

**A PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT FOR THE PROPOSED
TSITSIKAMMA COMMUNITY WIND ENERGY FACILITY, KOUGA LOCAL
MUNICIPALITY, HUMANSDORP 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 Phase 1 Archaeological Heritage Impact Assessment (AHIA) reports.

EXECUTIVE SUMMARY

Purpose of the Study

To conduct a phase 1 archaeological impact assessment (AIA) for the proposed Tsitsikamma Community Wind Energy Facility and associated infrastructure at Wittekleibosch near Humansdorp, Kouga Local Municipality, Cacadu District Municipality, Eastern Cape Province. The survey was conducted to establish the range and importance of possible exposed and *in situ* archaeological heritage remains and features, the potential impact of the development and, to make recommendations to minimize possible damage to these sites.

Site and location

The proposed Tsitsikamma Community Wind Energy Facility site is situated approximately 30 km west of Humansdorp, south of the N2 National Road in the Wittekleibosch area. The study site is currently being used mainly for grazing and general farming activities.

Type of development

The proposed development entails the construction and operation of a wind energy facility and associated infrastructure. The wind energy facility will be developed on approximately 54 square kilometres and comprise of some 31 wind turbines with a proposed total generating capacity of up to 100 MW.

Investigation

Most of the proposed Tsitsikamma Community Wind Energy Facility site is situated further than 5 kilometres (nearest point) from the coast and falls outside the coastal sensitive zone. A large part of the study site has been ploughed extensively in the past and is

covered by dense grass for grazing and patches of mainly alien vegetation. These circumstances made archaeological visibility virtually impossible. Only Earlier and Middle Stone Age stone tools were observed eroding from a sub-surface palaeosol at a sand quarry. It is unlikely that any significant archeological material will be exposed during the development.

Cultural sensitivity

The study area investigated appears to be of low archaeological (sites/materials) sensitivity and the impact of construction will be of low negativity. However, the visual impact of the turbines will have a negative effect on the pre-colonial archaeological landscape (an area 5 km wide and parallel to the coast. See below).

Recommendations

To lessen the visual impact on the pre-colonial archaeological landscape, turbines 18-29 must be constructed further inland. A minimum distance of 7 kilometres from the coast is proposed (2 km north of the 5 km boundary).

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

Community consultation

Consultation with the Gamtkwa KhoiSan Council was conducted as required by the National Heritage Resources Act No. 25 of 1999, Section 38(3e). They will communicate their recommendations to Savannah Environmental (Pty) Ltd if required.

PROJECT INFORMATION

Status

The proposed commercial wind energy facility is to be developed by Exxarro Resources and Watt Energy (Pty) Ltd and is referred to as the Tsitsikamma Community Wind Energy Facility. This report is part of an Environmental Impact Assessment.

The type of development

The proposed Tsitsikamma Community Wind Energy Facility and associated infrastructure will be developed on some 54 square kilometres and comprise of up to 31 wind turbines with a proposed generating capacity of approximately 100MW. The associated infrastructure required for the facility will include concrete foundations to support the turbines. Cabling between the turbines will be laid underground where practical. An on-site substation to facilitate the connection between the wind energy facility and the grid will be constructed. New overhead power lines (132kV distribution line) will be constructed

to connect to Eskom's existing Melkhout substation near Humansdorp (approximately 25 kilometres northeast of the study site). Other developments will include internal access roads to each turbine and a workshop/administrative area for maintenance and storage of equipment.

The Developer

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Terms of reference

The purpose of the study was to conduct a phase 1 archaeological impact assessment (AIA) for the proposed Tsitsikamma Community Wind Energy Facility and associated infrastructure at Wittekleibosch near Humansdorp, Kouga Local Municipality, Cacadu District Municipality, Eastern Cape Province. The survey was conducted to establish the range and importance of the exposed and *in situ* archaeological heritage remains and features, the potential impact of the development and, to make recommendations to minimize possible damage to these sites.

ARCHAEOLOGICAL BACKGROUND

Brief literature review (a comprehensive desktop study was compiled)

The oldest evidence of the early inhabitants in the region are large stone tools, called hand axes and cleavers which can be found in the river gravels which capped the hill slopes in the region, and on the calcrete floors exposed in the dune systems along the coast towards Cape St Francis (Laidler 1947; Deacon & Geleijnse 1988; Binneman 2001, 2005). The time period is known as the Earlier Stone Age and the stone tools belong to the Acheulian Industry, dating between approximately 1,5 million and 250 000 years old.

After this period, the Acheulian hand axes and cleavers were replaced by a totally different looking stone tool industry, the so-called flake and blade industries of the Middle Stone Age (MSA). The time period, between 120 000 - 30 000 years ago, also witness the emergence of the first modern humans (*Homo sapiens sapiens*). The oldest remains of anatomically modern humans in the world (some 110 000 years old) comes from the Klasies River complex of caves some seven kilometres west of the proposed development (Singer & Wymer 1982; Rightmire & Deacon 1991; Deacon 1992, 1993, 2001; Deacon, H.

J & Shuurman, R. 1992). The archaeological deposits at the Klasies River Caves (1-5) date to 120 000 years old. Although humans were already anatomically modern by 110 000 years ago, they were not yet fully exhibiting 'modern behaviour' and only developed into culturally modern behaving humans between 80 000 and 70 000 years ago. This occurred during cultural phases known as the Still Bay and Howieson's Poort time periods/stone tool traditions. The Howieson's Poort is well represented at Klasies River Cave 2 (Deacon & Wurz 1996; Wurz 1999).

Unfortunately, no caves and shelters in the region have been excavated yet with deposits dating between 25 000 and 5 000 years ago. Nevertheless, from sites farther along the coast and adjacent Cape Mountains, we know that the past 20 000 years, called the Later Stone Age (LSA), introduced several 'new' technological innovations. Others became more common, such as rock art, burials associated with grave goods, painted stones, new microlithic stone tool types, some fixed to handles with mastic, bow and arrow, containers, such as tortoise shell bowls and ostrich eggshell flasks (sometimes decorated), decorative items, bone tools and many more (Deacon & Deacon 1999).

