Plate 31).

31. S34.09643 E22.12273 (Plate 32)

Ruins of a north-facing cottage built partially of both brick and calcrete blocks. The ruins are reminiscent of those observed at occurrence 3. Remains of window frames appear to be of Oregon pine. Original clay mortar is still visible between clay bricks - with temper of fragments of burnt bone and marine shell - and calcrete blocks as is clay plaster beneath whitewash and/or paint. Certain areas of the structure include plaster and mortar that appear more modern. No midden was located in the vicinity of the ruins. Old fence poles and wire are still in place in certain areas around the house and garden. While older building rubble and metal sheeting is strewn around the ruins, very little modern rubbish such as plastics was seen.

32. S34.10054 E22.11938 (Plate 33)

Some 200 meters east of the subway under the N2, along the main gravel road into the property are five graves situated under and next to a large Rooikranz bush on the north side of the road (see Plate 5). All graves have old concrete headstones that face in a north to northeasterly direction. Three graves are capped with concrete "beds" (Plate 33 e, f & i). The only materials associated with these graves are a modern wine bottle and a broken glass container.

Only four gravestones bear inscriptions (e, f, g & j), though the one depicted in Plate 33 (a, b & c) is somewhat overgrown with grass, which may be obscuring any inscription. The following was legible on gravestones in Plate 33 (e, f, g & j) and the format used below is as text appeared on the headstones;

(e) L.H. Koen Gebore  
30 st Mei 1870  
Gesterwe 8 ste Feb 1956  
Rus in Vrede

(f) I.E.S. Koen  
Gebore 1873  
Gestorwe  
6 Feb 1944  
Rust in Vrede

(g) Koen 1893 (additional inscriptions were not clear during inspection)

(j) Herklaas  
Philipus  
Smit  
Gebore 3 Aug 1893  
Oorlede 14 Junie 1947  
Rus

More information concerning occurrence 32 may be obtained via archival/historic/anthropogenic research that should be conducted during the mitigation phase. Through this research concerted efforts must be made to locate relatives of the above-named individuals and if they so require, a reburial of the above-named individuals will be at the expense of the developer. If no relatives can be located, then the best option may be to leave the graves undisturbed.

33. S34.10216 E22.11810 (Plate 34)

These are fairly recent labourers cottages built of modern materials including large concrete bricks and the roof is of "big six" style roof plates in fiber cement. The houses are similar to "longhouses" that are common on the west coast of the southwestern Cape with fireplaces at the northern ends of the structures. A lot of modern litter is strewn around in the vicinity of the houses including many plastic containers and other 20<sup>th</sup> and 21<sup>st</sup> century materials.

34. S34.10391 E22.11877 (Plate 35)

Ruins of structure built mostly of calcrete blocks and no bricks were seen in the remaining walling. This structure is similar to those recorded at occurrences 3 and 31. Mortar consists mostly of clay though more modern looking mortar and plaster was seen in places. Small portions of the original structure remain in tact, so it is difficult to estimate original structure's shape and size. This, however, should become evident through clearing and excavation. No obvious refuse midden was seen in the vicinity of the structure and the litter lying around is unlike the modern materials seen at occurrence 33.

35. S34.10263 E22.12152 (Plate 36)

This is a small cluster of mostly cobbles and calcrete blocks and nodules, but also includes a few stone artefacts, one of which is ESA in origin. This cluster is at a water trough on the edge of a cleared field and is probably associated with clearing the field for plowing and cultivation.

36. S34.10211 E22.11990 (Plate 37)

This is an isolated manuport. Several of these were seen in most cultivated fields as well as uncultivated areas, but not all were plotted.

37. S34.10205 E22.11961 (Plate 38)

Situated in a cultivated field near the above occurrence is a flaked quartzite cobble.

38. S34.10403 E22.11595 (Plate 39)

Several old, rusted water tanks and building rubble including calcrete blocks are clustered in a formerly cultivated field. Associated with these are what appear to be remnants of a former structure including a circular calcrete feature (Plate 39, indicated with orange oval) as well as a linear ridge of grass that may cover ruins of walling. The circular feature is likely the platform for a water tank. Also noted was a large, old metal pot. The nature of this occurrence cannot be determined without clearing vegetation and archaeological excavation. No modern looking debris was seen and it is possible, therefore, that this occurrence is 19<sup>th</sup> century or earlier in origin.

39. S34.09837 E22.12229 and S34.09822 E22.12213 (Plate 40)

What appears to be a continuation of occurrences 29 and 30 is a large, low to medium-density scatter of Enon derived cobbles and pebbles that include hammer stones, cores, flakes and at least two retouched stone artefacts. It is likely that this scatter of some 3500 m<sup>2</sup> is an exposure of eroded Enon conglomerates that was used as a source or quarry of raw material for artefact manufacture. Most stone artefacts are MSA in origin, though some pieces may be of LSA and ESA age.

40. S34.09395 E22.12807 (Plate 41)

Immediately southeast of a vegetated patch is a very sparse scatter of stone artefacts including flaked cobbles and flakes that appear MSA in origin (Plate 41, bottom images).

41. S34.09175 E22.13013, S34.09181 E22.12950 and S34.09182 E22.12963 (Plate 42)

On slopes at the northwestern extent of the property - adjacent to the N2 - is a medium to low-density scatter (2 to 3 pieces per 4 m<sup>2</sup>) of stone artefacts that are mostly MSA in origin though more recent materials (LSA) were also noted. Included among these are flaked cobbles, flakes and a single retouched piece that may be of LSA age. Stone artefacts are in quartzite that is likely derived from Enon conglomerates exposed through erosion. Several Enon exposures are located in the vicinity of this occurrence.

42. S34.09129 E22.13087 (Plate 43)

This is an example of Enon conglomerates exposed via erosion in a ravine adjacent to the N2. This observation strongly suggests that cobbles seen on the slopes described for occurrence 41 are of Enon origin. That some cobbles display old flake scars indicates that this material was sourced for artefact manufacture.

43. S34.09095 E22.13244 (Plate 44)

Situated on the western edge of a formerly cultivated field is a medium to low-density scatter of predominantly ESA stone artefacts though some materials may be MSA in origin. While artefacts were seen on the exposed edge of the field, it is likely that grass cover is obscuring more materials. This scatter is reminiscent of occurrence 28 and is possibly a continuation thereof. Most artefacts are in quartzite though milky quartz was also recorded (Plate 44 middle) and include crude bifacial tools and/or cores, cores and flakes as well as hammer stones.

Plotting and collecting this material can be accomplished along with mitigation of occurrence 28.

44. S34.09242 E22.13235 (Plate 45)

Several parts of a broken up ox wagon are strewn about on the western edge of a formerly cultivated field. Some parts may be rescued for restoration.

### **3.1.2. Geological / Palaeontological Occurrences**

23. S34.09120 E22.14046 (Plate 46)

At the northern extent of the property, on the southern banks of the Klein-Brak Rivier is a geological/palaeontological feature that appears to be a relic dune/aeolianite or raised beach. It is more likely the latter as it comprises fragmented shell and sand and not well-sorted sands as is the case with dunes.

The blocks used in the large structure referred to in occurrence 7 are of the same material as this feature. This occurrence requires investigation by a specialist. As these remnants are rare and irreplaceable, they are likely to require conservation measures.

24. S34.09114 E22.14137 (Plate 47)

Near occurrence 23 is another geological/palaeontological feature that consists of a capping of calcrete that lies on top of what is likely a raised beach, which in turn is inter bedded with a conglomerate of pebbles and small cobbles that may or may not be of Enon origin. It is possible that the pebbles and small cobbles represent a high-energy beach. The raised beach is identified as such for the same reasons given for occurrence 23. This occurrence requires investigation by a specialist. As these remnants are rare and irreplaceable, they are likely to require conservation measures. A stone artefact was seen lying atop the calcrete with the latter adhering to one of its surfaces.

25. S34.09114 E22.14189 (Plate 48)

This palaeontological/geological feature is a raised beach nearby the above two occurrences that is at least 10 meters above the high water mark of the tidal Klein-Brak Rivier. Large numbers of complete specimens and large fragments are cemented into the sands of the raised beach. This occurrence requires investigation by a paleontologist. It is likely that this occurrence will require mitigation and conservation measures to be recommended and reviewed by a specialist and the heritage authorities respectively.

### 3.2. Heritage – Archival Research

Figure 4 shows the original Surveyor General diagram that was issued at the time Vaalevalley was granted to E. E. Meyer in 1870. No structures are depicted on this or a later diagram (Figure 5) and without indications of structures it is extremely difficult to date the construction of houses or other structures through archival records. Later diagrams of subdivisions were examined, but no buildings are shown on any of those either.

Because of the lateness of the grant date, (surrounding farms were all granted c 1814), and the fact that it was granted to E. E. Meyer, one of the original settler names in the district, it is possible there was an entangled estate that warranted a re-grant. A guess is that E. E. Meyer was a direct descendant of the original Esias Engelbrecht Meyer who was granted the farm Hartenbosch in c 1732.

The farm name Vaalevalley was a name given at a later date, the first being 'De Hoek' (possibly of Hartenbosch). This is mentioned in later diagrams, of which there were seven from the time of grant to 1959 (e.g., Figure 5). No substantial portions of land were sub-divided from the original farm (the largest being 30 morgen in 1900), between the above-given dates, which suggests that the portion studied here would be described as 'the remainder'.

A specialist in vernacular architecture would be of help in dating the identified buildings and structures and should be consulted during the mitigation phase.

