CONSERVATION MANAGEMENT PLAN FOR THE PROTECTION OF HERITAGE RESOURCES AT BRANDEWYNKOP, HUMANSDORP MAGISTERIAL DISTRICT, EASTERN CAPE PROVINCE

Required under Section 38(8) of the National Heritage Resources Act (No. 25 of 1999).

SAHRA Case ID.: 188

Report for:

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EXECUTIVE SUMMARY

This Conservation Management Plan (CMP) arose after a wind farm proposal had impinged on the Brandewynkop Dune Field, which was seen as a potentially significant heritage resource. It is located on portions 2, 5, 11 and the remainder of Farm Langefontein 717. Although the turbines were removed to the southern edge of the exposed dune field, other activities are ongoing in the area and due to the high local significance of the dune field and surroundings it was decided that a CMP should still be compiled.

The area indicated for the CMP had never been subjected to a ground survey. A survey was thus carried out and it was found that a vast amount of Middle Stone Age (MSA) archaeology, in the form of stone artefact scatters, was present in eroding areas. In one instance a fossil tooth fragment was found associated with the artefacts. These scatters seemed to be associated with exposed palaeosols indicating occupation of the dune field during or immediately after wetter climatic periods. Due to the importance of MSA research on the south coast, these finds are considered to have high local significance. The dune field and surrounding area have also been identified as having a spiritual link to indigenous populations because of the latter's earlier use of the area for their daily activities. This link is also regarded as having high local significance. It is these two heritage aspects that are the primary focus of the CMP, although the possibility of other types of heritage occurring in the area remains open.

The CMP has been formulated following a simple approach in which much of the management will be carried out by people already on site – staff of the farms and of the Gibson Bay Wind Farm – and which will not require substantial budget. Periodic inspections of the site and surrounding fences will be required, along with recording such inspections in a log book and annual reporting to SAHRA and/or ECPHRA. The CMP should be updated every five years in conjunction with an archaeological site inspection in order to ensure its continued effectiveness. SAHRA or ECPHRA can at any time request an update to the CMP if a new threat to the integrity of the heritage resources in the CMP area is apparent.

Recommendations for conservation of the heritage resources were generated and from these a short set of CMP conditions was formulated. These conditions guided the list of tasks that need to be carried out in order to comply with the CMP.

Glossary

Archaeology: Remains resulting from human activity, which is in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures.

Coprolite: Fossilised faeces.

Cultural significance: means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.

Conservation: In relation to heritage resources, includes protection, maintenance, preservation and sustainable use of places or objects so as to safeguard their cultural significance.

Fossil: Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.

Handaxe: A bifacially flaked, pointed stone tool type typical of the Early Stone Age Acheulian Industry. It is also referred to as a large cutting tool.

Management: In relation to heritage resources, includes the conservation, presentation and improvement of a place protected in terms of the NHRA.

National Estate: The collective heritage assets of the Nation.

Palaeontology: Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

Palaeosol: An old soil horizon that has become buried by more recent sediments but is identifiable through its discolouration and/or texture.

Abbreviations

APHP: Association of Professional Heritage Practitioners

ASAPA: Association of Southern African Professional Archaeologists

CMP: Conservation Management Plan

CRM: Cultural Resources Management

ESA: Early Stone Age

ECO: Environmental Control Officer

EMP: Environmental Management Plan

GBWF: Gibson Bay Wind Farm

GKC: Gamtkwa Khoisan Council

GP: General Protection

GPS: Global Positioning System

HMP: Heritage Management Plan

HP: Howieson's Poort

LSA: Later Stone Age

MSA: Middle Stone Age

NEMA: National Environmental Management Act (No. 107 of 1998)

NHRA: National Heritage Resources Act (No. 25) of 1999

REDZ: Renewable Energy Development Zone

SAHRA: South African Heritage Resources Agency

SAHRIS: South African Heritage Resources Information System

SWOT: Strengths, Weaknesses, Opportunities and Threats.