The period between 20 000 and 14 000 years ago experienced extremely cold climatic conditions and had a great influence on the environment, the people and animals. During the Last Glacial Maximum (the last ice age) vast areas were exposed along the coast which created favourable conditions for grassland and grazing animals (also inland). The remains from archaeological sites indicated that there were several large grazing animal species which are now extinct, for example the giant buffalo, the giant hartebeest and the Cape horse. After 14 000 years ago the climate started to warm up again and the sea level rose rapidly. By 12 000 years ago the sea was close to modern conditions and the previously exposed grassland also disappeared due to the rising sea level, causing the extinction of many grassland species including the giant buffalo, hartebeest and the Cape horse (Deacon & Deacon 1999).

Between 10 000 and 8 000 years ago the environment became bushier and gave rise to territorial smaller type browsing animals that lived in small groups or pairs. Most of the large Last Glacial grazing animals disappeared from the archaeological deposits during this time period from sites in the region. A characteristic of the past 8 000 years, also known as the Wilton time period, was the large number of small (microlithic) stone tools in the shelters and open-air middens of the region. However, by 4 500 years ago these stone tools were replaced at the the Klasies River Caves by large quartzite stone tools, labelled the Kabeljous Industry (Binneman 2001. 2005). The first real change in the socio-economic landscape came some 2 000 years ago when Khoi pastoralists settled in the region. They were the first food producers and introduced domesticated animals (sheep, goats and cattle) and ceramic vessels to the region (Binneman, 2001, 2005).

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Museum/University databases and collections

The Albany Museum in Grahamstown houses collections and information from the region. Other institutions also having collections and information from the region include the University of Cape Town and Iziko Museums.

Relevant impact assessments for the study area

- ACO UCT. 2010. *Environmental Impact Assessment for three proposed nuclear power station sites and associated infrastructure*. Prepared for Argus Gibb engineering and Science, Johannesburg.
- Binneman, J. 2010. *A phase 1 archaeological heritage impact assessment for the proposed Deep River Wind Energy Project, Kouga Municipality, District Of Humansdorp, Eastern Cape Province*. Prepared for Savannah Environmental (Pty) Ltd, Sunninghill.
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DESCRIPTION OF THE PROPERTY

Area Surveyed

Location data

The site for the proposed Tsitsikamma Community Wind Energy Facility and associated infrastructure is situated in the Wittekleibosch area approximately 30 kilometres west of Humansdorp, 14 kilometres east of Clarkson and 15 kilometres north-west of Oyster Bay in the Kouga Local Municipality, Humansdorp District, Cacadu District Municipality, Eastern Cape Province (Maps 1-2). The development is located between the N2 National Road (south) and the coast (a distance of between 5 and 12 kilometres) and east, north-east of the Tsitsikamma River. The main gravel road between Oyster Bay and Palmietvlei/N2 runs through the southern part of the study area.

The development will be in a site approximately 54 square kilometres in size and will accommodate some 31 wind turbines with a generating capacity of up to 100MW as well as the associated infrastructure. The site comprises of relatively flat, high lying agricultural land and the development will take place on the following farm portions (Maps 1-3):

Portions 19 and 22 of Zalverige Valley 660
 Portions 3 and 5 of Vergaaderingskraal 675
 Portion 1 of Ou Driefontein 721
 Portion 2 of New Driefontein 720
 Portions 3 - 9 of Wittekleibosch 787
 Farm 818
 Remainder of Farm 678
 Portion 3 of Kliprug 676

Maps

1:50 000 – 3424 AB Clarkson and 3424 BA Kruisfontein

ARCHAEOLOGICAL INVESTIGATION

Methodology and results

The proposed Tsitsikamma Community Wind Energy Facility site was investigated by two people on foot and from a vehicle. A literature study of the archaeology of the region was compiled prior to the survey and a layout map for the proposed locations of the turbines and the substation was available at the start of the survey (Map 1). GPS readings were taken with a Garmin and all important features were digitally recorded. Consultation was conducted with the local Gamtkwa KhoiSan community regarding the archaeological heritage of the area.

The study area comprises a gently undulating plain (southern area towards the coast) and a relatively flat plain (northern part near the N2), used mainly for agricultural activities. Virtually the entire study area has been transformed in the past by bush clearing,

ploughing and planting of grass for grazing, construction of dams, general farming activities and more recently by the establishment of small informal settlements (Figs 1-4). Persistent rain during the past few weeks drenched the fields and made most farm tracks impassable. These conditions made it difficult to reach the turbine sites and to observe archaeological sites (Figs 5-6). The turbine positions are located either on disturbed areas covered by short, dense grass or among dense patches of mainly alien vegetation (Figs 7-18). The dense vegetation cover and waterlogged fields made it difficult to observe archaeological sites, but a few Earlier and Middle Stone Age quartzite stone tools (1,5 million – 30 000 years old) were observed at an old sand mine and vehicle track which exposed sub-surface ferricretes (GPS reading: 34.05.856S; 24.28.777E). The Earlier Stone Age stone tools included hand axes, cores, flaked cobbles and flakes (date between 1.5 and 250 000 years old). The Middle Stone Age stone tools (date between 250 000 and 30 000 years old) included broken blades and flakes which displayed typical faceted striking platforms. Some flakes displayed utilization damage but no 'formally' retouched flakes were observed (Fig. 19-20). The stone tools were in secondary context and of low cultural significance.



Figs 1-4. General views of the Tsitsikamma Community Wind Energy site (top row) and examples of general farming and settlement activities (bottom row).



Figs 3-12. General views of the conditions of the roads and fields after the recent rains (top row), turbine positions 1-4, 30-31 (second row), turbine positions 5,9,11 and 15 (third row), turbine positions 6, 8,10,12 and 13 (bottom row).



Figs 13-20. general views of turbine locations 14, 16 and 17 (top row), turbine locations 21, 22, 25, 27, 28 and 29 (second row), turbine positions 18, 19, 20, 24, and 26 (third row) and the sand mine area and an sample of the Earlier and Middle Stone Age stone tools observed at the site (bottom row).

Discussion

Most of the proposed area for the construction of the Tsitsikamma Community Wind Energy Facility is further than five kilometres from the coast and falls outside the maximum distance coastal archaeological features such as shell middens are expected to be located from the beach. Apart from a few Earlier and Middle Stone Age stone tools, no other archaeological sites/materials were observed and in general the area appears to be of low archaeological sensitivity. Previous surveys in the wider area identified Earlier and Middle Stone Age stone tools in the exposed river gravels and surrounding hill tops throughout the region, but these were in secondary context and not associated with any other archaeological materials. However, sites/materials may be covered by soil and grass and there is always a possibility that human remains and/or other archaeological material may be uncovered during the development. Should such material be exposed then it must be reported to the nearest museum, archaeologist or to the South African Heritage Resources Agency (see general remarks and conditions below).