Below is a summary of identified occurrences including their age, significance and recommended mitigation measures (Table 1). Similar sites are lumped to avoid repetition.

**Table 1. Age, significance and recommended mitigation (mandatory in bold) for discovered archaeological occurrences. HWC = Heritage Western Cape**

Site Number	Period/Age	Potential Significance	Mitigation
1, 2, 11	MSA, LSA, pastoralist/pottery	Low	Monitor vegetation clearing and earthmoving activities <b>Obtain permit from HWC for damage/destruction</b>
3, 7, 8, 31, 34, 38, 44	Historic, possibly 19 <sup>th</sup> C or earlier	Indeterminate	Investigation by historical archaeologist. <b>Obtain permit from HWC for damage/destruction</b>

Site Number	Period/Age	Potential Significance	Mitigation
4, 10, 20, 21, 27, 36, 37, 42	Mixed or indeterminate at this time	Low	None
5	Pastoralist/pottery period	Low	Full collection & shovel test
6	Mixed	Indeterminate	Inspect by paleontologist
9	LSA	Low	Shovel test. <b>Obtain permit from HWC for damage/destruction</b>
12, 13	LSA	Low	Complete collection & shovel test
14, 15	Indeterminate at this time	High	Archaeological investigation/excavation & possibly conserve if prehistoric graves. <b>Obtain permit from HWC for damage/destruction</b>
16, 17	Indeterminate at this time	Low	Monitor vegetation clearing and earthmoving activities.
18	MSA & some ESA	High	Map, piece-plot and collect all & shovel tests or conserve. <b>Obtain permit from HWC for damage/destruction</b>
19	MSA	Medium	Map, piece-plot and collect all or conserve. <b>Obtain permit from HWC for damage/destruction</b>
22	Indeterminate at this time	Low	Collect
23, 24, 25	Possibly 130kya or 300-400kya	High	Geologist/Paleontologist investigation, date via OSL or similar & conserve. <b>Obtain permit from HWC for damage/destruction</b>
26, 29, 30, 35, 39	MSA & ESA	Medium-Low	Map, piece-plot & collect. <b>Obtain permit from HWC for damage/destruction</b>
28	ESA	High	Map, piece-plot and collect all or conserve. <b>Obtain permit from HWC for damage/destruction</b>
32	19 <sup>th</sup> & 20 <sup>th</sup> C	High	Historian/Heritage/Anthropologist to investigate and possible reburial or conservation. <b>Obtain permit from HWC for damage/destruction</b>
33	20 <sup>th</sup> & 21 <sup>st</sup> C	Low	None
40	MSA	Medium	Map, piece-plot and collect. <b>Obtain permit from HWC for damage/destruction</b>
41	MSA	Medium-High	Conserve or map, piece-plot & collect. <b>Obtain permit from HWC for damage/destruction</b>
43	ESA & some MSA	Medium-High	Map, piece-plot and collect. <b>Obtain permit from HWC for damage/destruction</b>

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#### 4. Sources of Risk, Impact Identification and Assessment

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The proposed rezoning, subdivision and future development as outlined in 1.1 above will involve:

- Substantial vegetation clearing and earthmoving activities that will have a permanent and negative impact on significant archaeological resources. While numerous significant archaeological and heritage occurrences were recorded during this study, the limited visibility of the ground surface, limited coverage due to thick vegetation and the fact that most archaeological materials lie in and under the ground means that additional and potentially more significant occurrences may occur in areas that are not currently exposed or accessible.
- Associated impact in the form of increased vehicular and pedestrian traffic may also have a negative impact on archaeological and heritage resources that are not currently visible and/or exposed.
- Importantly, the strip of coastline between the railway line (eastern boundary of the studied area) and the beach was not in the brief for the study reported here. Parts of this strip of land – that will essentially become an obstacle between future residential zones and the beach - will most likely be used as access or bridging points between the future residential zones and the beach. Given the high density of archaeological and heritage occurrences identified during this study, it is almost certain that similar materials are located in the currently unstudied strip of land described above. Any future use of that land – including vehicular and pedestrian traffic - may have a negative impact on currently unidentified archaeological and heritage resources.
- This study has revealed a wide range of important and interesting archaeological and heritage resources that will make a significant contribution to South African heritage. In this way, the development has already had a positive impact and studies like this one have resulted in large-scale research endeavors such as that underway at Pinnacle Point (Marean *et al* 2004).

Based on the above-named sources of risk and identified negative impacts, the summary assessment is that:

- archaeological and heritage occurrences – including geological/palaeontological occurrences - will be impacted negatively by development and should be mitigated according to site-specific requirements to minimize or prevent negative impacts
- a selection of these occurrences should be conserved in perpetuity as they are rare and irreplaceable
- full-time archaeological monitoring of vegetation clearing and earth moving activities should be conducted to minimize impact during construction phases of development
- it must be ascertained whether the property between the study area and beach will be used in any way for access to the beach in the future so that appropriate studies and mitigation measures can be adopted.

Table 2 summarizes the impacts of the proposed development on archaeological and heritage resources, including geological/palaeontological occurrences.

**Table 2. Impact on and Loss of Archaeological and Heritage Resources**

	<b>Without Mitigation</b>	<b>Assuming Mitigation</b>
<b>Extent</b>	National/International	Local
<b>Duration</b>	Permanent	Permanent
<b>Intensity</b>	High	Medium to low
<b>Probability</b>	High	Medium to low
<b>Significance</b>	High	Medium to low
<b>Status</b>	Negative	- and +
<b>Confidence</b>	High	High

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## 5. Required and Recommended Mitigation Measures

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The following is required:

- The developer must submit a copy of this report to Heritage Western Cape.
- Structures of historic age were already damaged illegally and the developers must obtain permits from Heritage Western Cape for such damage and/or destruction, but only after this report is reviewed by the heritage authority and after the recommended/required mitigation measures are conducted.
- Quarrying of sand at occurrences 1, 2, 3 and 11 has (and continues to) disturbed and damaged archaeological materials illegally and such operations must cease until a permit for such activities is obtained from Heritage Western Cape.
- The National Heritage Resources Act, No. 25 of 1999, protects archaeological occurrences and therefore a permit for damage and/or destruction must be obtained from Heritage Western Cape prior to any vegetation clearing and earthmoving activities including demolition of structures older than 60 years.
- In the event that archaeological or historical remains are unearthed in the absence of the archaeological monitor(s), the developer and/or contractor(s) must immediately inform the appointed archaeologist or Heritage Western Cape.
- Unmarked human burials may occur anywhere in the landscape and are often exposed during earthmoving activities. Human remains are protected by law and, if encountered and older than 60 years, must be reported to the State Archaeologist at the South African Heritage Resources Agency (Mrs. Mary Leslie who can be reached at 021 462 4502).

The following is recommended:

- Several identified archaeological and heritage occurrences – including geological/palaeontological occurrences - require site-specific mitigation measures to be performed by professionals prior to and during the construction phase of development (see site-specific details in Table 1).
- Selected archaeological and heritage occurrences - including geological/palaeontological features - require conservation and management measures that must be reviewed and approved by HWC and implemented prior to the operational phase of development (see site-specific details in Table 1).
- Full-time monitoring of vegetation clearing and earth moving activities – during construction phase(s) - must be conducted and/or supervised by a professional archaeologist.
- In the event that the strip of land referred to in the last bullet above is intended for any use in connection with future development and associated use of the beach, that area requires an AHIA or, minimally, that the areas earmarked for use be studied for archaeological and heritage resources and that all earthmoving and vegetation clearing be monitored as detailed in point 2 above.
- If significant archeological materials are exposed through vegetation clearing and earthmoving activities, then archaeological mitigation in the form of collection and/or excavation and basic analyses will be required at the expense of developers.
- Several local and international developments and resorts understand and use the value of archaeological and heritage features and incorporate them into developments. These act as points of attraction and interest. The array and significance of numerous discoveries made at Vaalevalley are certainly worthy consideration for incorporation into future development on the property.

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## 6. Terminology

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Early Stone Age (ESA) = the Stone Age period dating from around 2.2 million years ago to some 300 000 years ago

Middle Stone Age (MSA) = the Stone Age period dating from approximately 300 000 years ago to about 30 000 years ago

Later Stone Age (LSA) = the Stone Age period dating from some 30 000 years ago to roughly 2000 years ago

Pastoralist/Pottery period = the prehistoric period from around 2000 years ago to historic times

Manuport = stone not occurring naturally in the landscape and therefore carried in by people (manu = hand, port = carry)

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## 7. Acknowledgements

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We thank Sharples Environmental Services for supplying an aerial photograph of the study area that was used during fieldwork and for generating certain figures and plates presented below. Mr. Willem van Rensberg kindly arranged for access to the property. Mr. Cornelius Goosen and Mr. Leonard Lekas assisted with fieldwork. We also thank Ms Kathleen Schulz for conducting the heritage/historic research concerning the built environment.

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## 8. References

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Kaplan, J. (1997) Archaeological Study: Proposed Pinnacle Point Development. Riebeek West, South Africa, Agency for Cultural Resource Management.

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Nilssen, P.J. (2005a) Archaeological Heritage Impact Assessment: Proposed rezoning and development of remainder portion Vyf-Brakkefontein 220, Hartenbos Heuwels, Mossel Bay. MAPCRM cc, Great Brak River.

Nilssen, P.J. (2005b) Archaeological Heritage Impact Assessment: Proposed rezoning and subdivision of Remainder 249 Vyf-Brakkefontein 220, Kwanonqaba, Mossel Bay. MAPCRM cc, Great Brak River.