Contents

1. INTRODUCTION

ASHA Consulting (Pty) Ltd was appointed by Gibson Bay Wind Farm (RF) (Pty) Ltd to compile a Conservation Management Plan (CMP) for the protection of all heritage resources present within a defined zone[1] in an area currently known as Brandewynkop[2]. This area is located on portions 2, 5, 11 and the remainder of Farm Langefontein 717 as shown in Table 1. These properties are parts of privately owned farms. The site lies in the Humansdorp Magisterial District, some 45 km southwest of Humansdorp and 10 km west-northwest of Oyster Bay, Eastern Cape Province (Figure 1). The centre of the study area is at S34° 07' 59" E24° 32' 47".

The need for the CMP arose during the approval process for the now constructed Gibson Bay Wind Farm (GBWF). Turbines had originally been proposed within this area but, once it emerged that it was sensitive, they were relocated. Nevertheless, in order to conserve and manage heritage resources within the area that was then known to be sensitive, the South African Heritage Resources Agency (SAHRA) requested that a CMP be compiled[3]. The request originated in SAHRA's conditions of approval for the Gibson Bay Wind Farm. Although no heritage sites were recorded in the relevant area (which was not yet surveyed at the time of compilation of the heritage impact assessment), the report did identify it as potentially sensitive (Van Ryneveld 2010). An area around the sensitive zone was also earmarked by SAHRA as an exclusion area in which no turbines could be built. Other activities are, however, ongoing in this area. Soon after this the Eastern Cape Provincial Heritage Resources Authority (ECPHRA) was constituted and, because the area was excluded from the development, the need for the CMP was rescinded by ECPHRA. Subsequently, during development of the GBWF, a fossil hyena lair was identified. As a result of this find and the fact that the Brandewynkop Dunes were known locally to contain archaeological materials, the Gamtkwa Khoisan Council (GKC) requested that the CMP still be compiled. In the interests of heritage management, this was taken up by GBWF.

The originally identified sensitive area was a many-sided polygon that included about 143 ha of land across four farm portions (Table 1). It was decided during the compilation of this CMP that a slightly larger area of c. 185 ha (Table 2) should be stipulated as the basis for the CMP (Figures 1 & 2). There are three reasons for this:

- A larger area indicates a more cautious approach;
- The southern boundary approximately follows a long dune ridge beyond which the archaeological sensitivity is expected to drop off significantly; and
- The shape has been simplified for easier recording.

Table 1: *Farm portions that include land within the exclusion and CMP areas.*

Farm portions forming part of exclusion area	Extent (ha)	Extent included within Sensitive Area 2	Extent within CMP area (ha)	GBWF turbines on farm portion
Farm 717/remainder	**702.98**	**c. 32.0**	**c. 50.8**	**Yes**
Farm 717/portion 1	988.24	-	-	No
Farm 717/portion 2	223.82	c. 37.9	c. 54.7	No

[1] This zone was originally referred to as "Sensitive Area A" in the HIA by Van Ryneveld (2010) and was identified only through its outline drawn onto maps.
[2] Historical sources show the name 'Lange Fontein' for the dune field.
[3] Red Cap Wind Energy Facility, Kouga Municipality, Eastern Cape. CaseID: 188. Final Comment dated 19/09/2012.

Farm 717/portion 5	60.90	c. 49.2	c. 53.2	No
Farm 717/portion 9	68.05	-	-	No
Farm 717/portion 11	**186.65**	**c. 23.9**	**c. 26.6**	**Yes**
Farm 722/portion 16	107.62	-	-	No
Farm 828	288.58	-	-	No
Total areas	-	c. 143.0	c. 185.3	-