ASSESSMENT OF THE IMPACTS

Pre-colonial archaeology

Nature of the impacts

From the investigation, it would appear that the proposed Tsitsikamma Community Wind Energy Facility site is of low archaeological sensitivity. Apart from a few exposed stone tools no sites/remains of significance were recorded, but material may be covered by soil and grass. The main impact to archaeological sites/remains (if any) will be the physical disturbance of the material and its context. The construction of the turbine foundations, substation, cabling between the turbines and access roads may expose, disturb and displace archaeological sites/material.

Extent of the impacts

Construction of the turbine foundations, substation, cabling between the turbines and access roads may impact on remains which are buried, but these impacts will be limited and restricted to the local area. The construction of the turbine bases may disturb small areas and the negative impact on possible archaeological sites/materials may be relatively small. Other projects such as the construction of roads, buildings and underground lines will disturb large areas and may expose sites/materials on a larger scale. In both cases further disturbances of sites/materials can be limited by mitigation.

Table 1. Impacts to the pre-colonial archaeology.

Nature: The potential impact of the construction of the turbines, substation, cabling between the turbines, access roads and workshop on above and below ground archaeology.		
	Without Mitigation	With Mitigation
Extent	Local (1)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Minor (2)	Minor (2)
Probability	Unlikely (2)	Unlikely (2)
Significance	Low < 30	Low < 30
Status (positive or negative)	Negative	Neutral
Reversibility	No	No
Irreplaceable loss of resources?	No, but in some cases, yes	No
Can impacts be mitigated?	Yes	
Mitigation		
No mitigation is proposed before construction starts because the archaeological remains (if any) are of low significance (excluding human remains). However, if concentrations of archaeological materials are exposed then all work must stop for an archaeologist to investigate (see below).		
If any human remains (or any other concentrations of archaeological heritage material) are exposed during construction, all work must cease and it must 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 investigate and to remove/collect such material. Recommendations will follow from the investigation.		
Cumulative impacts: N/A		
Residual impacts: N/A		

Pre-colonial archaeological cultural landscape

The Klasies River/Klippepunt cultural landscape and significance of place

Cultural landscapes, ... are cultural properties and represent the "combined works of nature and of man". They are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal (UNESCO, Operational Guidelines for the Implementation of the World Heritage Convention, 2008).

The concept of cultural landscapes comprises different fields and definitions (well-discussed in the literature and will not be repeated here). This report only discusses the pre-colonial cultural landscape which includes the Earlier, Middle and Later Stone Ages. These different fields are present throughout the region. Should other fields need to be investigated, then specialists in those fields must be appointed.

The significance of the pre-colonial archaeology between Klasies River in the west and Cape St Francis in the east, has been illustrated by research over many years (see the desktop study and brief literature review above), and more recently by a Heritage Impact Assessment conducted at Thyspunt for the proposed nuclear power facility site (ACO 2010). The importance of the archaeology of the region was maintained by SAHRA when

they recently ruled on the proposed nuclear site at Thyspunt, that within their mandate they,

... **cannot approve** any developments that will have a major deleterious effect on the heritage of a highly significant cultural landscape such as Thyspunt. It is the belief of the SAHRA that the impact on the heritage resources will be too severe and that mitigation will not achieve the desired effect (SAHRA 2010, Review comments on the Environmental Impact Assessment for three proposed nuclear power station sites and associated infrastructure: Heritage Impact Assessment: Archaeological Component).

However, Thyspunt is only a small part of the much larger and elaborate pre-colonial cultural landscape which is situated between Klasies River (previously also known as the Kaapsedrift River) in the west to Cape St Francis/Kromme River Mouth in the east. For the purpose of this report only the western part will be discussed with references to the central, Thyspunt part (Maps 3-5).

Approximately between two and three kilometres south-west from the nearest turbine locations of the Tsitsikamma Community Wind Energy Facility is the Geelhoutboom dunes. These fossil dunes were part of a Plio-Pleistocene headland bypass system. A modern day example is the fast disappearing shifting dune system between Oyster Bay and the St Francis Bay coast. On the landward side of the Geelhoutboom dunes, deflation has exposed a series of hardpan horizons associated with mid-Pleistocene Acheulian and younger artefacts which provide a minimum age for the Geelhoutboom dune (Laidler 1947; Deacon & Geleijnse 1988). The delicately worked symmetrical Middle Pleistocene Acheulian bifaces are much younger than the age of the dunes. The bulk of the artefacts in this area are from the Middle Stone Age and densities of upwards of 50 artefacts per square metre have been observed (Figs 21-22). The exposures which are several kilometres in length and several hundred metres in width, is the largest artefact scatter observed along this part of the south-eastern Cape coast (Deacon & Geleijnse 1988). The Geelhoutboom dune extends eastwards beyond the Tsitsikamma River and is represented by small exposed remnants such as the Brandewynkop (Lange Fontein) dunes. The archaeological context for these dunes is similar to that of the Geelhoutboom dunes (Deacon & Geleijnse 1988; personal observations, 1980s).

Some six kilometres south-west from the Tsitsikamma Community Wind Energy Facility is the Klasies River complex of caves (1-5) and several open air shell middens. This is one of the most significant archaeological cave complexes in the world, and home to the oldest anatomically modern human skeletal remains (*Homo sapiens sapiens*) (Singer & Wymer 1982; Rightmire & Deacon 1991; Deacon 1992, 1993, 1995, 2001; Deacon, H. J & Shuurman, R. 1992; Deacon & Deacon 1999). The archaeological deposits at the Klasies River Caves (1-5) date to 120 000 years old (Deacon & Geleijnse 1988).

The immediate coastal zone between Klasies River and Klippepunt has not yet been systematically researched/surveyed in any detail. However, several visits over the years demonstrated that this stretch of coast is similar to the Thysbaai coast and exceptionally

rich in shell middens and other features. Large complexes of shell middens were observed especially at the Tsitsikamma River mouth and Klippepunt area.



Figs 21-22. Earlier Stone Age hand axes and cleavers (left) and Middle Stone Age flakes and blades from the Geelhoutboom dunes (Albany Museum collection).

