

**RECOMMENDED EXEMPTION FROM FURTHER
PALAEOLOGICAL MITIGATION:**

**Application for prospecting rights in Area D,
Remainder of Erf 1362 Bloemendal, Nelson Bay
Municipality, Eastern Cape Province**

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Almenta 46 (Pty) Ltd is applying for prospecting rights for aggregate (solid rock), sand and clay on a 86.7ha portion, referred to as Area D, of the remainder of Erf 1362 Bloemendal near Port Elizabeth, Nelson Mandela Bay Municipality, Eastern Cape Province (See satellite image, Fig. 1). Approximately 55 excavations are envisaged for the prospecting phase of the development.

According to the 1: 50 000 geological map 3325CD, 3425AB Uitenhage (Le Roux 2000, Council for Geoscience, Pretoria), the prospecting area is underlain by Early Palaeozoic, fluvial and (minor) shallow marine quartzose sediments of Table Mountain Group (Fig. 2). These include the Ordovician Peninsula Formation that occupies the southern and central portions of the study area as well as the overlying Goudini Formation that underlies the northern portion of the area. Note that the finer-grained glacial and marine sediments of the Winterhoek Subgroup (Pakhuis and Cederberg Formations) that intervene between the Peninsula and Goudini Formations in the generally less deformed sector of the Cape Fold Belt in the Western Cape are not represented in the study area, probably as a result of tectonic deformation (Toerien & Hill 1989).

The Mid to Late Ordovician Peninsula Formation is a thick succession of well-washed braided fluvial sandstones and quartzites with subordinate pebbly lenses and thin (< 1m) heterolithic (mudrock / sandstone) intervals attributed to intermittent marine transgressive events (Toerien & Hill 1989, Le Roux 2000). Body fossils (shells, bones *etc*) have not been recorded from these beds but sparse, low diversity trace fossil assemblages are known from the paralic shallow marine or estuarine beds. These traces include eurypterid (water scorpion) trackways, as well as trilobite and bivalve burrows, among others (Rust 1967, Almond 1998, 2008 and references therein). They have mainly been recorded from the Western Cape, but are also expected from less deformed parts of the Eastern Cape outcrop area. Thin, dark, carbonaceous mudrock intervals probably contain organic-walled microfossils such as marine acritarchs, but these have not yet been sampled and are usually highly weathered.

Similar, but often brownish-tinted, braided fluvial to shallow marine sediments of the Early Silurian Goudini Formation (previously known as the Tchando Formation) also contain sparse marine to estuarine trace fossil assemblages associated with this heterolithic intervals but these are poorly recorded. They include possible arthropod burrows and trackways in the Western Cape outcrop area (Rust 1967, Almond 2008), and likely microfossils in the mudrock intercalations.

The overall palaeontological sensitivity of the Table Mountain Group bedrocks in the study area, as well as that of inferred sandy to gravely superficial sediments (alluvium, colluvium, soils), is low to very low (Almond *et al.* 2008). For this reason, , as well as the restricted area of the proposed mine and the small footprint of the shallow prospecting excavations envisaged, no further palaeontological mitigation is recommended for this development.

Should substantial fossil remains be exposed during construction, however, the ECO should safeguard these, preferably *in situ*, and alert SAHRA as soon as possible so that appropriate action (*e.g.* recording, sampling or collection) can be taken by a professional palaeontologist.

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- RUST, I.C. 1967. On the sedimentation of the Table Mountain Group in the Western Cape province. Unpublished PhD thesis, University of Stellenbosch, South Africa, 110 pp.

TOERIEN, D.K. & HILL, R.S. 1989. The geology of the Port Elizabeth area. Explanation to 1: 250 000 geology Sheet 3324 Port Elizabeth, 35 pp. Council for Geoscience, Pretoria.



Fig. 1. Google Earth® satellite image showing the location (outlined by dashed yellow line) of the prospecting area D on the Remainder of Erf 1362 Bloemendaal, Nelson Bay Municipality, near Port Elizabeth, Eastern Cape Province (Map kindly provided by Public Process Consultants, PE).