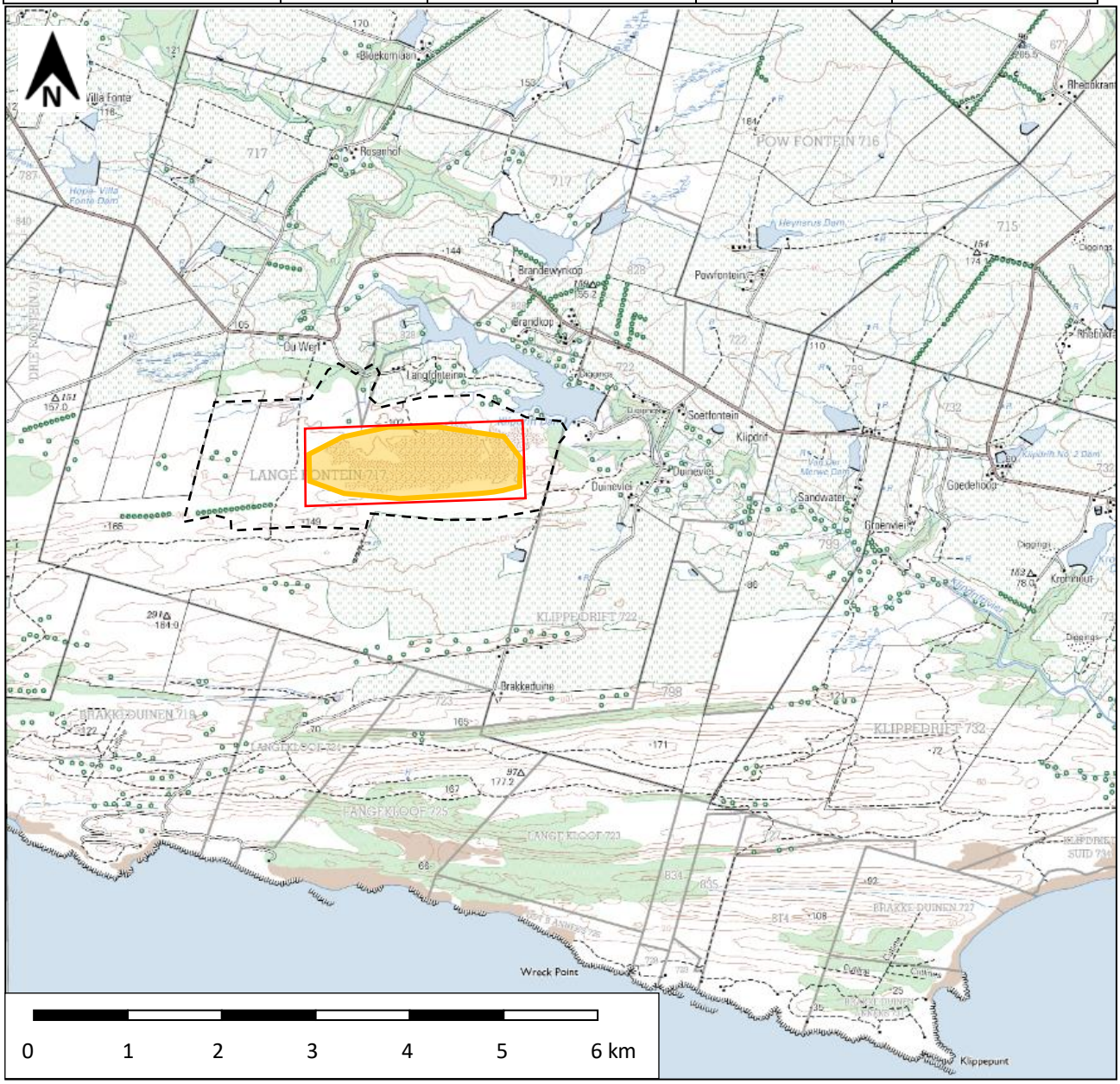

Figure 1: *Extract from 1:50 000 topographic maps 3424BA showing the location of the no-go area for turbines (black dashed polygon), the originally defined "Sensitive Area 2" (orange shaded polygon), and the CMP area as determined during compilation of the present report (red polygon). Source: Chief Directorate: National Geo-Spatial Information. Website: www.ngi.gov.za.*

Table 2: *Corner co-ordinates for the CMP area.*

Corner	Co-ordinates
Northwest	S34° 07' 48.0" E24° 32' 03.0"

Northeast	S34° 07’ 45.5” E24° 33’ 38.8”
Southeast	S34° 08’ 10.0” E24° 33’ 38.8”
Southwest	S34° 08’ 12.5” E24° 32’ 03.0”