Nature of the impact

The Klasies River/Klippepunt area represents one of the most unique pre-colonial cultural landscapes in the world. Anatomically modern human populations most probably originated here in the wider region and spread to Europe and other parts of the globe. Notwithstanding, a wind farm facility which includes 53 turbines and situated inside this pre-colonial archaeological cultural landscape has been approved for development (Maps 3-5). The proposed Tsitsikamma Community Wind Energy Facility development which includes 31 turbines is located inland from this project. The increase of a large number of turbines in the area will contribute to significant changes to the cultural landscape of the area as well as an overall 'sense of place'.

Extent of impact

The visual visibility of the turbines will be the single largest change to the Klasies River/Klippepunt pre-colonial cultural landscape and the result will be highly negative to the meaning of 'sense of place'. By adding another large number of turbines, the proposed Tsitsikamma Community Wind Energy Facility will contribute to the 'accumulative visual impact' on the pre-colonial cultural landscape and change to the 'significance of place'. Although this impact will be negative and long term to permanent, it can be mitigated to decrease the impact.

Table 1. Impacts to the pre-colonial cultural landscape.

Nature: The large number of turbines will impact on one of the most unique pre-colonial cultural landscape in the world in terms of visual impacts and changes to 'sense of place'.		
	Without Mitigation	With Mitigation
Extent	Local (4)	Local (3)
Duration	Long term/permanent (5)	Long term/permanent (5)
Magnitude	High (8)	Low (4)
Probability	Highly probable (4)	Highly probable (3)
Significance	Medium 68	Low 48
Status (positive or negative)	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	yes
Mitigation It is recommended that due to the significance of the pre-colonial cultural landscape, the closest turbines be pushed further inland to reduce the accumulative visual effect.		
Cumulative impacts: The cumulative impacts may be increasing as further wind farms are planned for adjoining areas. The large number of turbines will bring permanent changes to the pre-colonial cultural landscape in terms of visual impacts and changes to 'sense of place'.		
Residual impacts: permanent		

DISCUSSION AND MITIGATION

The proposed Tsitsikamma Community Wind Energy Facility site is situated approximately 5 kilometres from the coast and some 6 kilometres north-east from the Klasies River Complex of caves (from the nearest turbine), on the landward edge of the Klasies River/Cape St Francis pre-colonial archaeological cultural landscape. In recent years several large developments have been proposed for this region of the south-eastern Cape coast. Apart from the proposed nuclear power station development at Thyspunt, there are also several wind energy facilities proposed for the region and two in the immediate area have already been approved for development. One of the wind energy developments is situated adjacent to the Thyspunt cultural landscape, and has been approved with the condition that two turbines are constructed further inland. The other wind energy facility, which includes 53 turbines, is situated **inside** the pre-colonial archaeological cultural landscape between the Tsitsikamma Community Wind Energy Facility site and the coast (Van Ryneveld 2010) (Maps 3-5). All these proposed developments will have a cumulative effect on the Klasies River/Cape St Francis pre-colonial archaeological cultural landscape, not only in terms of the disturbance of archaeological heritage sites/materials, but also in terms of the visual impact and changes to 'sense of place'.

Research along the Klasies River/Cape St Francis coastal zone indicated that shell middens and other archaeological features occur up to 5 kilometres inland (Binneman 1985, 1996, 2001, 2005; Nilssen 2006). Based on this observation the pre-colonial cultural landscape is set at this distance from the coast (see Maps 3-6) which provide the criteria for recommendations for developments along the south-eastern Cape coast, including the current proposed Tsitsikamma Community Wind Energy Facility site.

If the distance of five kilometres from and parallel to the coast is accepted for the Klasies River/Cape St Francis pre-colonial archaeological cultural landscape, then the current positions of a number of turbines are on or close to the boundary (Map 6). Due to the size and visibility of the turbines it is impossible to 'shade/hide' their dominate influence in the environment, but the impact on the pre-colonial archaeological cultural landscape can be 'softened' by reducing the number of turbines and/or pushing them back further inland.

The Klasies River Complex of caves (between the Klasies River to Druipkelder Point - a distance of approximately 2,5 km) was proclaimed a National Monument on 22 June 1990 (Government Notice 1349 in the Government Gazette 1254) and also include the farms 664 and 665. The area is also proclaimed under the Heritage Programme of the Department of Environmental Affairs. The Klasies River Complex of caves will be proclaimed as a World Heritage Site in the near future, a process which was initiated already in 1998.

To decrease the cumulative impacts and effects on the Klasies River National Monument and the Klasies River/Cape St Francis pre-colonial archaeological cultural landscape (which include the burial grounds of the pre-colonial inhabitants), it is recommended that;

- To lessen the visual impact, turbines 18-29 must be constructed further inland (see Map 6). A minimum distance of 2 kilometres from the 5 kilometre boundary is proposed.
- If any concentrations of archaeological material or human remains are uncovered during further development of the site, all work must immediately cease and must be reported to the Albany Museum and/or the South African Heritage Resources Agency 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).
- Construction managers/foremen should be informed before the start of construction on the possible types of heritage sites and cultural material they may encounter and the correct procedures to follow when they encounter sites.

Additional references

- ACO UCT. 2010. Environmental Impact Assessment for three proposed nuclear power station sites and associated infrastructure. Prepared for Argus Gibb engineering and Science, Johannesburg.
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GENERAL REMARKS AND CONDITIONS

Note: This report is for a Phase 1 archaeological heritage impact assessment only and do 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/material and may not therefore, reflect the true state of affairs. Many sites 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, (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 Resources Act No. 25 of 1999 (NHRA).

It must also be clear that Phase1 Specialist Reports (AIAs) will be assessed by the relevant heritage resources authority. The final decision rests with the heritage resources authority, which should give 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 AND ADJACENT COASTAL AREAS: guidelines and procedures for developers

Shell middens

Shell middens can be defined as an accumulation of marine shell deposited by human agents rather than the result of marine activity. The shells are concentrated in a specific locality above the high-water mark and frequently contain stone tools, pottery, bone and occasionally also 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.

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.