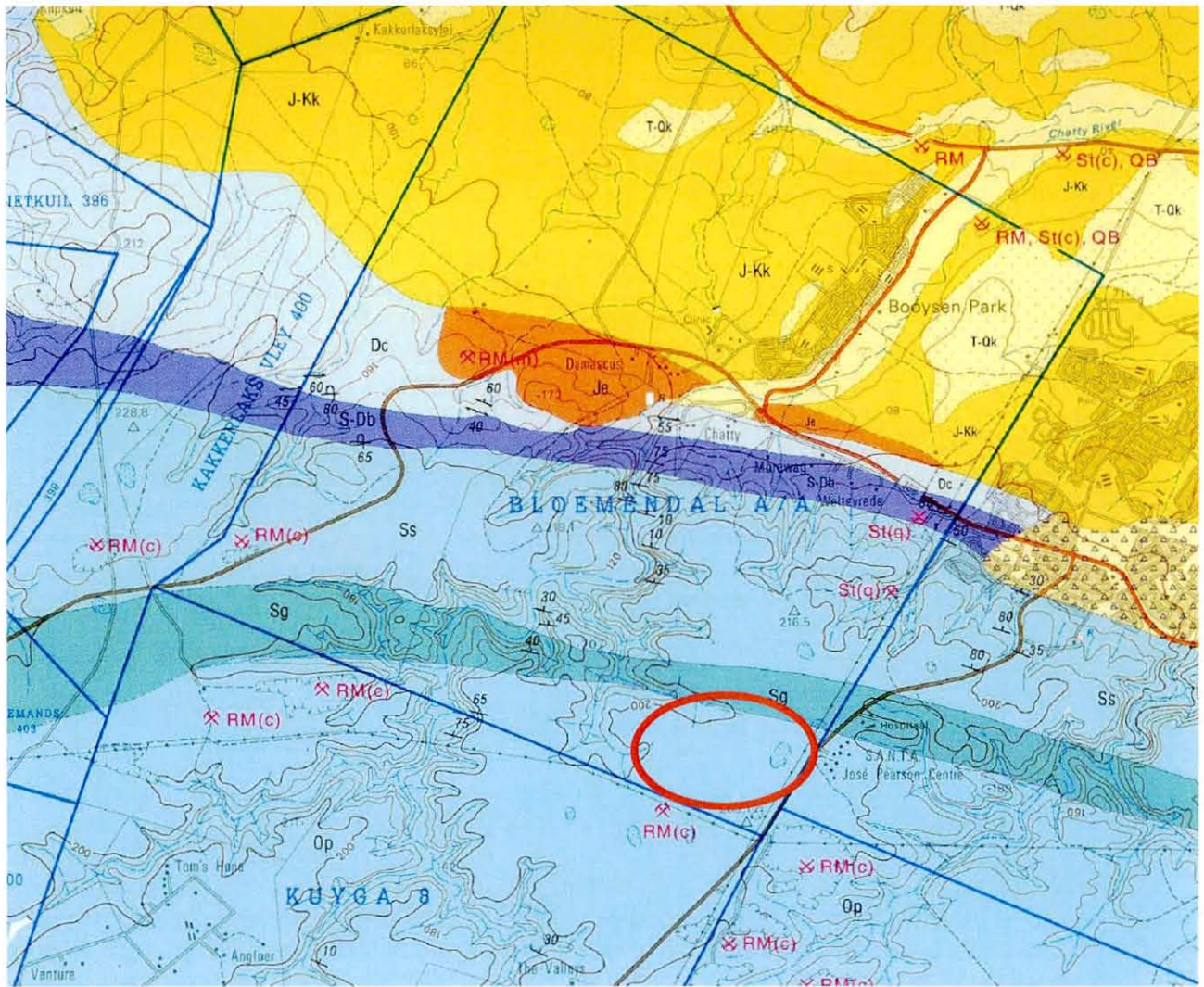


Fig. 2. Extract from 1: 50 000 geological map 3325CD, 3425AB Uitenhage (Council for Geoscience, Pretoria) showing approximate location (red oval) of the prospecting area D on the west side of Mission Road, Remainder of Erf 1362 Bloemendal, Port Elizabeth. Geological units mapped in the study area include the Peninsula Formation (Op, pale blue) and the Goudini Formation (Sg) of the Table Mountain Group. Note the apparent absence of the Winterhoek Subgroup between these two formations.