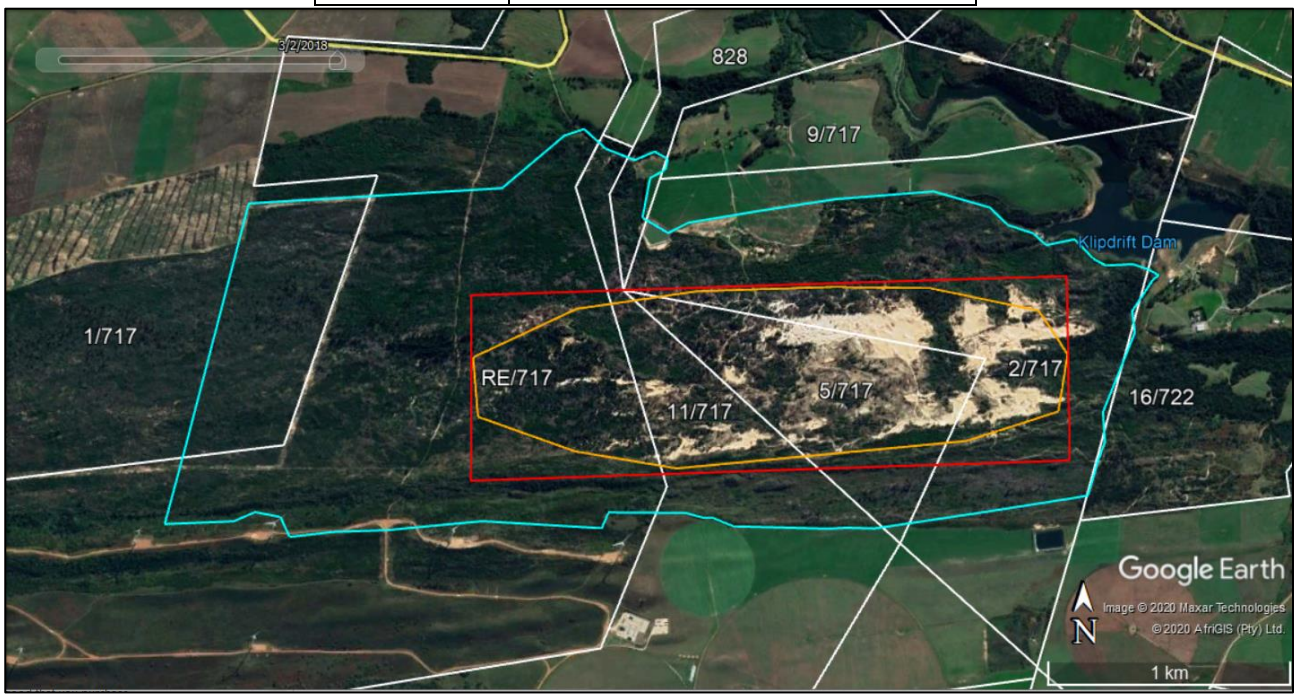

Figure 2: *Aerial view of the study area showing the turbine exclusion zone (turquoise), CMP Area (red) and the Sensitive Area 2 area (orange). The properties labelled inside the red polygon are part of the CMP area.*

1.1. Purpose and guiding principles of the heritage management plan

1.1.1. Objectives

- Identify the heritage resources present within the CMP area and determine their cultural significance;
- Identify management actions that will minimise and/or prevent negative impacts to any such heritage resources;
- Provide a framework for ensuring a balance between legislative requirements, sustainable socio-economic development and conservation of non-renewable heritage resources in the CMP area;
- Provide for the long term[4] protection of heritage resources in the CMP area through management, maintenance and conservation;
- Provide for long term[4] monitoring and reporting;
- Compile a CMP that allows landowners, heritage authorities and project managers to make sound decisions about heritage resources; and
- Develop conservation policies to be applied to preserve significance in the face of potential impact and change, and a strategy through which these policies will be implemented.

[4] For the lifetime of the GBWF (see Section 8.7).