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

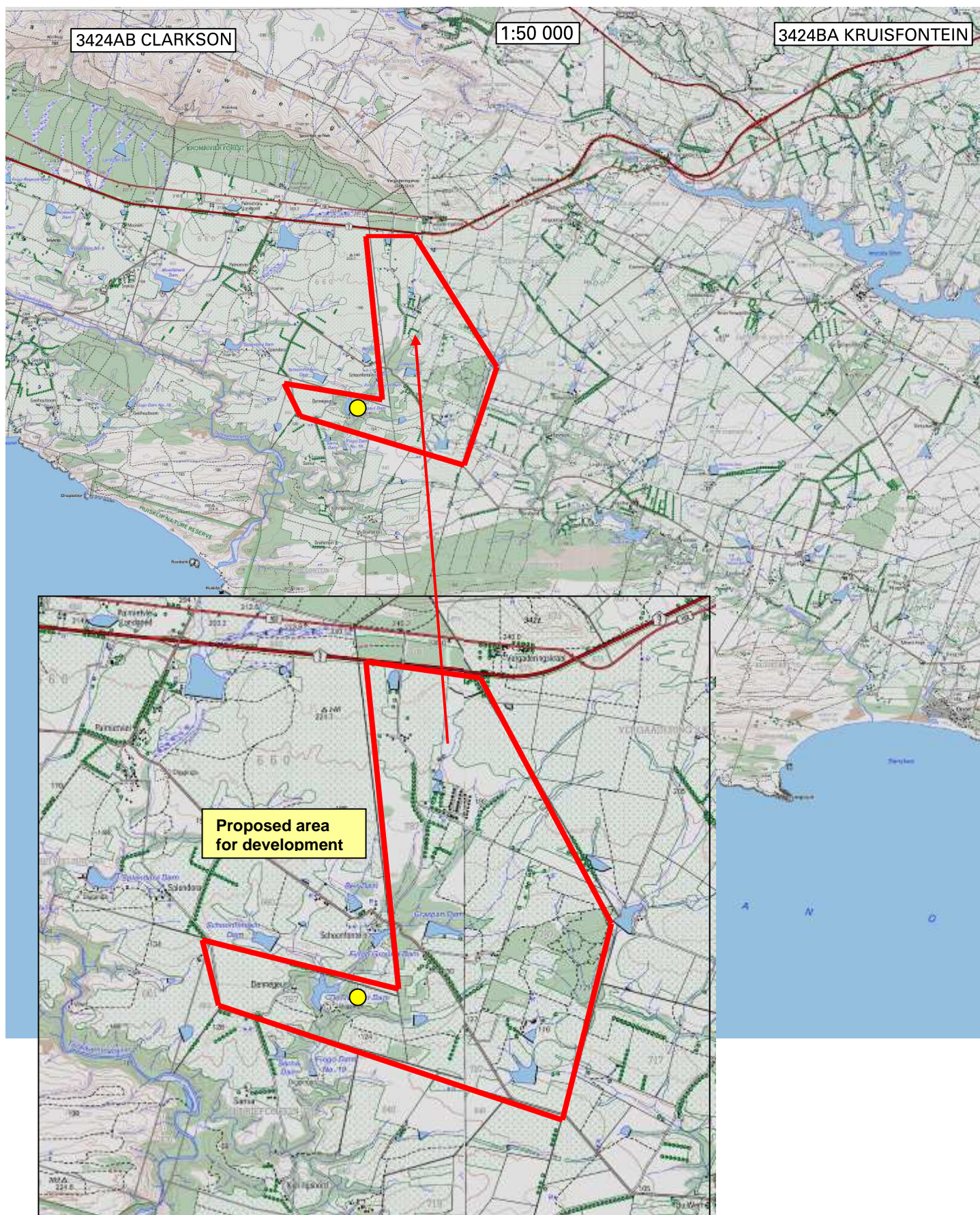
Fossil bones may be found embedded in geological deposits. Any concentrations of bones, whether fossilized or not, should be reported.

Large stone features

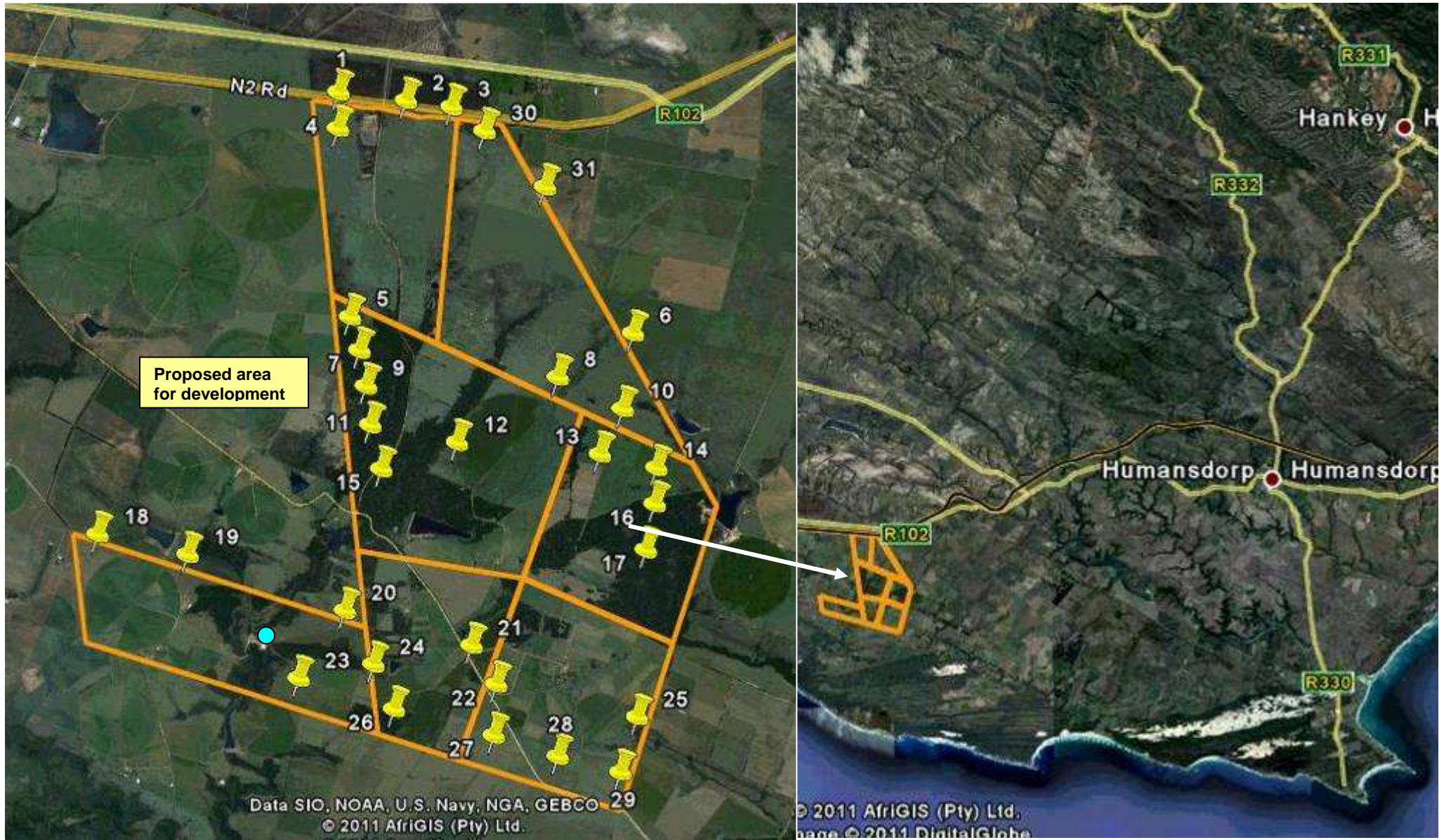
They come in different forms and sizes, but are easy to identify. The most common are roughly circular stone walls (mostly collapsed) and may represent stock enclosures, remains of wind breaks or cooking shelters. Others consist of large piles of stones of different sizes and heights and are known as *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.