QUALIFICATIONS & EXPERIENCE OF THE AUTHOR

Dr John Almond has an Honours Degree in Natural Sciences (Zoology) as well as a PhD in Palaeontology from the University of Cambridge, UK. He has been awarded post-doctoral research fellowships at Cambridge University and in Germany, and has carried out palaeontological research in Europe, North America, the Middle East as well as North and South Africa. For eight years he was a scientific officer (palaeontologist) for the Geological Survey / Council for Geoscience in the RSA. His current palaeontological research focuses on fossil record of the Precambrian - Cambrian boundary and the Cape Supergroup of South Africa. He has recently written palaeontological reviews for several 1: 250 000 geological maps published by the Council for Geoscience and has contributed educational material on fossils and evolution for new school textbooks in the RSA.

Since 2002 Dr Almond has also carried out palaeontological impact assessments for developments and conservation areas in the Western, Eastern and Northern Cape under the aegis of his Cape Town-based company *Natura Viva* cc. He is a long-standing member of the Archaeology, Palaeontology and Meteorites Committee for Heritage Western Cape (HWC) and an advisor on palaeontological conservation and management issues for the Palaeontological Society of South Africa (PSSA), HWC and SAHRA. He is currently compiling technical reports on the provincial palaeontological heritage of Western, Northern and Eastern Cape for SAHRA and HWC. Dr Almond is an accredited member of PSSA and APHAP (Association of Professional Heritage Assessment Practitioners – Western Cape).

Declaration of Independence

I, John E. Almond, declare that I am an independent consultant and have no business, financial, personal or other interest in the proposed development project, application or appeal in respect of which I was appointed other than fair remuneration for work performed in connection with the activity, application or appeal. There are no circumstances that compromise the objectivity of my performing such work.



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APPENDIX H: ARCHAEOLOGICAL SPECIALIST ASSESSMENT

A PHASE 1 ARCHAEOLOGICAL HERITAGE IMPACT ASSESSMENT FOR THE APPLICATION FOR A PROSPECTING RIGHT OF AREA D (86,7 HA) ON THE REMAINDER OF ERF 1362 BLOEMENDAL, NELSON MANDELA BAY MUNICIPALITY, PORT ELIZABETH, NELSON MANDELA BAY MUNICIPALITY, PORT ELIZABETH DISTRICT, EASTERN CAPE PROVINCE

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CONTENTS

SUMMARY	1
PROJECT INFORMATION	2
BRIEF ARCHAEOLOGICAL BACKGROUND	2
DESCRIPTION OF THE PROPERTY	3
ARCHAEOLOGICAL INVESTIGATION.....	3
RECOMMENDATIONS.....	4
GENERAL REMARKS AND CONDITIONS	5
APPENDIX A: BRIEF LEGISLATIVE REQUIREMENTS	6
APPENDIX B: IDENTIFICATION OF ARCHAEOLOGICAL FEATURES AND MATERIAL FROM COASTAL AREAS.....	7
MAPS	

A PHASE 1 ARCHAEOLOGICAL HERITAGE IMPACT ASSESSMENT FOR THE APPLICATION FOR A PROSPECTING RIGHT OF AREA D (86,7 HA) ON THE REMAINDER OF ERF 1362 BLOEMENDAL, NELSON MANDELA BAY MUNICIPALITY, PORT ELIZABETH, NELSON MANDELA BAY MUNICIPALITY, PORT ELIZABETH DISTRICT, EASTERN CAPE PROVINCE

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Note: This report follows the minimum standard guidelines required by the South African Heritage Resources Agency for compiling Archaeological Heritage Phase 1 Impact Assessment (AHIA) reports.

SUMMARY

Proposal

The original proposal was to conduct a survey of possible archaeological sites on Area D of the Remainder of Erf 1362 on the farm Bloemendal, Port Elizabeth; to establish the range and importance of the heritage sites, the potential impact of the development and to make recommendations to minimize possible damage to these sites.

The investigation

Apart from occasional stone tools, no visible archaeological sites were found during the investigation. The entire property is covered by dense grass, fynbos, and alien vegetation in parts. Sites and/or material may be exposed during development.

Cultural sensitivity

The area investigated is of low cultural sensitivity, but archaeological material may be exposed after the top soil is removed (for example human remains).

Recommendations

If any concentrations of archaeological material are uncovered during development it should be reported immediately to the nearest archaeologist, museum and/or the South African Heritage Resources Agency.