Nilssen, P.J. (2005c) Phase 2 – Mitigation of Archaeological Heritage Resources in Zone 1: St Francis Links – Golf Estate. Progress report submitted to SAHRA. MAPCRM cc, Great Brak River.

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**Figures and Plates** (on following pages)

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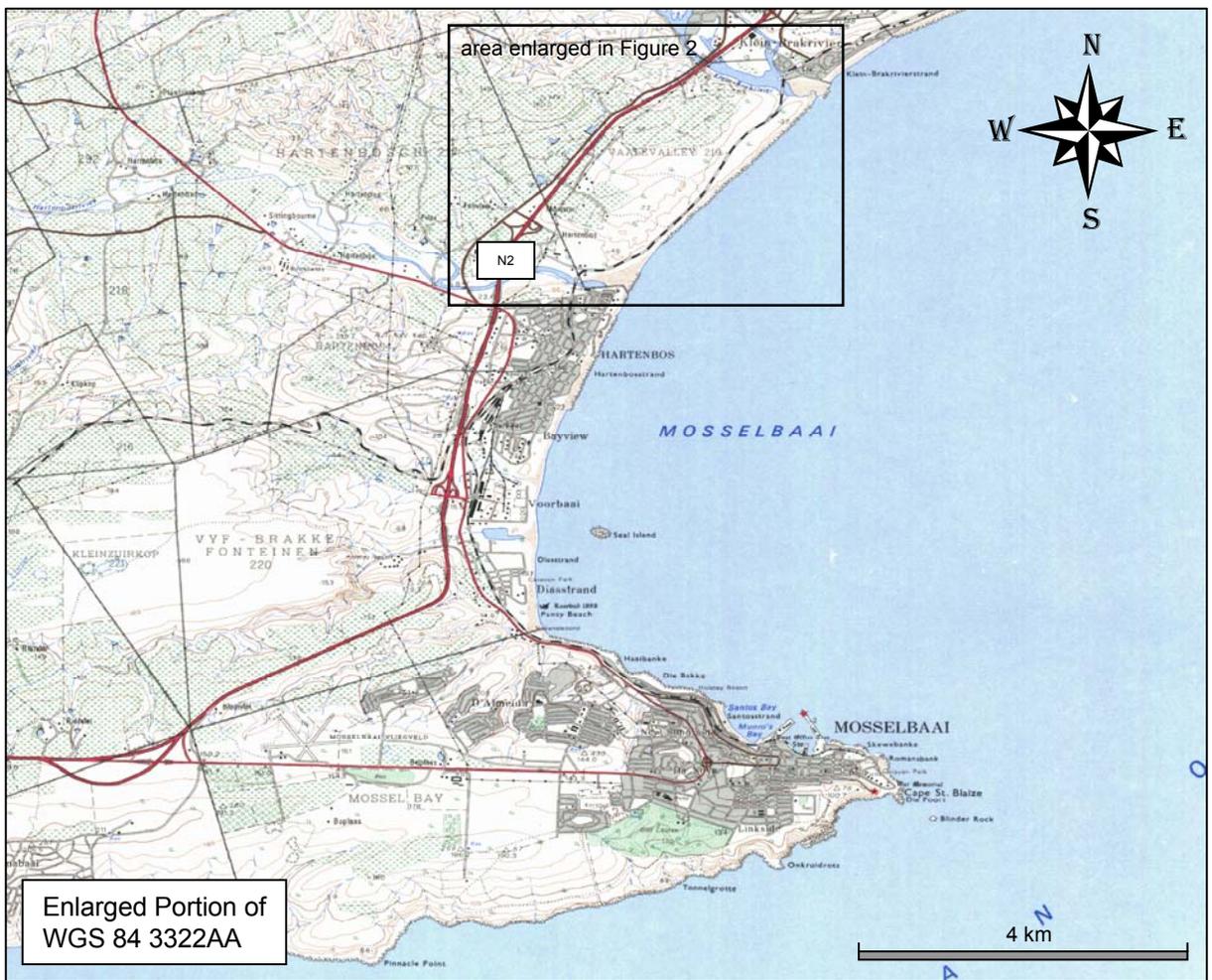


Figure 1. General location of the study area, Vaalevalley 219, (framed) relative to the coastal town of Mossel Bay, Western Cape Province.

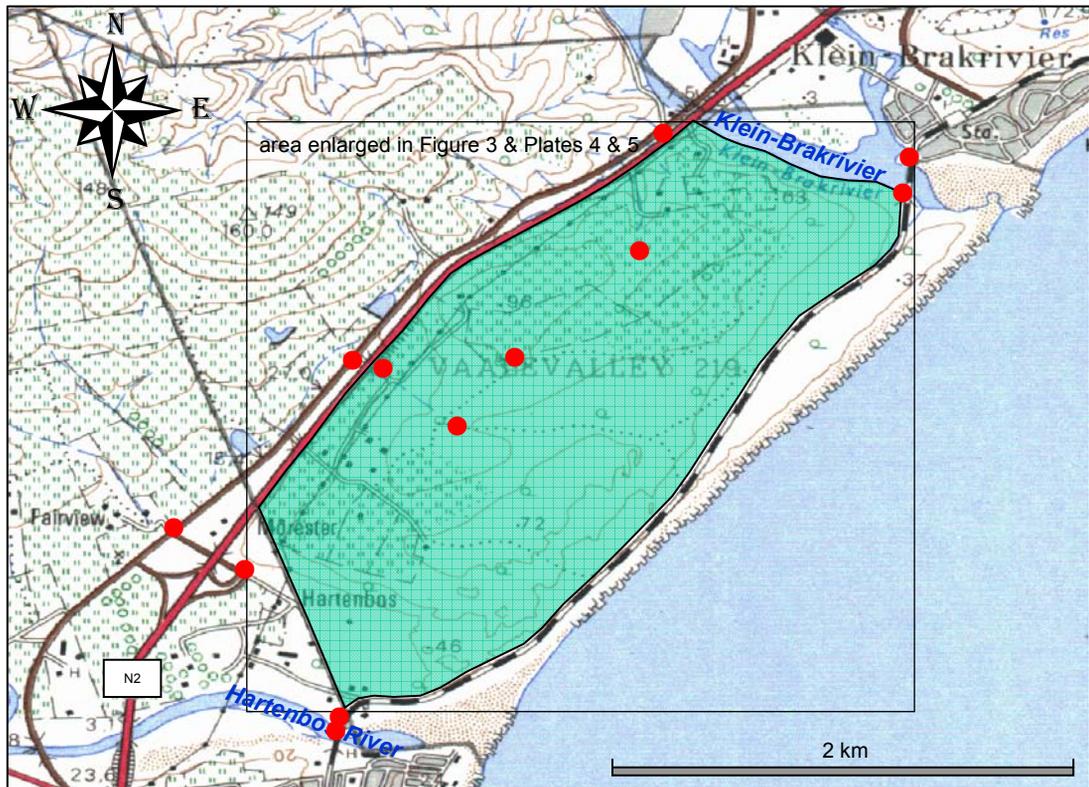


Figure 2. Enlarged area as indicated in Figure 1 showing the extent of the study area (shaded green) and rectification points (red dots). This map is not rectified, but see Figure 3.

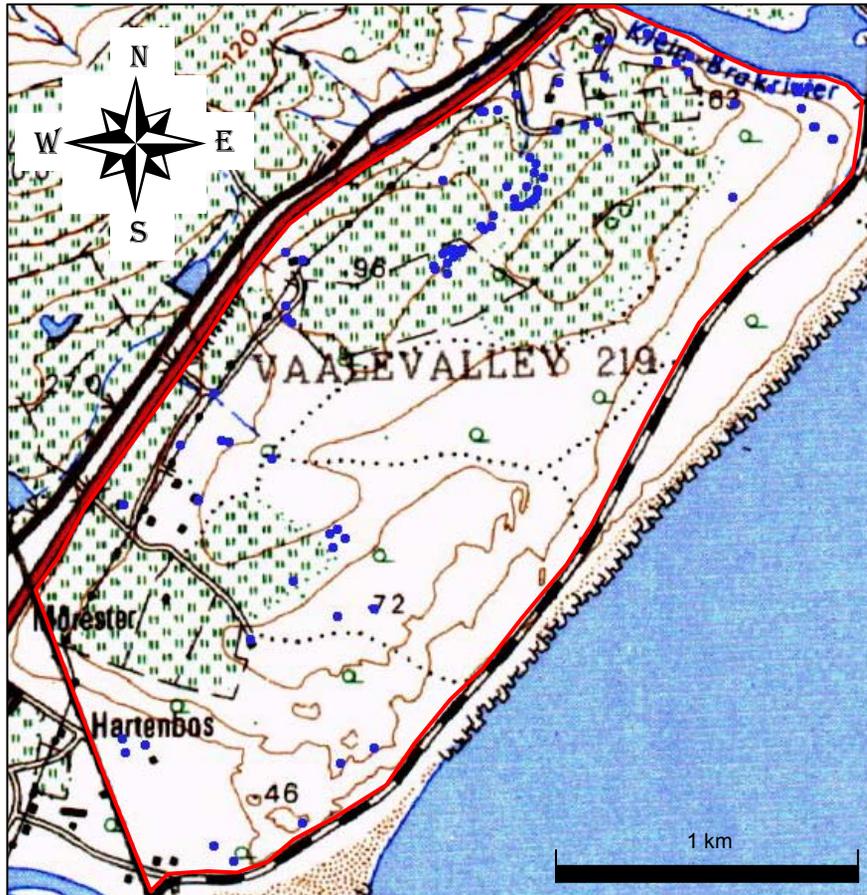


Figure 3. Enlarged, rectified map as indicated in Figure 2, showing GPS waypoints for recorded occurrences as blue dots and the extent of the study area with red outline.