Historical artefacts or features

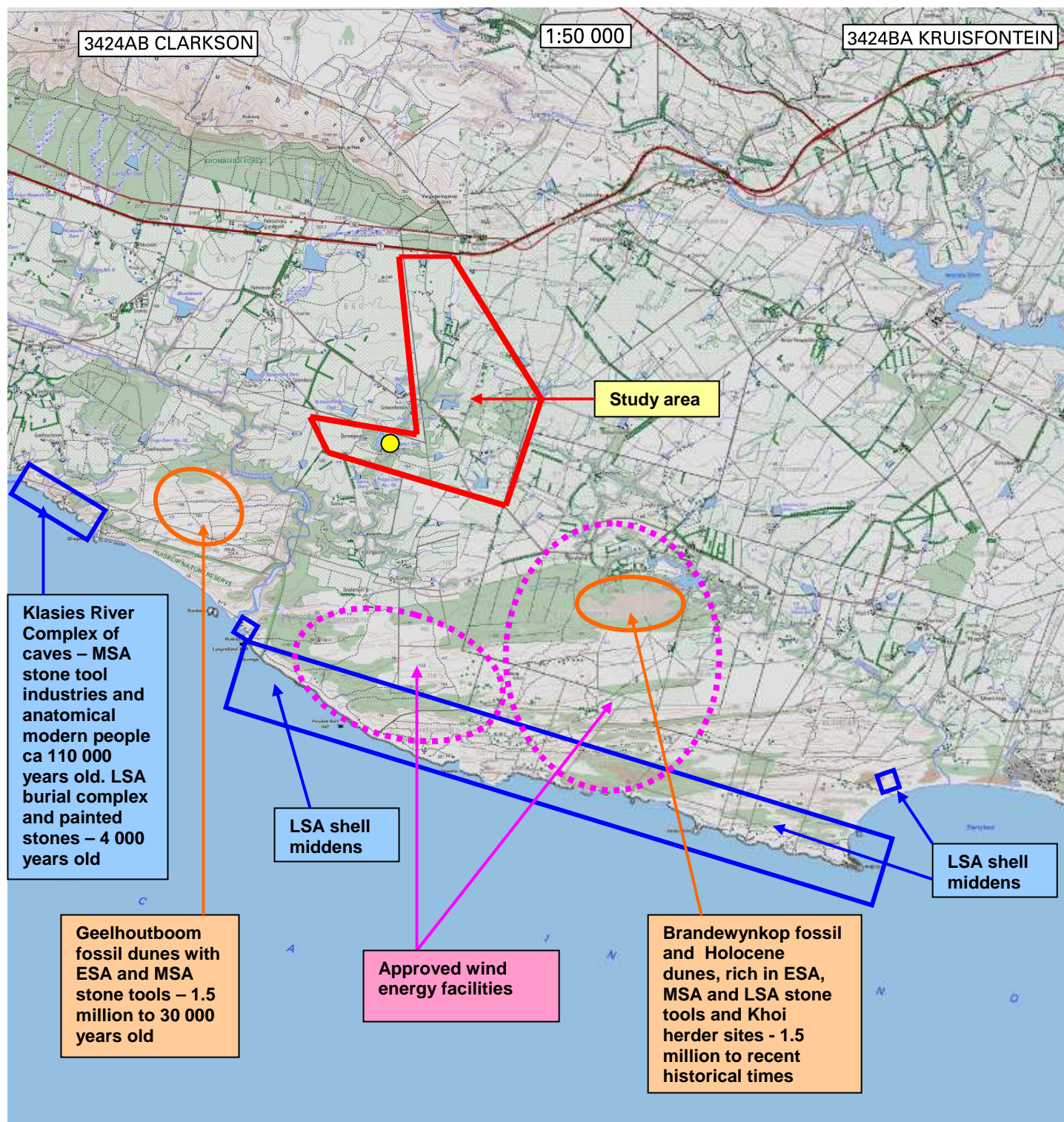
These are easy to identified and include foundations of buildings or other construction features and items from domestic and military activities.



Map 1. 1:50 000 maps indicating the location of the proposed Tsitsikamma Community Wind Energy Facility. The redlines outline the approximate size of the study area and the yellow dot marks the ESA stone tool site.