1.1.2. Outcomes

- Clear guidelines on cost-effective maintenance and management of heritage resources in the CMP area;
- Enhanced long-term conservation of the heritage record in the CMP area;
- A balanced approach between local activities and heritage conservation; and
- Increased awareness of the heritage in the CMP area.

1.1.3. Guiding principles of the Conservation Management Plan

- *Minimum intervention*: Any action that could alter the heritage resource should be guided by the concept of achieving the required result through the least disturbance of the heritage resource. An intervention may only be undertaken once a permit to do so has been granted by the relevant heritage authority;
- *Reversibilit*y: Any conservation measures applied should be reversible;
- *An enabling environment:* The CMP should assist the landowners by enabling continued use of the area without unduly affecting the cultural significance of the heritage resources; and
- *Simplicity*: The CMP should have clear, simple requirements that are more likely to be followed through.

Throughout the preparation of the CMP the cautious approach has been adopted, changing only what is necessary to improve conservation management and ultimately the conservation of the heritage resource. The focus of the conservation management plan is on continuous low-key maintenance by the landowners who are best placed to care for the heritage resource for current and future generations. The landowners are the custodians and current users of the place in which the resource is located. They are responsible for ensuring that current activities do not affect the heritage resource negatively.

1.2. The authors

Dr Jayson Orton has an MA (UCT, 2004) and a D.Phil (Oxford, UK, 2013), both in archaeology, and has been conducting Heritage Impact Assessments and archaeological specialist studies in South Africa (primarily in the Western Cape and Northern Cape provinces) since 2004 (please see curriculum vitae included as Appendix 1). He has also conducted research on aspects of the Later Stone Age in these provinces and published widely on the topic. He is an accredited heritage practitioner with the Association of Professional Heritage Practitioners (APHP; Member #43) and also holds archaeological accreditation with the Association of Southern African Professional Archaeologists (ASAPA) CRM section (Member #233) as follows:

- Principal Investigator: Stone Age, Shell Middens & Grave Relocation; and
- Field Director: Colonial Period & Rock Art.

Ms. Cecilene Muller has an MA (UCT, 2002) in Archaeology and a B.Soc.Sci. (Hons) (UCT, 2009) in Social Development and has been active in the Heritage Management sector since 2004 (please see curriculum vitae included as Appendix 2). She has worked as a Researcher and Education Coordinator for the Clanwilliam Living Landscape Project focusing on Rock Art and facilitating greater awareness to all stakeholders in the area. From 2004 to 2014 she worked at the South African Heritage Resources Agency first as a Data Processor in the APM Unit digitising Archaeological

records, than as an Assistant Heritage Officer responsible for the issue of permits and dealing with illicit trafficking. Towards the end of 2006 she become Manager (grading and declaration) for national heritage sites (resources). She was also a participant and facilitator on the Africa 2009 programme for immovable heritage in Africa (heritage management planning and plans). Between 2015 and 2016 she was a South African Museums Association (SAMA) Council member and Western Cape Regional Chairperson of SAMA. She is currently a member of Heritage Western Cape's Archaeology, Palaeontology and Meteorites Committee and Impact Assessment Committee.

1.3. Declaration of independence

ASHA Consulting (Pty) Ltd and its consultants have no financial or other interest in the proposed development and will derive no benefits other than fair remuneration for consulting services provided.

2. HERITAGE LEGISLATION

The National Heritage Resources Act (NHRA) No. 25 of 1999 protects a variety of heritage resources as follows:

- Section 34: structures older than 60 years;
- Section 35: prehistoric and historical material (including ruins) more than 100 years old as well as military remains more than 75 years old, palaeontological material and meteorites;
- Section 36: graves and human remains older than 60 years and located outside of a formal cemetery administered by a local authority; and
- Section 37: public monuments and memorials.