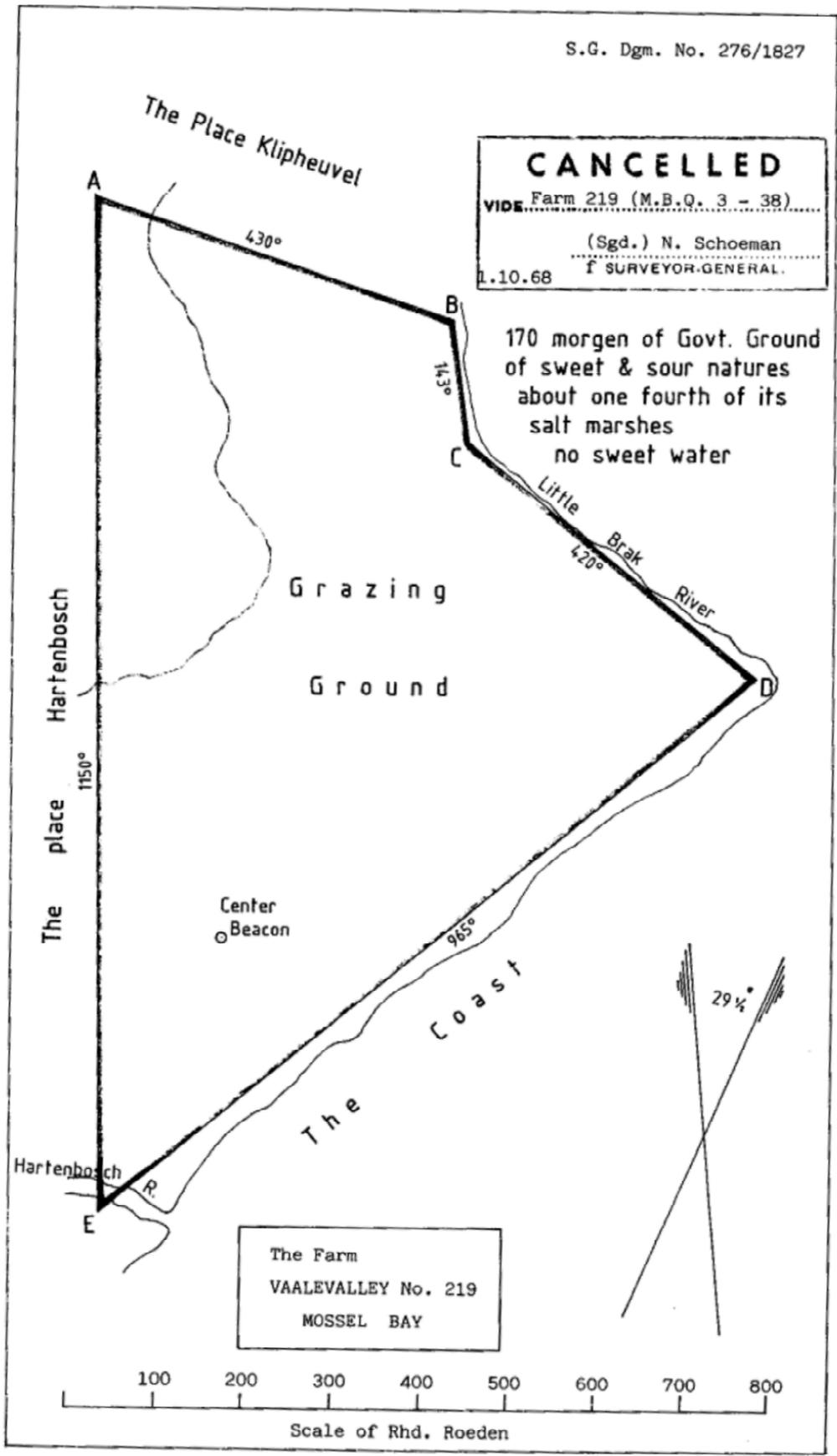


Figure 4. Original Surveyor General diagram issued at the time Vaalevalley was granted to E E Meyer in 1870. No structures depicted.





Plate 1. Western boundary of the study area verging on the N2 between the Hartenbos River and Klein-Brakrivier. Perspectives are to the southwest (top) and northeast (bottom).



Plate 2. The railway line is the eastern boundary (top – steam engine on track) of the study area, which verges on the southern bank of the Klein-Brakrivier (middle) and comes to a point on the northern bank of the Hartenbos River (bottom, also see Figure 2).

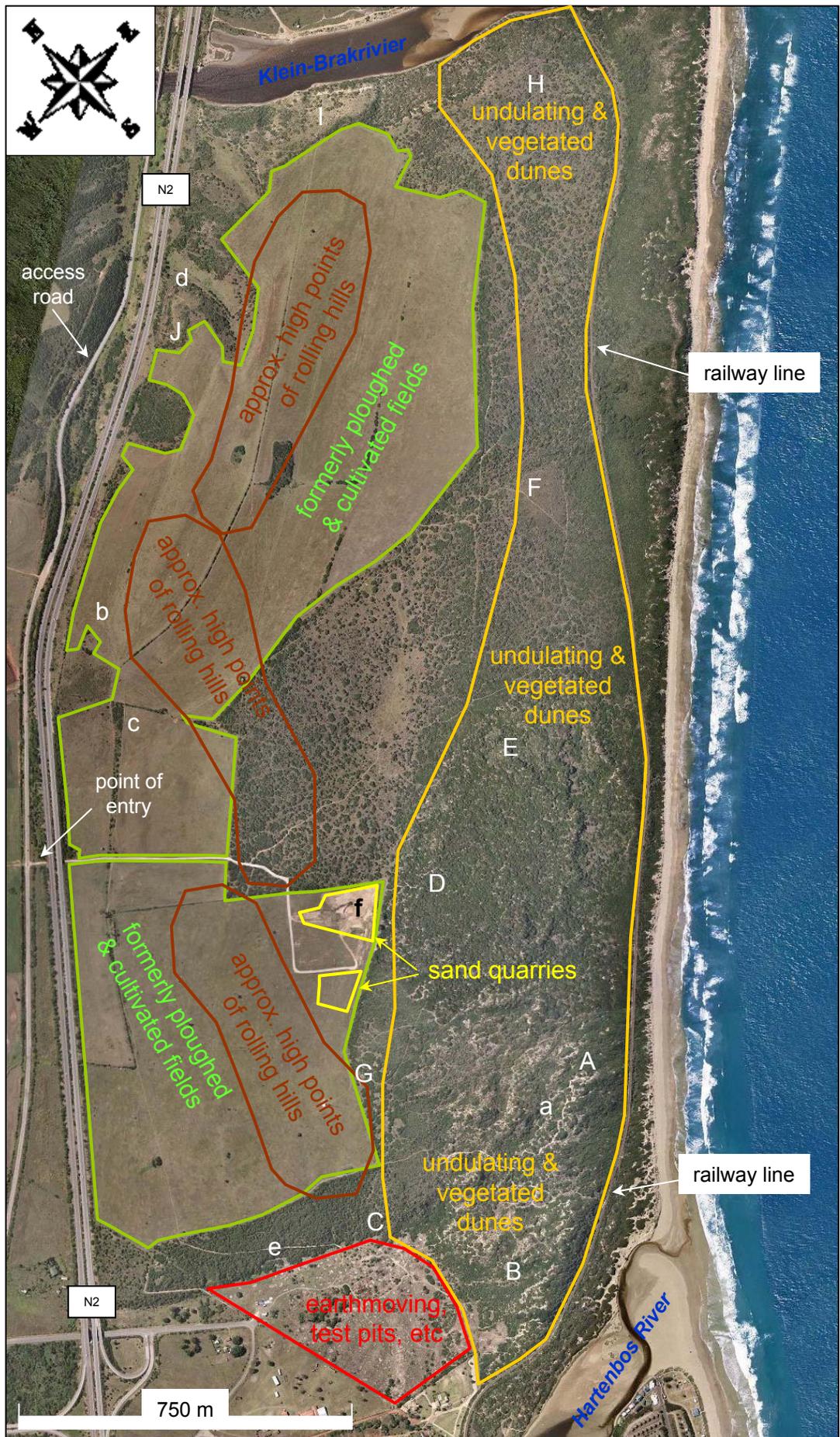


Plate 3. Non-rectified aerial photograph of the study area, portion of Vaalevalley 219, showing formerly cultivated areas, undulating dunes, high points of rolling hills, etc (see Fig. 3 for property outline). Lower and upper case letters are explained in Plates 6 & 7.