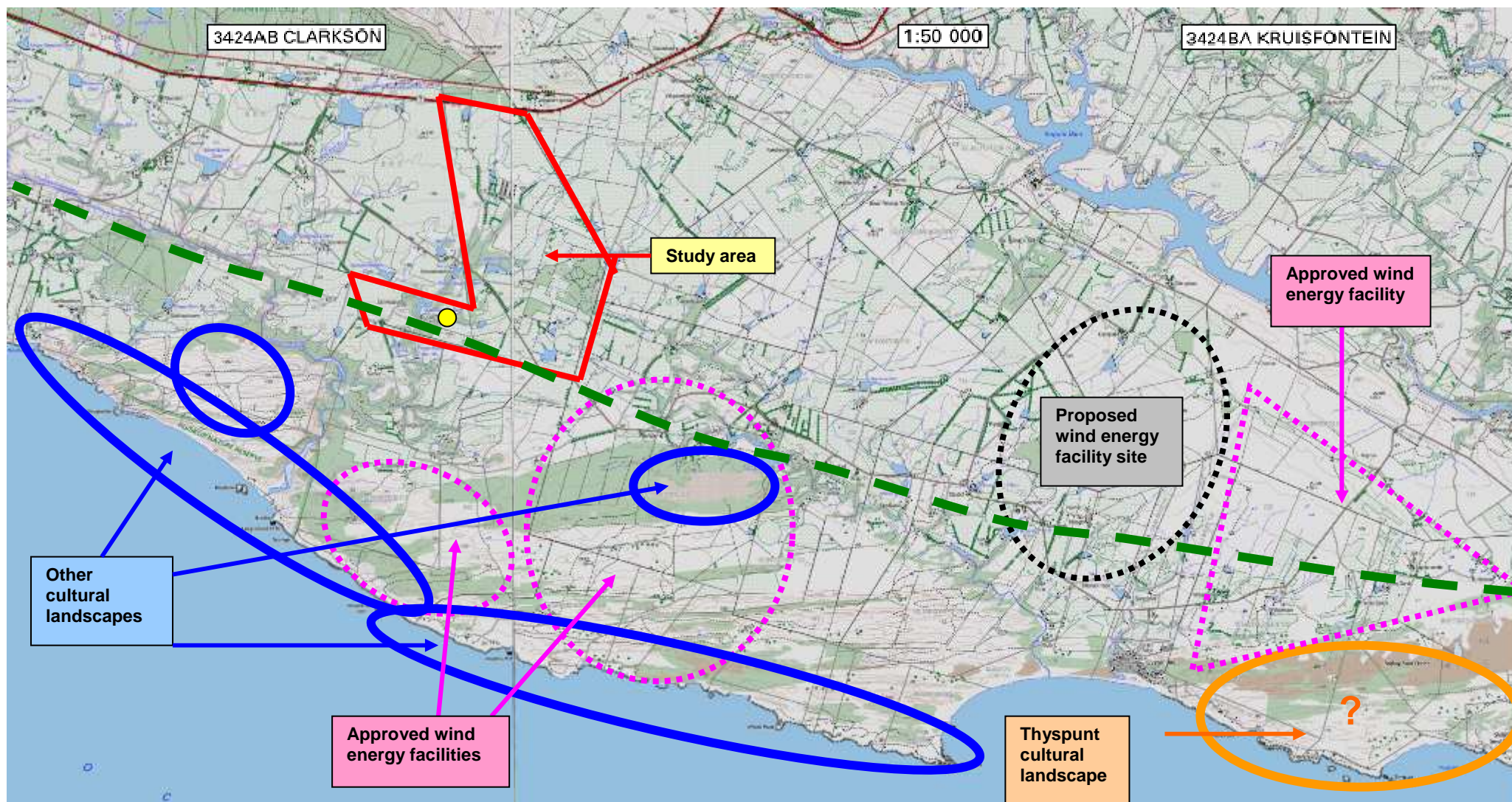


Map 2. Aerial images of the location of the development and the turbine positions mark by the yellow pegs and the blue dot marks the ESA stone tool site (maps courtesy of Savannah (Pty) Ltd).

