

**A PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT FOR THE PROPOSED  
CONSTRUCTION OF A 10 MEGAWATT SOLAR FARM NEAR PEARSTON, BLUE  
CRANE MUNICIPALITY, EASTERN CAPE PROVINCE**

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# **A PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT FOR THE PROPOSED CONSTRUCTION OF A 10 MEGAWATT SOLAR FARM NEAR PEARSTON, BLUE CRANE MUNICIPALITY, 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 phase 1 archaeological impact assessment of the proposed construction site for a 10 megawatt solar farm near Pearston, Blue Crane Municipality, Eastern Cape Province. The survey was conducted to establish the range and importance of possible exposed and *in situ* archaeological sites/materials, the potential impact of the development and, to make recommendations to minimize possible damage to these sites.

### **The location of the development**

The proposed 10 megawatt solar farm development is situated approximately 4 kilometres south-west of the town of Pearston. It is located north of the R337 gravel road between Pearston and Jansenville.

### **The investigation**

No significant archaeological sites/materials were observed.

### **Cultural sensitivity**

The proposed property for development is of low archaeological sensitivity. Development may proceed as planned.

### **Recommendations**

1. If any concentrations of archaeological material are uncovered during development, it should be reported immediately to the Albany Museum and/or the South African Heritage Resources Agency.
2. Construction managers/foremen should be informed, before construction starts, on the possible types of heritage sites which may be encountered during construction.

## **PROJECT INFORMATION**

### **Status**

The report is part of an Environmental Impact Assessment.

### **The type of development**

Construction of a 10 megawatt solar farm, some 20 hectares in size.

### **The Developer:**

BNM Technology  
P.O. Box 4783  
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### **The Consultant**

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### **Terms of reference**

Conduct a phase 1 archaeological impact assessment of the proposed construction site for a 10 megawatt solar farm near Pearston, Blue Crane Municipality, Eastern Cape Province. The survey was conducted to establish the range and importance of possible exposed and *in situ* archaeological sites/materials, 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 Pearston area because no systematic research or regional surveys/recordings have been conducted. There are a few reports of faded rock paintings and stone tools in the Bruintjies Hoogte Mountains to the east of Pearston. The closest and one of the most complete archaeological surveys in South Africa was conducted in the Agter Sneeuberg region in the central and upper Seacow River Area some 200 km north-west (Sampson 1985). The only systematic survey and recording in the immediate vicinity was conducted in the Mountain Zebra National Park (Brooker 1974) and Deacon (1976) excavated Highlands Rock Shelter some 50-60 km to the north-east. Sampson's, Brooker's, and Deacon's

research and surveys, together with records/collections of the Albany Museum, provide the background information for compiling an archaeological time sequence for the region.

The oldest evidence for occupation of the region are stone artefacts (small hand axes, sidescrapers and flakes) from the Earlier Stone Age, known as the 'final' Acheulian Industry which date older than 200 000 years. Excavations at the Cradock springs in the town yielded a number of these stone tools (Opperman pers. comm.). Sampson (1985) located a large number of sites and there is also a collection in the Albany Museum from the Cradock and Graaff Reinet area. Middle Stone Age (MSA) artefacts (long blades and points) are found throughout the region, but because these are found in the open it is difficult to know where they fit into the cultural time sequence. At Highlands Rock Shelter MSA stone tools, possibly a Howieson's Poort Industry, was dated older than 30 000 years (Deacon 1976). Sampson on the other hand reported many open-air MSA sites which he assigned to the Orangian Industry (dating between 128 000 - 75 000 years old), Florisbad and Zeekoegat Industries dating between 64 000 and 32 000 years old.

Without the aid of radiocarbon dating in the past, all Later Stone Age (LSA) assemblages were classified into three phases using mainly scrapers shape and size, namely, Smithfield A, large circular scrapers, Smithfield B, long, narrow end scrapers (both manufactured of black hornfels) and Smithfield C, small thumbnail scrapers (manufactured of chalcedonies and agates) (Goodwin and Van Riet Lowe 1929). When radiocarbon dating became available many years later it indicated that there were no sites which date between 9 500 and 4 600 years old for the drier inland plateaux (Deacon 1974). The LSA deposits at Highlands Rock Shelter date to 4 500 years old (Deacon 1976). Today the term Smithfield is only used for stone tool assemblages with backed bladelets and long end scrapers dating within the last 1000 years and replaces the term Smithfield B (Sampson 1988). The term Smithfield A has been replaced by Oakhurst and Smithfield C by Interior or Post-Wilton. Oakhurst is similar to the Albany Industry in the adjacent Cape Mountains, dating between 10 500 and 8 000 years old and also replaces the previously termed Lockshoek Industry (Sampson 1985).