Any of these resources occurring within the CMP area should be covered by the CMP. Following Section 2 of the NHRA, the definitions applicable to the above heritage resources are as follows:

- Structures: "any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith";
- Palaeontological material: "any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace";
- Archaeological material: a) "material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures"; b) "rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation"; c) "wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the Republic, as defined respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation"; and d) "features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found";

- Grave: “means a place of interment and includes the contents, headstone or other marker of such a place and any other structure on or associated with such place”; and
- Public monuments and memorials: “all monuments and memorials a) “erected on land belonging to any branch of central, provincial or local government, or on land belonging to any organisation funded by or established in terms of the legislation of such a branch of government”; or b) “which were paid for by public subscription, government funds, or a public-spirited or military organisation, and are on land belonging to any private individual.”

While landscapes with cultural significance do not have a dedicated Section in the NHRA, they are protected under the definition of the National Estate (Section 3). Section 3(2)(d) lists “landscapes and natural features of cultural significance” as part of the National Estate.

The definition of “development” as provided in the NHRA is also relevant to this CMP:

- Development: “means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of a heritage authority in any way result in a change to the nature, appearance or physical nature of a place, or influence its stability and future well-being, including—
  (a) construction, alteration, demolition, removal or change of use of a place or a structure at a place; (b) carrying out any works on or over or under a place; (c) subdivision or consolidation of land comprising, a place, including the structures or airspace of a place; (d) constructing or putting up for display signs or hoardings; (e) any change to the natural or existing condition or topography of land; and (f) any removal or destruction of trees, or removal of vegetation or topsoil.”

3. METHODS

This CMP has been prepared following the general guidelines stipulated by SAHRA (2014, 2017). However, further details have been added as required based on the specifics of this project.

3.1. Literature survey and information sources

The literature consulted included published material, unpublished commercial reports and online material, including reports sourced from the South African Heritage Resources Information System (SAHRIS). Especially important in this regard were the various heritage reports compiled during the impact assessment process for the development of the GBWF. The 1:50 000 map and historical aerial photographs were sourced from the Chief Directorate: National Geo-Spatial Information.

Various stakeholders were consulted informally prior to finalisation of the draft CMP in order to learn more about the area’s heritage and to develop a greater understanding of the values attached to the landscape and the heritage resources it holds.

3.2. Fieldwork

A low coverage survey of a far wider area was conducted by Van Ryneveld (2010) during the original impact assessment process for the wind farm. A subsequent survey for a power line (Nilssen 2014) and monitoring of the construction of the northern part of the wind farm (Nilssen 2016) have also taken place. None of this fieldwork took place within the boundary of the CMP area which

necessitated a dedicated survey being carried out to inform the development of the CMP. Four days (2-5 April 2019) were spent surveying the CMP area. During this time an attempt was made to expand the survey towards the west but due to impenetrable bush this was largely unsuccessful (Figure 3).