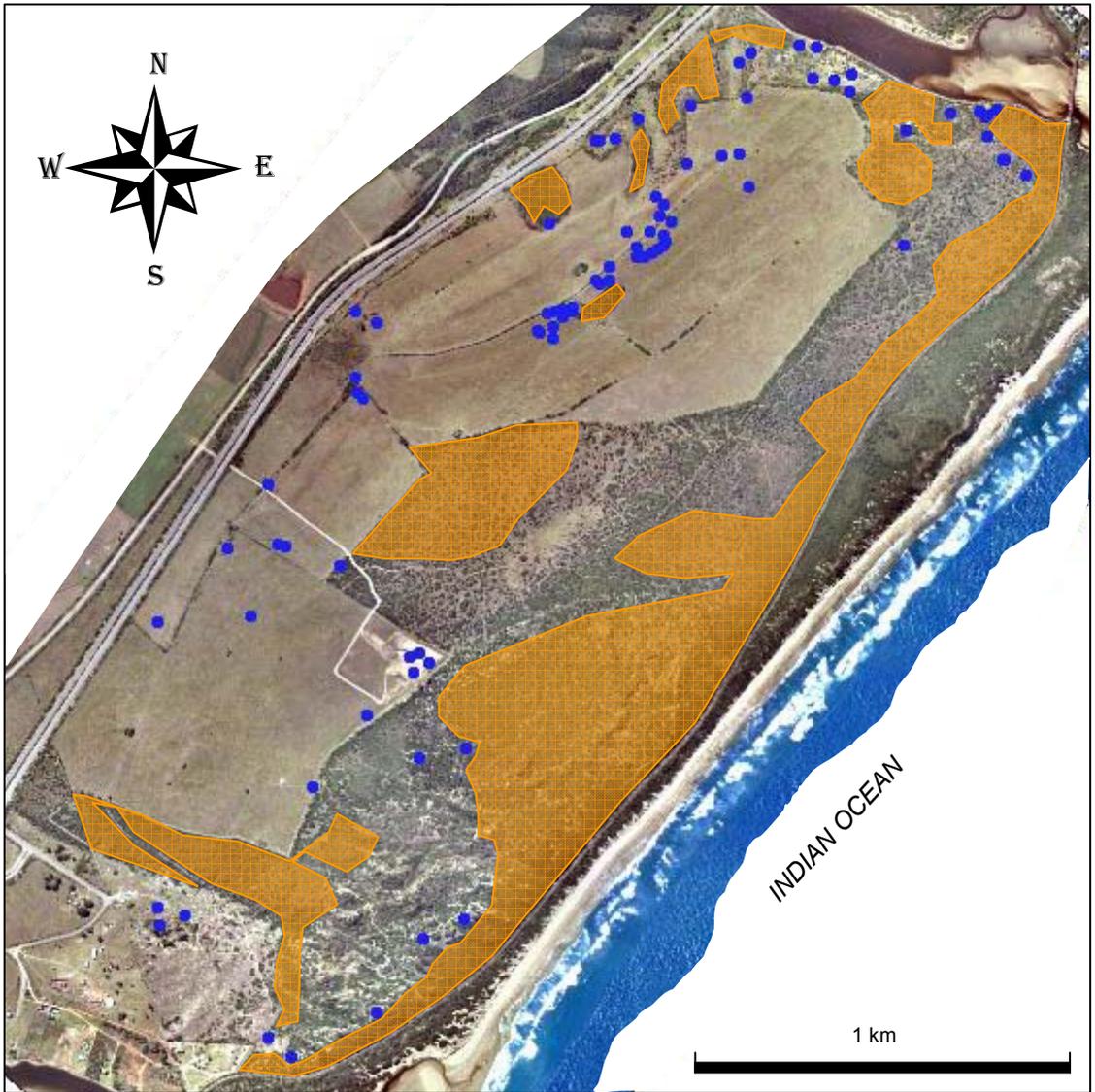


Plate 4. Enlarged, rectified aerial photo as indicated in Figure 2 showing GPS waypoints for recorded occurrences as blue dots and areas not surveyed are shaded orange.

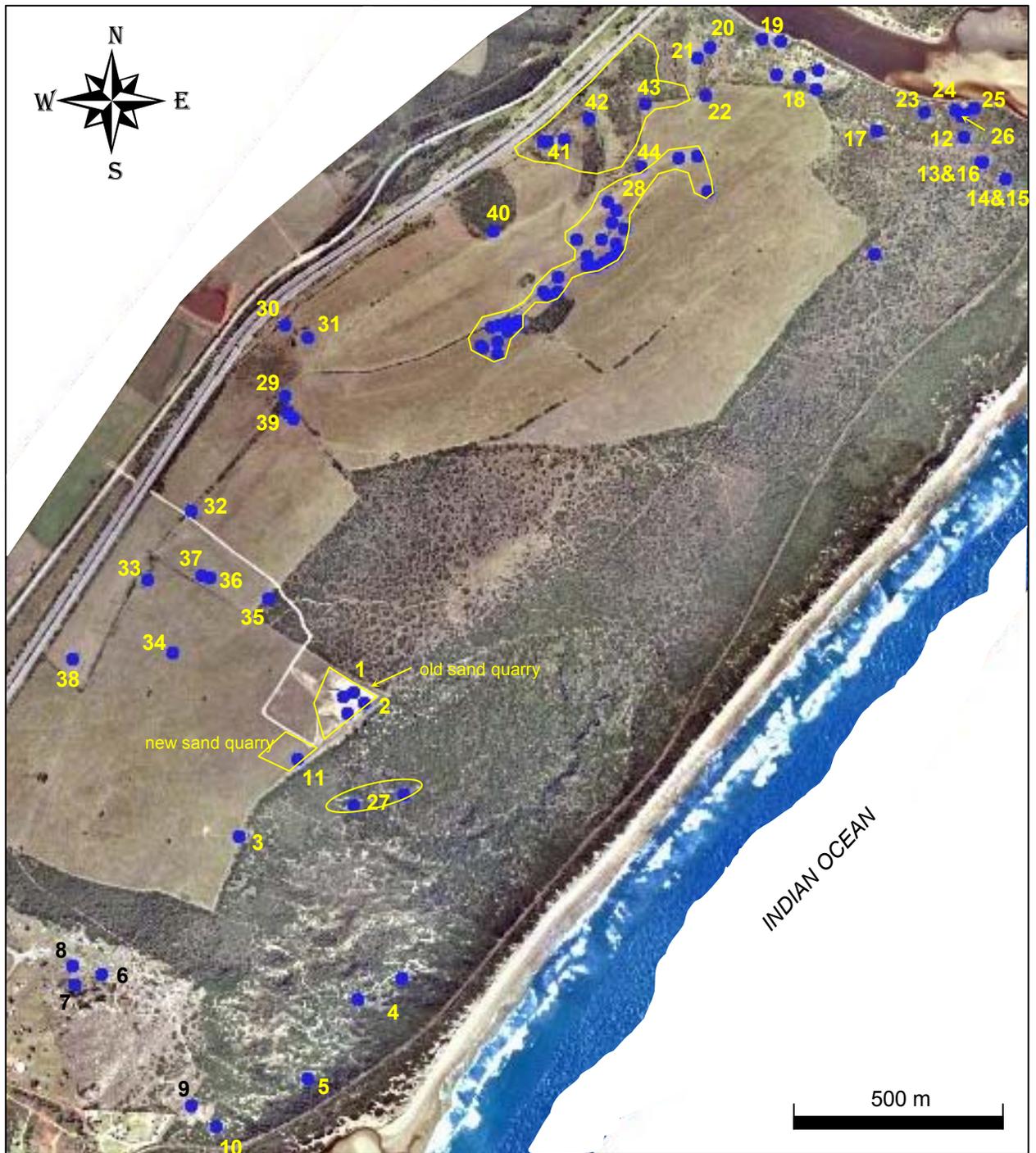


Plate 5. Enlarged, rectified aerial photo as indicated in Figure 2 showing GPS waypoints for recorded occurrences as blue dots.



Plate 6. The above are examples of geological deposits occurring in different parts of the study area. The locations where these images were taken are indicated in Plate 3 with associated lower case letters. Note the large animal burrow in e.



Plate 7. The above are examples of vegetation types observed in different parts of the study area. The locations where these images were taken are indicated in Plate 3 with associated capital letters.



Plate 8. Stone artefacts at occurrence 1 are shown. Image c is the enlarged frame in b and b is the enlarged frame in a. All except the hammer stone/grind stone in e appear to be MSA in origin. The artefact in e may be of ESA origin.



Plate 9. The context and a selection of stone artefacts at occurrence 2 are shown. Image b is the enlarged frame in a. Scale intervals in b are in centimeters. Dorsal and ventral surfaces of flakes with prepared platforms are shown in c and f. The artefact in d is a combination hammer stone and upper grind stone while the flake with prepared platform in e appears to be *in situ*. All appear to be of MSA origin.



Plate 10. Cottage constructed predominantly of calcrete blocks and clay mortar recorded at occurrence 3. The top left image was taken from the northeast while the right image at the top was taken from the southwest. Remaining images are examples of walling, features, plaster and window frames.



Plate 11. Two stone “artefacts” (manuports) in vehicle track at occurrence 4. Scale intervals are in centimeters.



Plate 12. Low density scatter of marine shell, stone artefacts and pottery at occurrence 5. Intervals on all scale bars are in centimeters.



Plate 13. Developer's test pit at occurrence 6 yielding marine or estuarine shellfish, a MSA flake and 19<sup>th</sup> century materials. Intervals on scale in top right image are 20cm while the remainder are in cm.



Plate 14. Ruins at occurrence 7, showing plaster and construction blocks in middle row and bottom left, and bulldozer damage at bottom right. Scale intervals in cm except 10 cm intervals in central image.



Plate 15. Ruins at occurrence 8 showing vertically planted wooden beams with metal tethering features and bricks of reddish clay. The scale intervals are in cm.