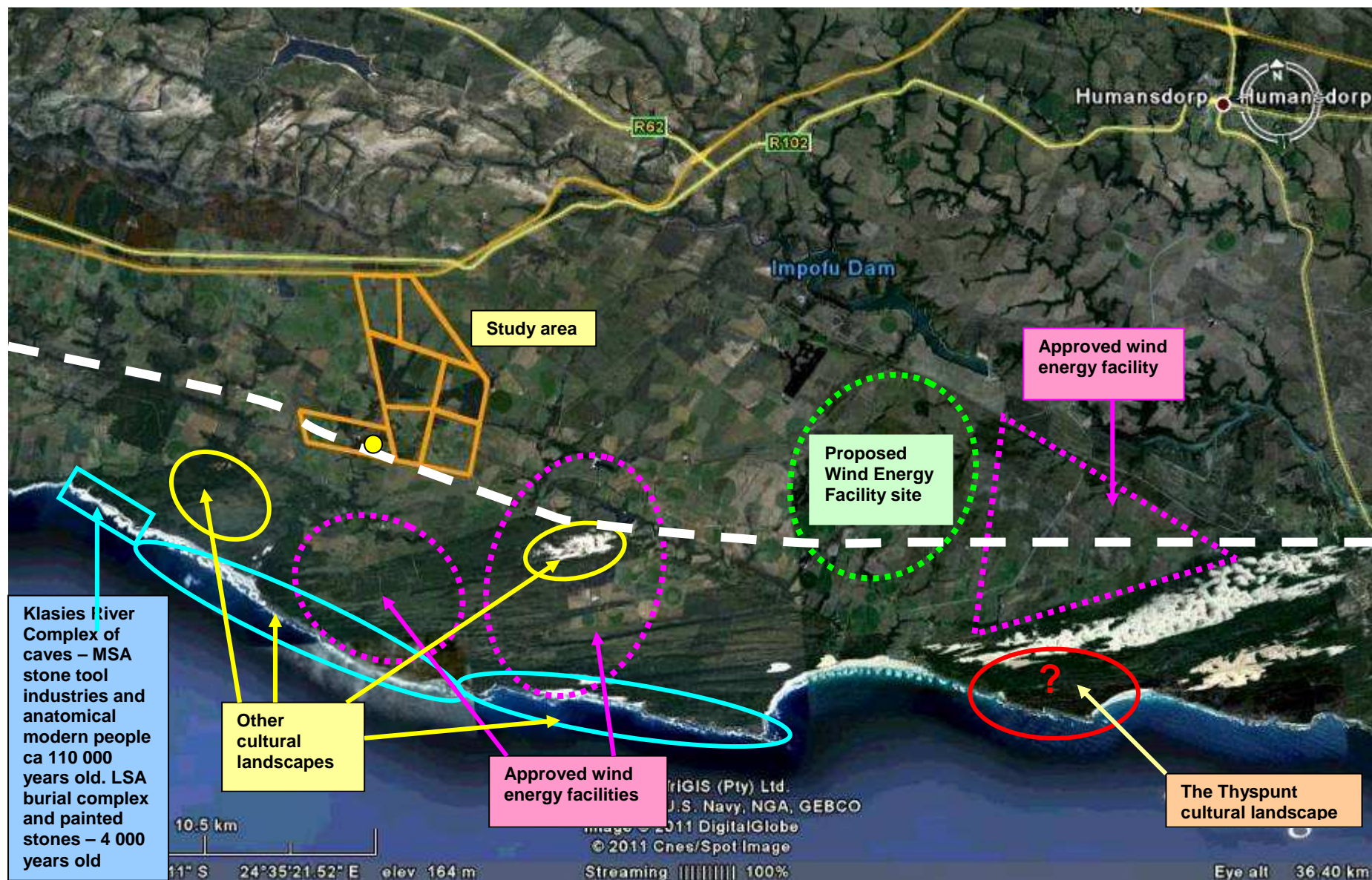


Map 3. 1:50 000 map indicating the location of the proposed development and the adjacent areas with archaeological sites. The yellow dot marks the ESA and MSA stone tool site.

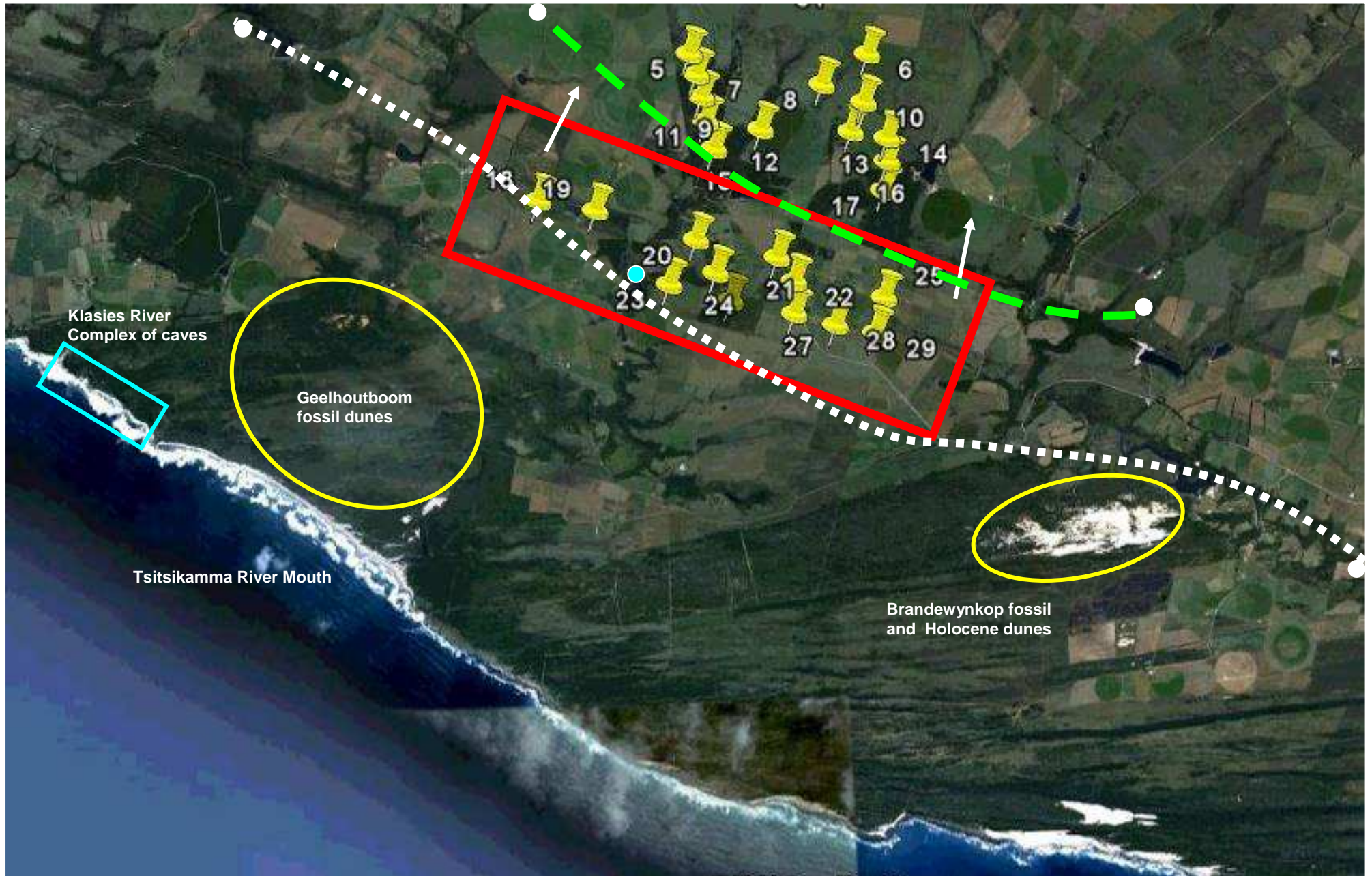
- The red lines outline the approximate size of the site/study area.
- The blue and orange lines outline concentrations of archaeological sites/materials.
- The pink broken lines outline the approximate location of other proposed wind energy facility approved for development (see Van Ryneveld 2010).
- The Brandewynkop dunes, also known as the Lange Fontein dunes (a small remnant of a larger system of the past) has been visited since the early 1980s by myself, the late Prof. Hilary Deacon and his students from the Department of archaeology at the University of Stellenbosch.
- The Albany Museum houses a large collection of stone tools from the Geelhoutboom dune area.



Map 4. 1:50 000 map indicating the location of the proposed Tsitsikamma Community Wind Energy Facility (red) in relation to other proposed wind energy facilities (pink and black), the Thyspunt cultural landscape (orange) and other adjacent archaeological landscapes (blue). The broken green line marks the proposed archaeological cultural landscape parallel to the coast.



Map 5. An aerial image indicating the location of the proposed Tsitsikamma Community Wind Energy Facility (orange) in relation to other proposed wind energy facilities (pink and green), the Thyspunt cultural landscape (red) and other adjacent potential archaeological landscapes (blue). The broken white line marks the proposed archaeological cultural landscape parallel to the coast.



Map 6. The proposed turbines, outline in red, must be moved further inland, to the green broken line to reduce the visual impact on the pre-colonial archaeological cultural landscape, which is outlined by the broken white line parallel to the coast).