The survey of the Mountain Zebra National Park (Brooker 1974) confirmed that the area is rich in archaeological remains and that some of the LSA time sequence for the region was present, as well as rock art. Unfortunately no rock engravings were found to compare with that of Samekoms, but there is another engraved and painted site listed in the Albany Museum records, only a few kilometres away. Unfortunately, apart from the stone tools, little else is preserved and it is not possible to reconstruct subsistence patterns. Better preservation of organic material at Highlands Rock Shelter provides some insight into hunter-gatherer subsistence in the area. Collecting of underground plant remains such as *Cyperus usitatus* and *Frezia corymbrosa* would appear to have been an important food source together with the hunting of mountain zebra/quagga, mountain reedbuck, warthog and various small antelope such as duiker, klipspringer and steenbok. Also listed in the museum records are freshwater shell middens along the banks of the Great Fish River and small quantities of crab and freshwater mussel were also found in the excavations. Many stock enclosures with stone walls and fragments of sand-tempered ceramic vessels are found throughout the Seacow River area and are most probably associated with Khoi pastoralists who settled in the area during the past 1 000 years.

## References

Brooker, M. 1977. The archaeology of the Mountain Zebra Park. *Koedoe* 20:77-93.

- Deacon, H. J., 1976. Where hunters gathered: a study of Holocene Stone Age people in the Eastern Cape. South African Archaeological Society Monograph Series No. 1.
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- Goodwin, A.J.H. & Lowe, C. van Riet. 1929. The Stone Age cultures of South Africa. Annals of the South African Museum.
- Sampson, C.G. 1985. Atlas of Stone Age settlements in the Central and Upper Seacow Valley. Memoirs van die Nasionale Museum Bloemfontein No.20.
- Sampson, C.G. 1988. Stylistic boundaries among mobile hunter-foragers. Washington: Smithsonian Institution Press.

### **Relevant impact assessments**

None from the immediate vicinity

## **DESCRIPTION OF THE PROPERTY**

### **Area Surveyed**

#### Location data

The proposed area for the construction of a 10 megawatt solar farm is situated approximately 4 kilometres south-west of Pearston, Blue Crane Municipality, Eastern Cape Province. It is located on the farm Kraan Vogel Kuil No. 50 close to (north) the R337 gravel road between Pearston and Jansenville (Maps 1-2).