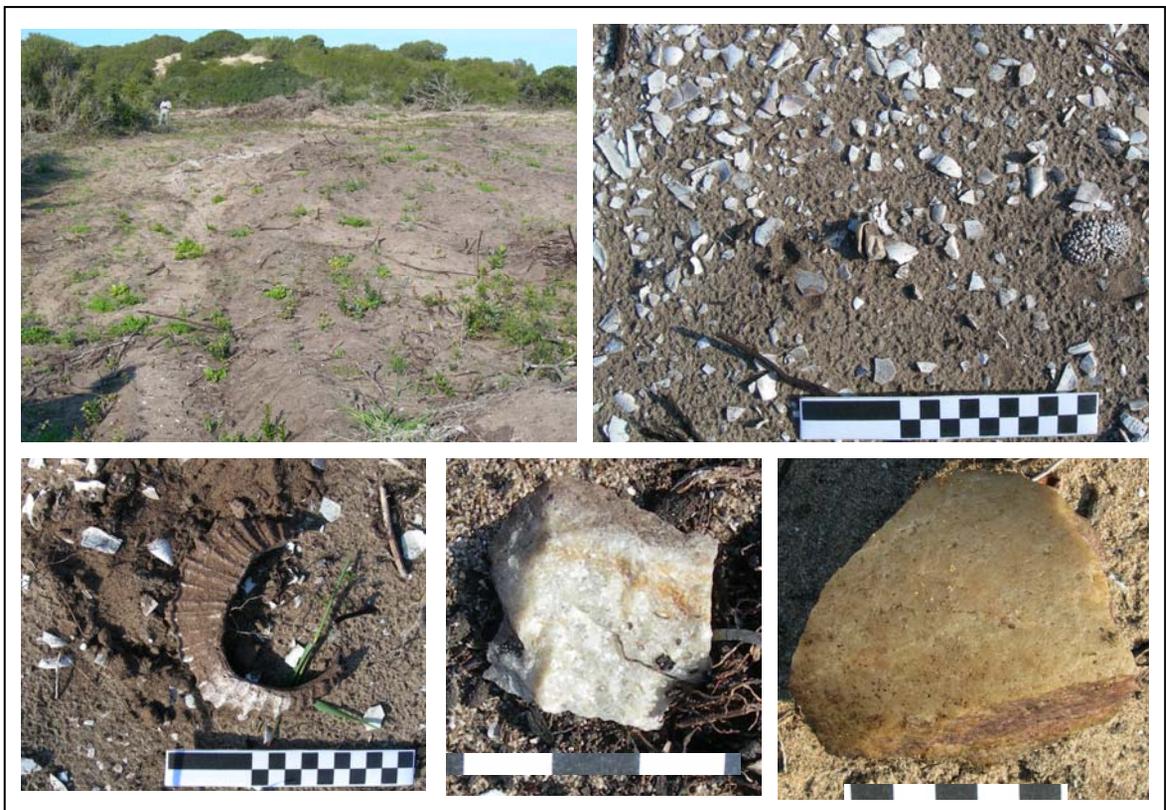


Plate 16. Low to medium density scatter of marine shell and occasional stone artefacts at occurrence 9. Earthmoving damage visible in top left image and examples of shell, milky quartz and quartzite artefacts. The scale intervals are in cm.



Plate 17. Location of occurrence 10 on dune slope immediately east of disturbed area.



Plate 18. Newer sand quarry at occurrence 11. Perspectives toward the northwest (top) and southeast (bottom).



Plate 19. Low density scatter of marine shell and quartzite stone artefact at occurrence 12. All scale bar intervals are in cm.



Plate 20. Isolated manuport at occurrence 13. Both sides of the stone are shown. All scale intervals are in cm.



Plate 21. Vertically “planted” quartzite (left) and calcrete (right) manuports at occurrence 14. The scale intervals are in cm.



Plate 22. Large collection/cache of manuports – possibly a cairn - at occurrence 15 including a vertically planted calcrete block (2 images at bottom left) like those seen at occurrence 14. Scale intervals are in cm.



Plate 23. Isolated and flaked quartzite cobble at occurrence 16. Scale intervals are in cm.



Plate 24. Broken lower grind stone at occurrence 17. Scale intervals in cm.

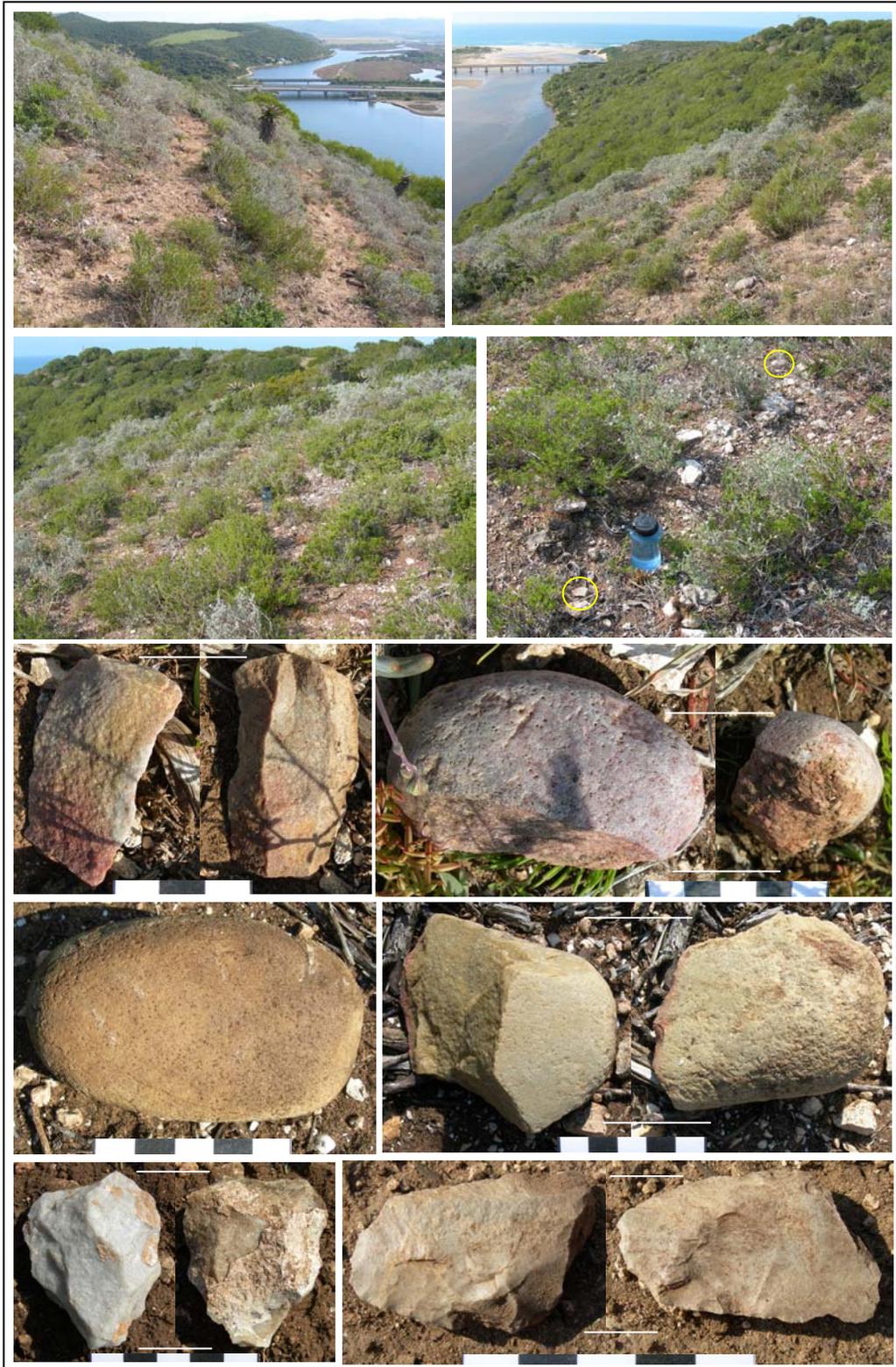


Plate 25. Low to medium density scatter of predominantly MSA stone artefacts at occurrence 18. Top four images show surroundings and ground surface with two artefacts circled in yellow. Bottom six images are examples of artefacts described in text including quartzite, milky quartz (bottom left) and silcrete (bottom right). All scale bar intervals are in cm.



Plate 26. Quartzite stone artefacts among exposed and eroding Enon conglomerates at occurrence 19 (bottom 4 images to right). Yellow arrow indicates bedded Enon enlarged in centre top image. Bottom left image shows *in situ* Enon cobbles with percussion and flake scars. Top right image shows scatter of eroded Enon cobbles that includes stone artefacts.