PROJECT INFORMATION

Reference No.: EC 30/5/1/1/2/0159 PR

Status

The report is part of an Environmental Impact Assessment.

The type of development

The Prospecting Right Application is for approximately 86.7 hectares and the intend is to prospect for aggregate (hard rock), red gravel, sand and clay deposits on the site over a two year period.

The Developer

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TERMS OF REFERENCE

The original proposal was to conduct a phase 1 archaeological impact assessment for the application for a prospecting right of Area D (86.7 ha) on the remainder of Erf 1362 on the farm Bloemendal, Port Elizabeth, Nelson Mandela Municipality, Eastern Cape Province: to describe and evaluate the importance of possible archaeological heritage sites, the potential impact of the development and to make recommendations to minimize possible damage to these sites.

BRIEF ARCHAEOLOGICAL BACKGROUND

Literature review

Little is known about the archaeology of the immediate area, mainly because no systematic research has been conducted there. The oldest evidence of the early inhabitants in this area are large stone tools, called handaxes and cleavers, which can be found amongst river gravels and in old spring deposits in the region (Deacon 1970). These large stone tools are from a time period called the Earlier Stone Age (ESA) and may date between 1.4 million and 250 000 years old. The large handaxes and cleavers were replaced by smaller stone tools called the Middle Stone Age (MSA) flake and blade industries. Evidence of MSA sites occur throughout the

region and date between 250 000 and 30 000 years old. Fossil bone may in rare cases be associated with MSA occurrences. (Deacon & Deacon 1999).

The majority of archaeological sites found in the area date from the past 10 000 years (called the Later Stone Age) and are associated with the campsites of San hunter-gatherers and Khoi pastoralists. These sites are difficult to find because they are in the open veld and often covered by vegetation and sand. Sometimes these sites are only represented by a few stone tools and fragments of bone. The preservation of these sites is poor and it is not always possible to date them Africa (Deacon & Deacon 1999). There are many San hunter-gatherers sites in the nearby Elandsberg and Groot Winterhoekberg Mountains. Here caves and rock shelters were occupied by the San during the Later Stone Age and contain paintings along the walls. The last San/KhoiSan group was killed by Commando's in the Groendal area in the 1880s.

Some 2 000 years ago Khoi pastoralists occupied the region and lived mainly in small settlements. They were the first food producers in South Africa and introduced domesticated animals (sheep, goat and cattle) and ceramic vessels to southern.

References

- Deacon, H.J. 1970. The Acheulian occupation at Amanzi Springs, Uitenhage District, Cape Province. *Annals of the Cape Provincial Museums*, 8:89-189.
- Deacon, H.J. & Deacon, J. Human beginnings in South Africa. Cape Town: David Phillips Publishers.

DESCRIPTION OF THE PROPERTY

Area surveyed

Location data

The proposed area for prospecting is situated on the Remainder of Erf 1362 of the farm Bloemendal, Port Elizabeth, Nelson Mandela Municipality, Eastern Cape Province, approximately 10 kilometres north-west from Port Elizabeth and west of Mission Road (Maps 1-2). GPS readings were taken at: 33.53.569S; 25.27.192E, 33.53.707S; 25.27.666E and 33.53.434S; 25.26.706E.

Map

1:50 000 3325CD & 3425AB Uitenhage

ARCHAEOLOGICAL INVESTIGATION

Methodology

The size of the property and dense vegetation in places precluded a detailed survey. The investigation was conducted by two people on foot and spots checks and surveys from a vehicle to cover as much of the terrain as possible. GPS readings were taken with a Garmin Plus II and all important features were digitally recorded.

The proposed area for prospecting is situated on relatively flat land with deep valleys towards the northwest (Figs 1-4). Power line construction, road making previous gravel mining disturbed the property in the past along the southern boundary (Figs 5-6). A thin layer of grey sandy soil and dense short grass and fynbos vegetation cover the area. Apart of a few isolated stone tools no other

archaeological sites/materials were found during the survey. In general it would appear unlikely that any archaeological heritage remains of any value will be found *in situ* or of any contextual value will be exposed during the development.



Figs 1-4. Different views the proposed property for prospecting.