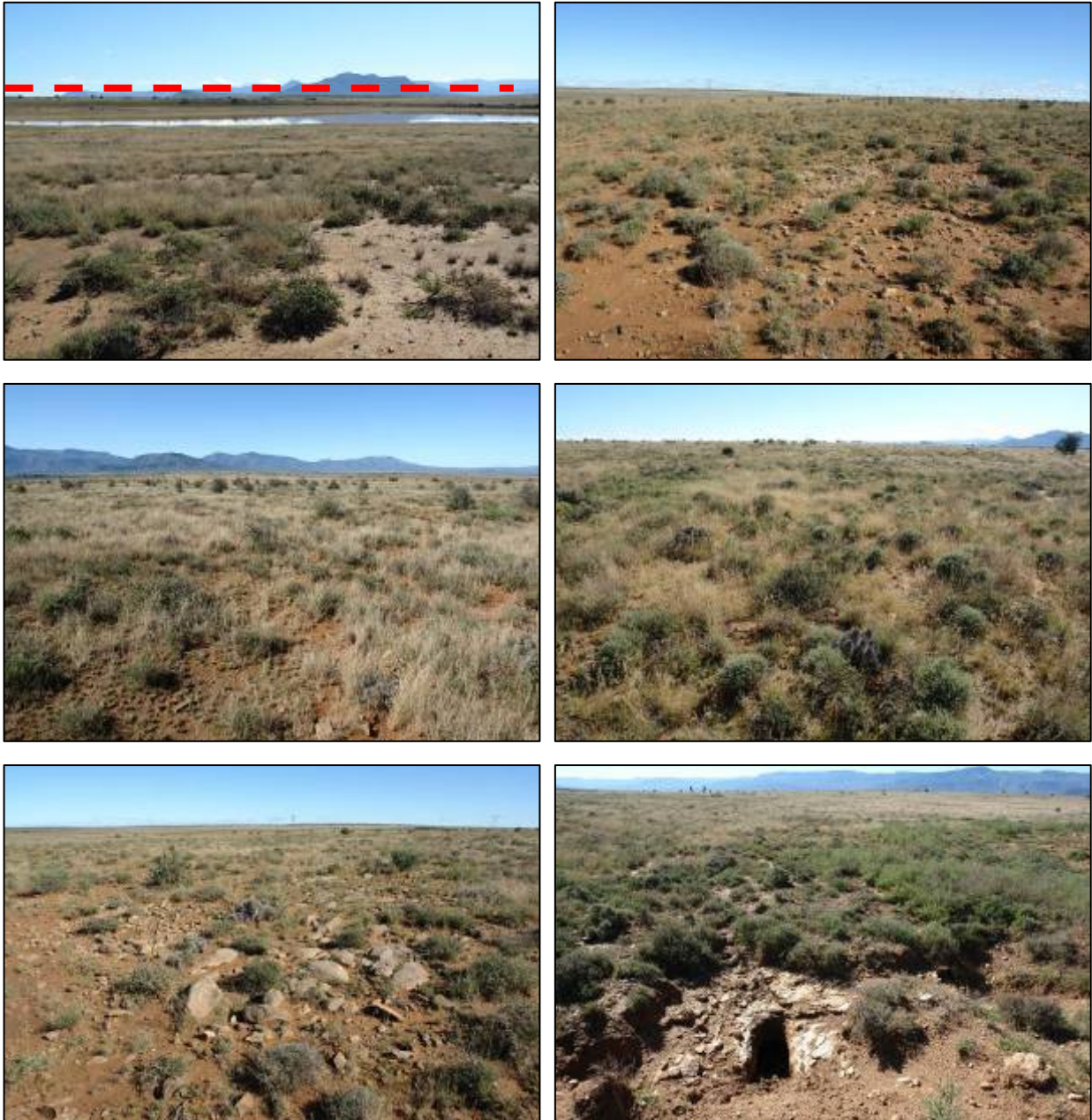
#### Map

1:50 000 3225 CA Pearston

## **ARCHAEOLOGICAL INVESTIGATION**

### **Methodology and results**

The survey was conducted on foot. GPS readings were taken with a Garmin and all important features were digitally recorded. The proposed area for development comprised of natural veld and is situated on a relatively flat plain. The immediate surrounds have been disturbed in the past by the construction of a power line (west), a large dam and cultivated lands (south and south-east). The terrain comprised of red sandy soil covered by sparsely to dense low grass, shrubs and *euphorbia ferrox* vegetation (Figs 1-6). The underlying hard rock and calcrete deposits are exposed in places. In general the surface visibility was good, but surprisingly no significant archaeological sites/materials were observed. One would have expected to find at least occasional Middle Stone Age (older than 30 000 years) and Later Stone Age (younger than 30 000 years). Nevertheless, it is possible that such materials may be covered by soil and vegetation. There are no graves or buildings older than 60 years. In general it would appear that it is unlikely that any sensitive archaeological heritage remains will be exposed during the development. The area is of low cultural sensitivity and the proposed development may proceed.



**Figs 1-6. General views of the proposed site for the construction of a 10 megawatt solar farm. The red broken line indicates the location of the site. Exposed hard rock and calcrete are visible in the bottom row of images.**

## **RECOMMENDATIONS**

1. If any concentrations of heritage material are uncovered during development, it should be reported to the Albany Museum and/or the South African Heritage Resources Agency immediately so that systematic and professional investigation/excavations 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 which may be encountered during construction.

## GENERAL REMARKS AND CONDITIONS

**Note:** This report is a phase 1 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 (AIA's) 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 5000m<sup>2</sup> 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 000m<sup>2</sup> 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 A: IDENTIFICATION OF ARCHAEOLOGICAL FEATURES AND MATERIAL FROM INLAND AREAS: guidelines and procedures for developers**

### **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 human remains are buried in a flexed position on their side, but are also found buried in a sitting position with a flat stone capping. Developers are requested to be on alert for the possibility of uncovering such remains.

### **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 m<sup>2</sup> in extent, should be reported to an archaeologist.