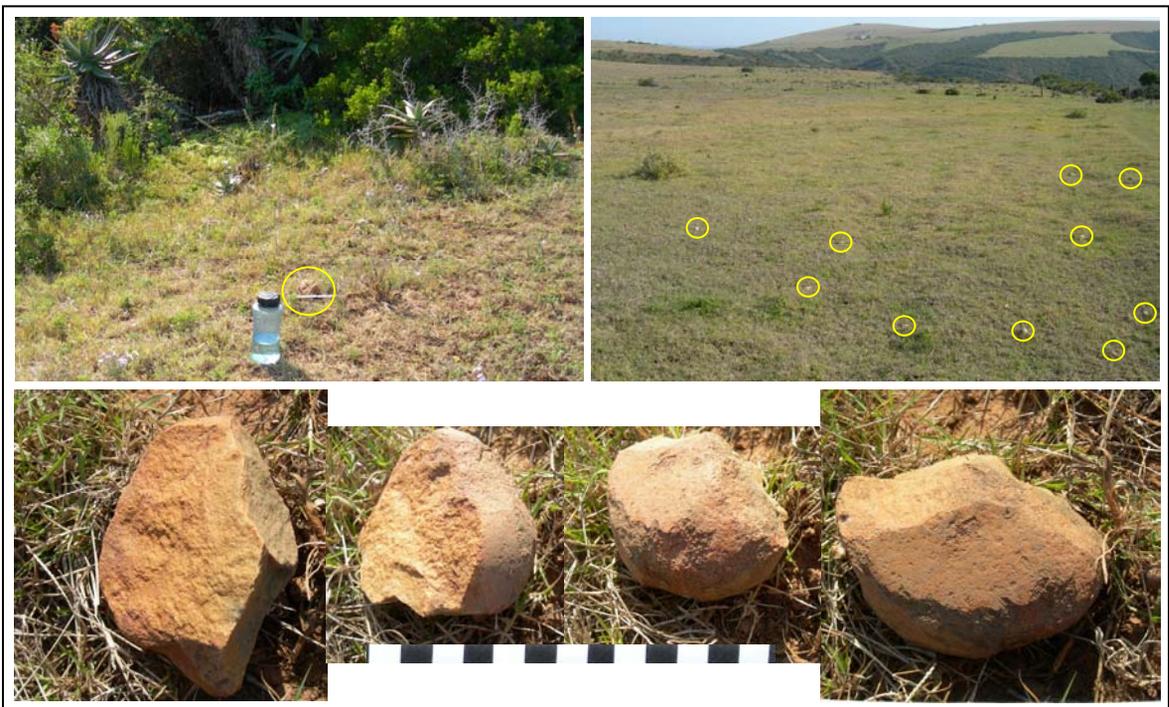


Plate 27. Isolated stone artefact at occurrence 20 (top left), low-density scatter of manuports at occurrence 21 (top right) and combination hammer stone, grind stone and core at occurrence 22 (bottom). Scale intervals are in cm.



Plate 28. Stewn building rubble including bricks that appeared laid in the fashion of paving at occurrence 27.



Plate 29. Medium to high-density scatter of overwhelmingly ESA stone artefacts at occurrence 28. Yellow ovals encircle larger stone artefact that can be seen on an enlarged version of these stitched images. Numerous additional artefacts, including smaller ones, are visible on site and more lie beneath the grass cover.



Plate 30. Examples of stone artefacts observed at occurrence 28 include cores (a, b & c), flakes (d, e & f), hammer stones (g & h), cobble tools (i) and bifacial hand axes (j, k & l). Merged images - except g and h - display dorsal and ventral surfaces. All scale bar intervals are in cm.



Plate 31. Low to medium-density scatter of Enon derived cobbles including some stone artefacts at occurrences 29 and 30. Scatter in field and adjacent to field (top left and right respectively). Example of flake (bottom left) and hammer stone (bottom right). Scale intervals are in cm.



Plate 32. Ruins of an old cottage at occurrence 31 viewed from southwest, northeast and southeast (a, b & c respectively). Presented are examples of walling (d & f), window frame (e), mixed building materials (f) and brick (g).

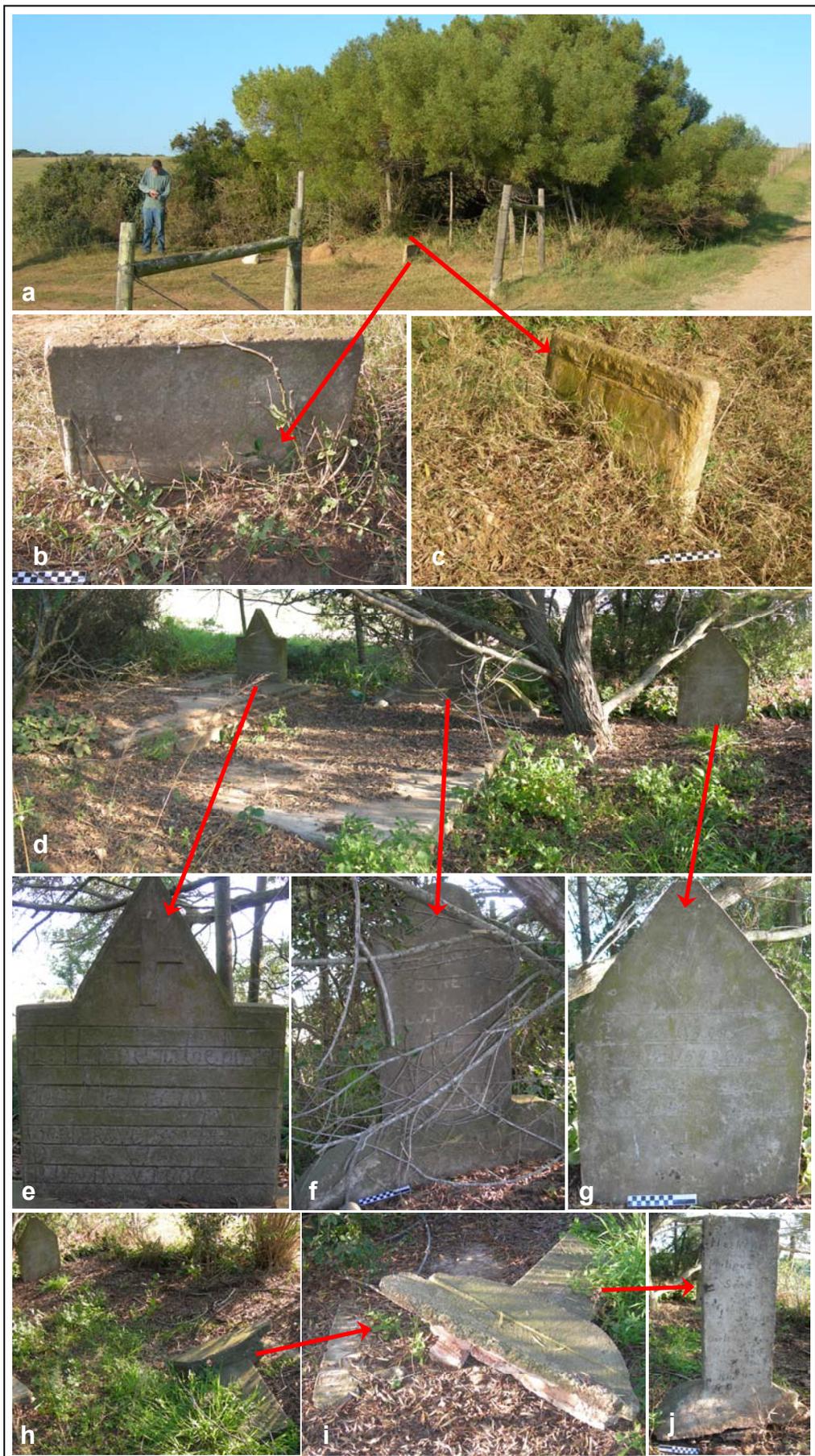


Plate 33. Graves in and adjacent to large Rooikranz bush at occurrence 32 (a). The gravestone to the west is not inscribed (a, b & c) while the remaining four bear inscriptions (e, f, g & j). Scale intervals are in cm.



Plate 34. Modern labourer's cottages at occurrence 33 viewed from the east to northeast (top and bottom left), and from the north to northwest (bottom right).



Plate 35. Ruins of calcrete structure at occurrence 33 viewed from the east to northeast (top), and from the north to northeast (middle left). Dashed lines represent remains of the same walling viewed from different angles. Middle and bottom right images are close-ups of the best surviving walls.



Plate 36. Small, dispersed scatter of mostly cobbles and calcrete at occurrence 35 (top), but a few stone artefacts were seen including the large ESA artefacts displayed above. Scale intervals are in cm.



Plate 37. Isolated manuport at occurrence 36. Scale intervals are in cm.



Plate 38. Isolated, flaked quartzite cobble at occurrence 37. Scale intervals are in cm.



Plate 39. Water tanks and rubble at occurrence 38. Dashed line indicates raised grass.