Discussion

The proposed area for development is of low cultural sensitivity. It is unlikely that any archaeological or historical material of any value will be found *in situ* or of any contextual value. Notwithstanding, there is always a possibility that human remains and/or other archaeological and historical material may be uncovered during the development removed. Such material must be reported to the nearest museum, archaeologist or to the South African Heritage Resources Agency if exposed (see general remarks and conditions below).

RECOMMENDATIONS

1. In the unlikely event that any concentrations of archaeological material are exposed during construction, all work in that area should stop and it should be reported immediately to the nearest museum/archaeologist or to the South African Heritage Resources Agency so that a systematic and professional investigation can be undertaken. Sufficient time should be allowed to remove/collect such material (See appendix B for a list of possible archaeological sites that maybe found in the area).
2. Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.

GENERAL REMARKS AND CONDITIONS

Note: This report is a phase I archaeological heritage impact assessment/investigation only and does not include or exempt other required heritage impact assessments (see below).

The National Heritage Resources Act (Act No. 25 of 1999, section 35) (see Appendix A) requires a full Heritage Impact Assessment (HIA) in order that all heritage resources, that is, all places or objects of aesthetics, architectural, historic, scientific, social, spiritual linguistic or technological value or significance are protected. Thus any assessment should make provision for the protection of all these heritage components, including archaeology, shipwrecks, battlefields, graves, and structures older than 60 years, living heritage, historical settlements, landscapes, geological sites, palaeontological sites and objects.

It must be emphasised that the conclusions and recommendations expressed in this archaeological heritage sensitivity investigation are based on the visibility of archaeological sites/features and may not therefore, reflect the true state of affairs. Many sites/features may be covered by soil and vegetation and will only be located once this has been removed. In the event of such finds being uncovered, (such as during any phase of construction work), archaeologists must be informed immediately so that they can investigate the importance of the sites and excavate or collect material before it is destroyed. The onus is on the developer to ensure that this agreement is honoured in accordance with the National Heritage Act No. 25 of 1999.

It must also be clear that Archaeological Specialist Reports (AIAs) will be assessed by the relevant heritage resources authority. The final decision rests with the heritage resources authority, which should grant a permit or a formal letter of permission for the destruction of any cultural sites.

APPENDIX A: brief legislative requirements

Parts of sections 35(4), 36(3) and 38(1) (8) of the National Heritage Resources Act 25 of 1999 apply:

Archaeology, palaeontology and meteorites

35 (4) No person may, without a permit issued by the responsible heritage resources authority—

- (a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
- (b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;
- (d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

Burial grounds and graves

36. (3) (a) No person may, without a permit issued by SAHRA or a provincial heritage resources authority—

- (a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
- (b) destroy, damage, alter, exhume, 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; or
- (c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

Heritage resources management

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorized as –

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- (b) the construction of a bridge or similar structure exceeding 50m in length;
- (c) any development or other activity which will change the character of the site –
 - (i) exceeding 5000m² in extent, or
 - (ii) involving three or more erven or subdivisions thereof; or
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA, or a provincial resources authority;
- (d) the re-zoning of a site exceeding 10 000m² in extent; or
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must as the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

APPENDIX B: IDENTIFICATION OF ARCHAEOLOGICAL FEATURES AND MATERIAL FROM INLAND AREAS: guidelines and procedures for developers

1. Human Skeletal material

Human remains, whether the complete remains of an individual buried during the past, or scattered human remains resulting from disturbance of the grave, should be reported. In general the remains are buried in a flexed position on their sides, but are also found buried in a sitting position with a flat stone capping and developers are requested to be on the alert for this.

2. Freshwater mussel middens

Freshwater mussels are found in the muddy banks of rivers and streams and were collected by people in the past as a food resource. Freshwater mussel shell middens are accumulations of mussel shell and are usually found close to rivers and streams. These shell middens frequently contain stone tools, pottery, bone, and occasionally human remains. Shell middens may be of various sizes and depths, but an accumulation which exceeds 1 m² in extent, should be reported to an archaeologist.

3. Stone artefacts

These are difficult for the layman to identify. However, large accumulations of flaked stones which do not appear to have been distributed naturally should be reported. If the stone tools are associated with bone remains, development should be halted immediately and archaeologists notified.