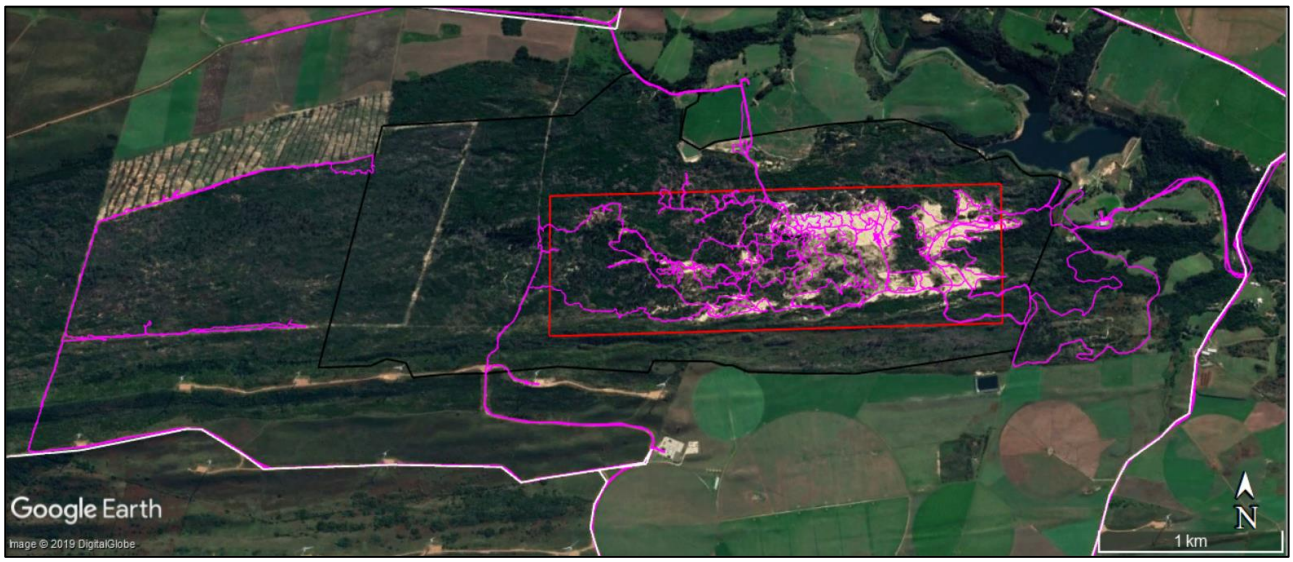

Figure 3: *Aerial view of the study area showing the survey tracks (purple lines) relative to the CMP area (red polygon).*

3.3. Grading

Section 7(1) of the National Heritage Resources Act (NHRA; No. 25 of 1999) provides for the grading of heritage resources into those of National (Grade I), Provincial (Grade II) and Local (Grade III) significance. Grading is intended to allow for the identification of the appropriate level of management for any given heritage resource. Grade I and II resources are intended to be managed by the national and provincial heritage resources authorities respectively, while Grade III resources would be managed by the relevant local planning authority. These bodies are responsible for grading, but anyone may make recommendations for grading.

It is intended under S.7(2) that the various provincial authorities formulate a system for the further detailed grading of heritage resources of local significance but this is generally yet to happen. SAHRA (2007) has formulated its own system[5] for use in provinces where it has commenting authority. In this system sites of high local significance are given Grade IIIA (with the implication that the site should be preserved in its entirety) and Grade IIIB (with the implication that part of the site could be mitigated and part preserved as appropriate) while sites of lesser significance are referred to as having 'General Protection' (GP) and rated as GP A (high/medium significance, requires mitigation), GP B (medium significance, requires recording) or GP C (low significance, requires no further action). Section 7 of the NHRA is further substantiated by Regulation 43 (Grading) published in Government Gazette No. 6820.

[5] The system is intended for use on archaeological and palaeontological sites only but will be appropriated to grade other heritage resources in this report.

3.4. Consultation

3.4.1. Informal consultation

During the process, meetings were held with the various relevant stakeholders in order to guide the process, both to obtain information and explain (to the landowners) the approximate process to be followed. These stakeholders and the discussions/meetings are listed in Table 3.

Table 3: *List of stakeholders consulted informally during the drafting of the CMP.*

Stakeholder	Discussions and meetings
Mr Sello Mokhanya (representing ECPHRA)	Telephone conversation 14 March 2019
Mr Kobus Reichert (representing the GKC)	Telephone conversation and various emails 27 March – 1 April 2019
Dr Peter Nilssen (construction monitoring archaeologist)	Meeting 1 April 2019
Mr Conrad Dreyer (landowner in CMP area)	Meetings 2 and 3 April 2019
Mr Choppie Linstrom (neighbouring landowner)	Meetings 3 and 4 April 2019
Mr Johan Linstrom (runs 4x4 trail)	Meetings 3 and 4 April 2019
Mr Arthur Loretz (runs 4x4 trail)	Meetings 3 and 4 April 2019
Mr Lance Blaine (Red Cap)	Telephone conversations and various emails throughout CMP preparation
Mr Jadon Schmidt (Red Cap)	Meeting 3 April 2019 and various emails throughout CMP preparation
Dr Alex Mackay (academic archaeologist)	Email discussion 6 June 2019
Mr Kobus Reichert (representing the GKC)	Meeting 17th March 2019
Alex Blackwood (academic archaeologist working on the south coast)	Conducted site visit on 17th March 2020 and provided feedback
Landowners	Meeting 17th March 2019