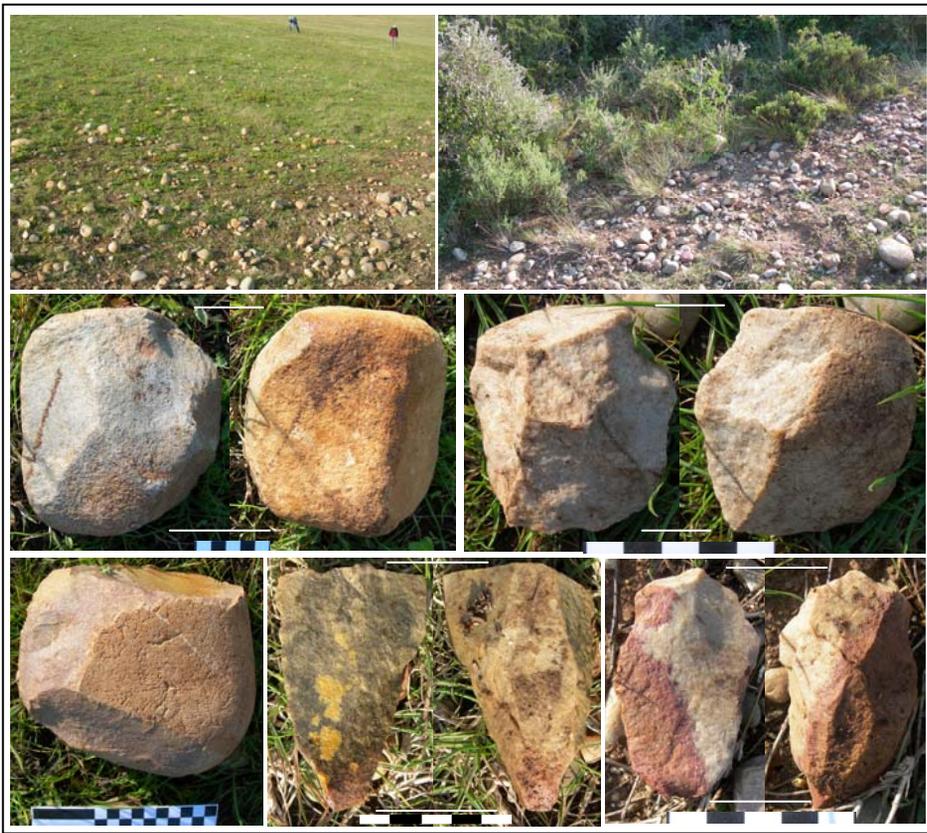


Plate 40. Large scatter of Enon derived cobbles including stone artefacts of mostly MSA origin at occurrence 39. Displayed are hammer stones, cores (middle & bottom left) and retouched flakes (bottom middle and right). Scale intervals are in cm.

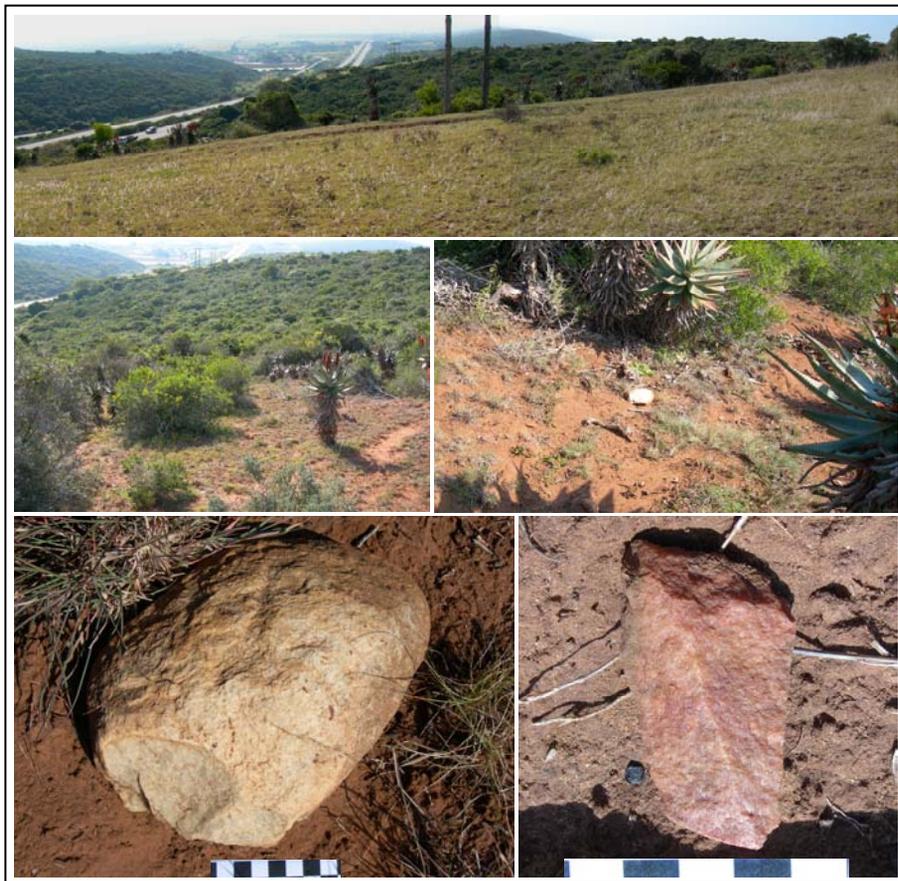


Plate 41. Low density artefact scatter at occurrence 40. Scale intervals are in cm.

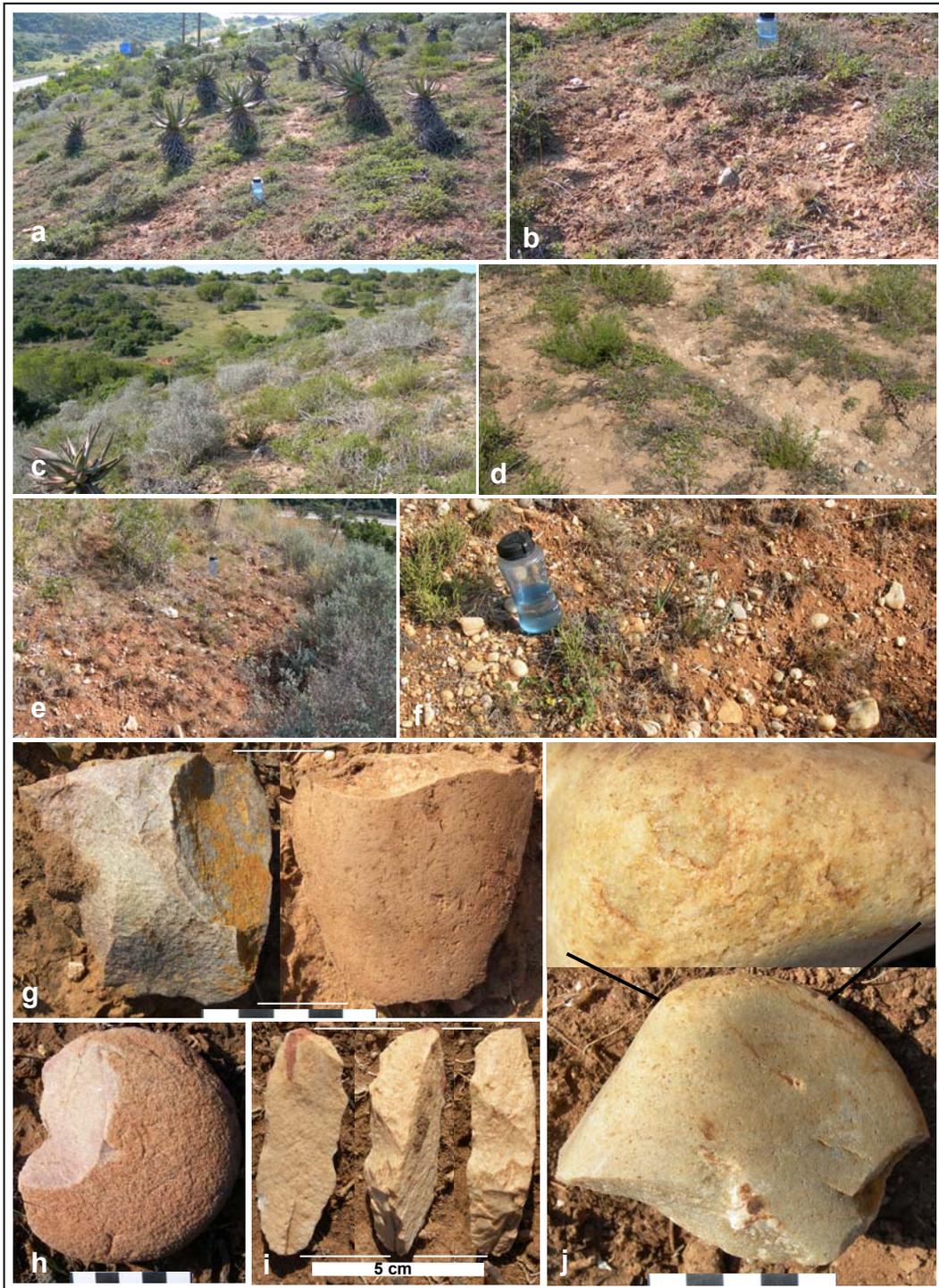


Plate 42. Stone artefacts observed in sparsely vegetated areas at occurrence 41. Examples of exposed ground surfaces are shown in a, c and e while close-ups of those areas are displayed in b, d and f respectively. Artefacts include cores (g & h), hammer stones (h & j), flakes (i) and a single retouched flake (i). Scale intervals are in cm except for the scale bar in i.



Plate 43. An example of exposed Enon conglomerates at occurrence 35. The N2 is visible in upper right corner of top image. One liter water bottle for scale.



Plate 44. ESA and MSA artefacts at occurrence 43 that is on the western edge of a cultivated field (top left). Stone artefacts include crude bifacial tools and/or cores (top right & bottom left), cores and flakes (middle) and hammer stones (bottom right). Scale intervals are in cm.



Plate 45. Parts of an old ox wagon strewn about at occurrence 44. Scale intervals are in cm.



Plate 46. Geological/palaeontological feature at occurrence 23 that appears to be a dune/aeolianite or raised beach. One liter bottle for scale.



Plate 47. Geological/palaeontological feature at occurrence 24. Calcrete caps a raised beach (top) and the latter is inter bedded with a conglomerate of pebbles and small cobbles that may or may not be of Enon origin (bottom and right).



Plate 48. Geological/palaeontological feature at occurrence 25 is a raised beach. White frame in top image is enlarged at right and the bottom image is a close-up showing *in situ* marine shell in raised beach. Scale intervals are in cm.