4. Fossil bone

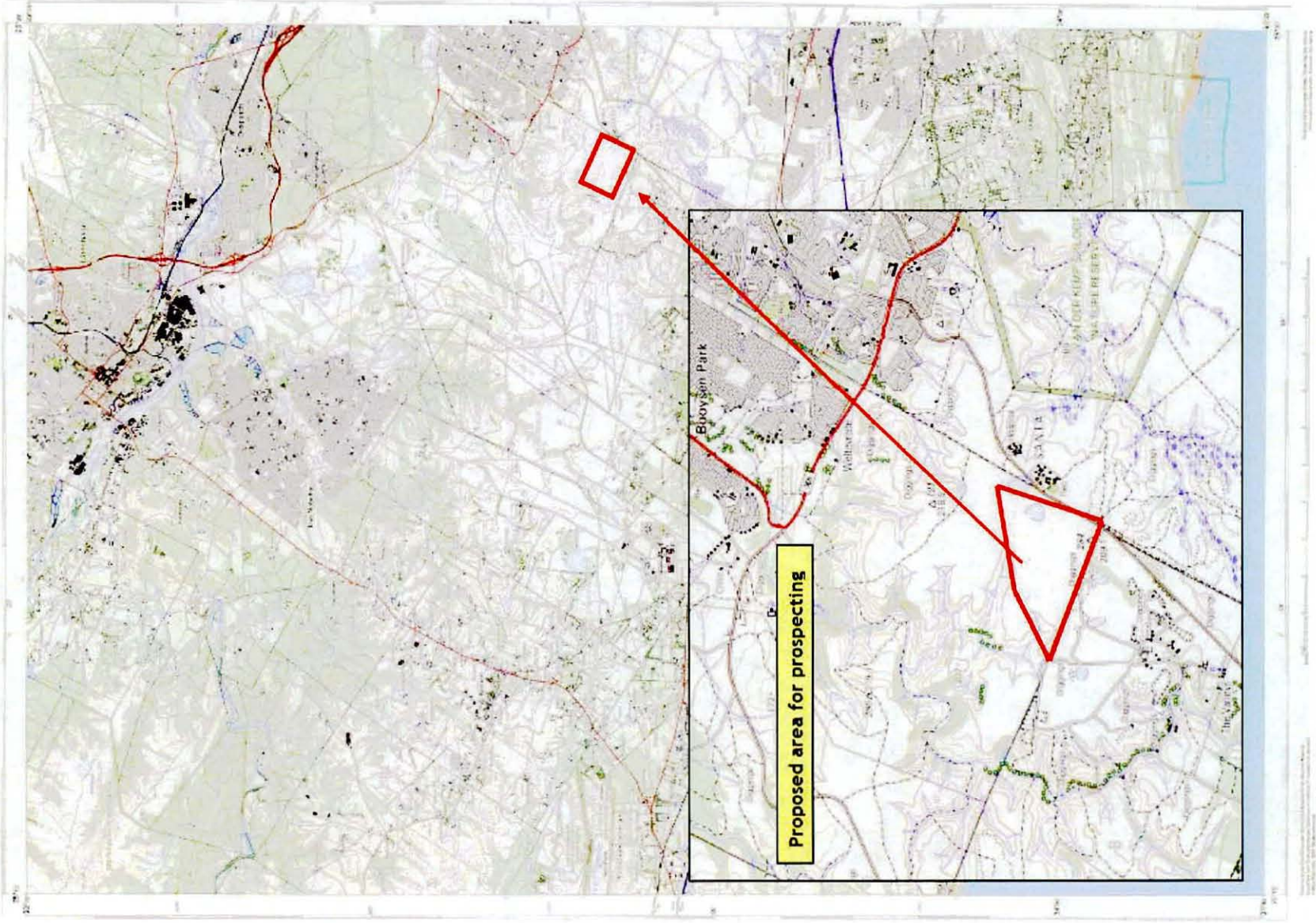
Fossil bones may be found embedded in geological deposits. Any concentrations of bones, whether fossilized or not, should be reported.