### **Large stone cairns**

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.

### **Stone artefacts**

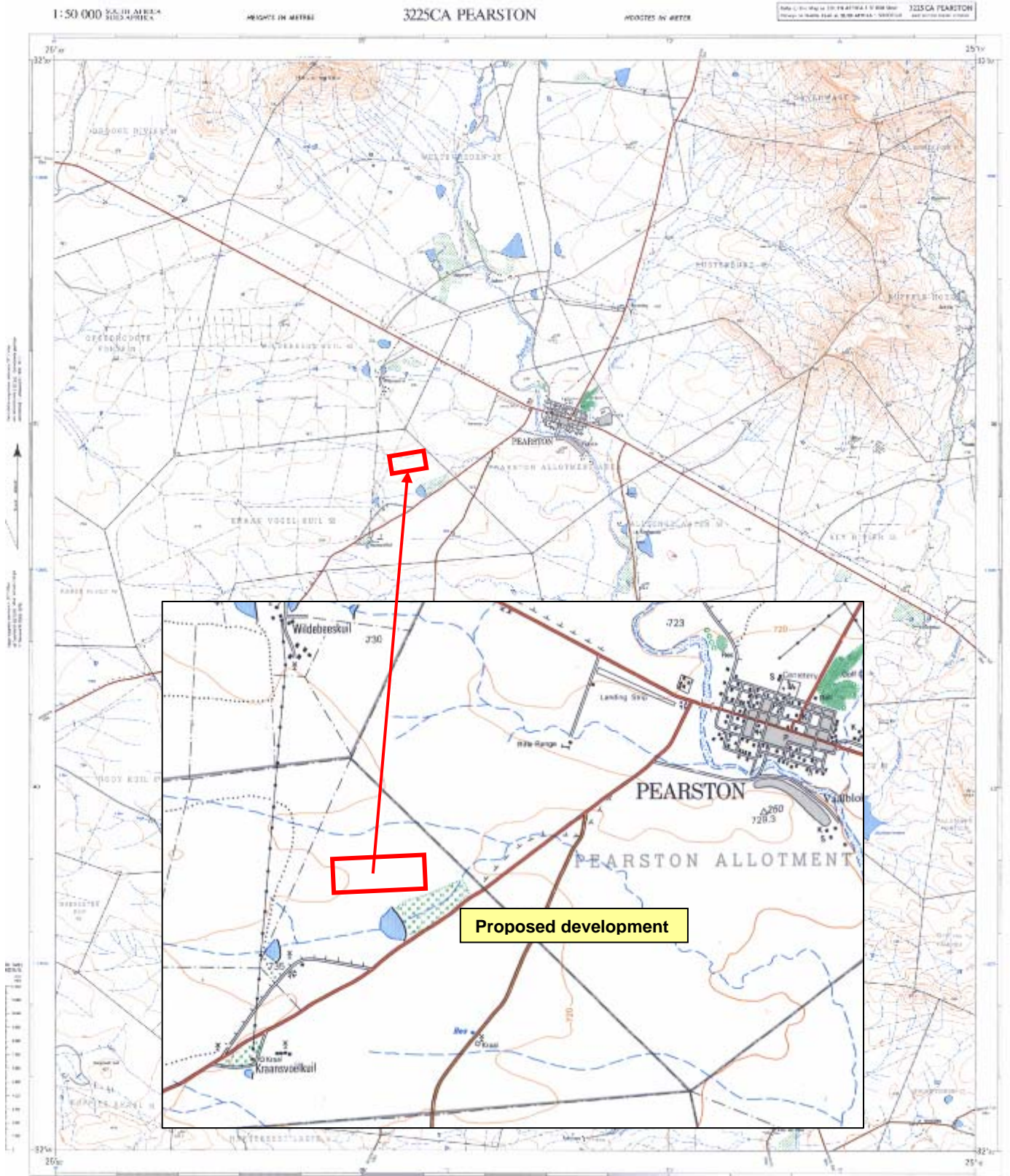
These are difficult for the layman to identify. However, large accumulations of flaked stones which do not appear to have been distributed naturally should be reported. If the stone tools are associated with bone remains, development should be halted immediately and archaeologists notified.

### **Fossil bone**

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

### **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 location of the proposed development. The red rectangles mark the approximate size of the site.**



Map 2. Aerial photographs indicating the location of the proposed development. The red rectangles mark the approximate size of the site.