5. Large stone features

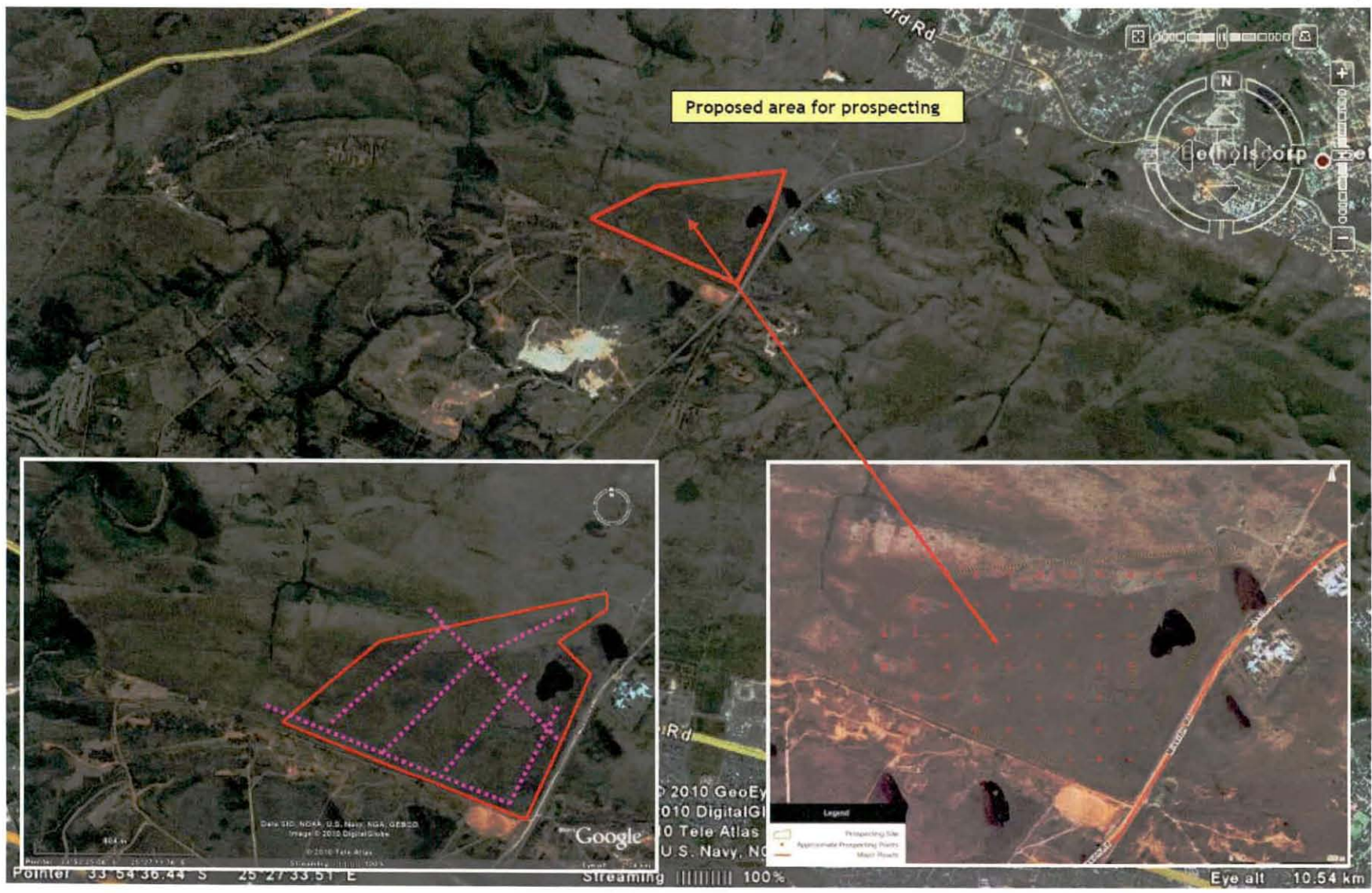
They come in different forms and sizes, but are easy to identify. The most common are roughly circular stone walls (mostly collapsed) and may represent stock enclosures, remains of wind breaks or cooking shelters. Others consist of large piles of stones of different sizes and heights and are known as *isisivane*. They are usually near river and mountain crossings. Their purpose and meaning is not fully understood, however, some are thought to represent burial cairns while others may have symbolic value.

6. Historical artefacts or features

These are easy to identify and include foundations of buildings or other construction features and items from domestic and military activities.



Map 1. 1:50 000 maps indicating the proposed area for prospecting. The red lines outline the approximate size of the property.



Map 2. Aerial views of the proposed area for prospecting. The red lines outline the approximate size of the property and the broken pink lines mark the survey routes (insert map courtesy of PPC).