3.4.2. Formal Consultation

Once the area's heritage was well-understood, a draft CMP was compiled and made available to the landowners and client for review and comment. Feedback was incorporated into the report. The revised draft CMP was then provided to the GKC[6] for a two week commenting period. Once more, feedback was requested and then incorporated into the report. This version was then reviewed by the client with their feedback leading to further minor revisions. The report was then made available to the identified stakeholders for a minimum 30 day formal commenting period prior to finalisation. This commenting period was advertised in the Kouga Express and Our Times as well as through posters on the two most obvious access points to the dunefield. The formal consultation period ran from 15 July to 28 August 2020. Digital copies were available from www.asha-consulting.co.za and hard copies for consultation at Die Windmeul (Oyster Bay) and Oudebosch Farm Stall.

[6] While it is acknowledged that other indigenous groups do occur in the region, the GKC have specifically emphasized their spiritual connection to this area and their desire to see it conserved. Other groups were free to comment during the formal consultation.

3.5. Assumptions and limitations

The main limitation was the poor archaeological visibility over much of the surveyed area. Nevertheless, because a large number of occurrences were seen, it is assumed that they are representative of the rest of the CMP area and probably also of a wider area. Along with oral testimony, these data thus form the basis of our understanding of the heritage of the area.

4. THE CMP AREA

4.1. Context

The study area for the CMP is at the eastern end of an undeveloped west-east trending dune field. The dunes extend to the coast in the west, while a river marks their eastern extent just beyond the study area. The land to the north and south of the study area is intensely cultivated (cereal crops and grazing grass), while to the southwest the terrain is generally little disturbed but does host the GBWF. The landscape is distinctly rural in nature but the GBWF (on the southern boundary of the CMP area) and the Tsitsikamma Community Wind Farm (some 4.5 km to the northwest of the CMP area) and their associated power lines and substations do provide a new 'electrical layer' to the landscape. Another wind farm lies further away to the east. The site is not within a Renewable Energy Development Zone (REDZ). The village of Oyster Bay lies 19 km to the southeast of the CMP area, Humansdorp lies 45 km to the northeast and Clarkson is 22 km to the northwest.

4.2. Description

The Brandewynkop CMP area is within one of the series of dune fields that lie along the coastline between the mouths of the Klasies and Kromme Rivers to the west and east respectively. The dunes were once mobile (see Appendix 3) but through the course of the 20th century have largely been stabilised by invading alien vegetation. Deflated areas and patches of exposed hardpan preserve scatters of stone artefacts but where white aeolian sand dominates or where the surface is vegetated, artefacts are rare or usually absent. Figures 3 to 8 show views and features of the CMP area.

Figure 3: *View towards the north across the eroding and deflating part of the dune field in the north central part of the CMP area.*

Figure 4: *View towards the northeast across the eroding and deflating part of the dune field showing residual stacks of consolidated sand and patches of dark hardpan. These darker deposits are the archaeologically important areas. A 4x4 track is visible in the foreground.*

Figure 5: *Close up through a sediment stack at waypoint 1557 showing dark sand mantling lighter sand layers. These stacks are key to interpreting the past.*

Figure 6: *View eastwards along the north-eastern part of the dune field showing mobile sand dunes that are generally archaeologically sterile.*

Figure 7: *View of the eastern end of the dune field where steep grassy slopes lead into dense bush.*

Figure 8: *View towards the northeast from the south-western corner of the CMP area showing the dense bush in its western part.*

4.3. Present condition of the CMP area

The CMP area is currently undeveloped dune field. Part of it is comprised of the open, aeolian dunes, while the remainder is heavily infested with at least nine species of invasive alien vegetation. A 4x4 trail runs through the area largely following a single track (Figure 9). The exceptions are in areas of open, mobile sand dunes were drivers can test their skills on the steep sandy faces of the dunes. Small scale wood cutting also occurs and there is a proliferation of short tracks forming in the northern part of the CMP area (Figure 9). Livestock grazing does not occur in the dunes for reasons of environmental impact and fences exist to keep animals out.

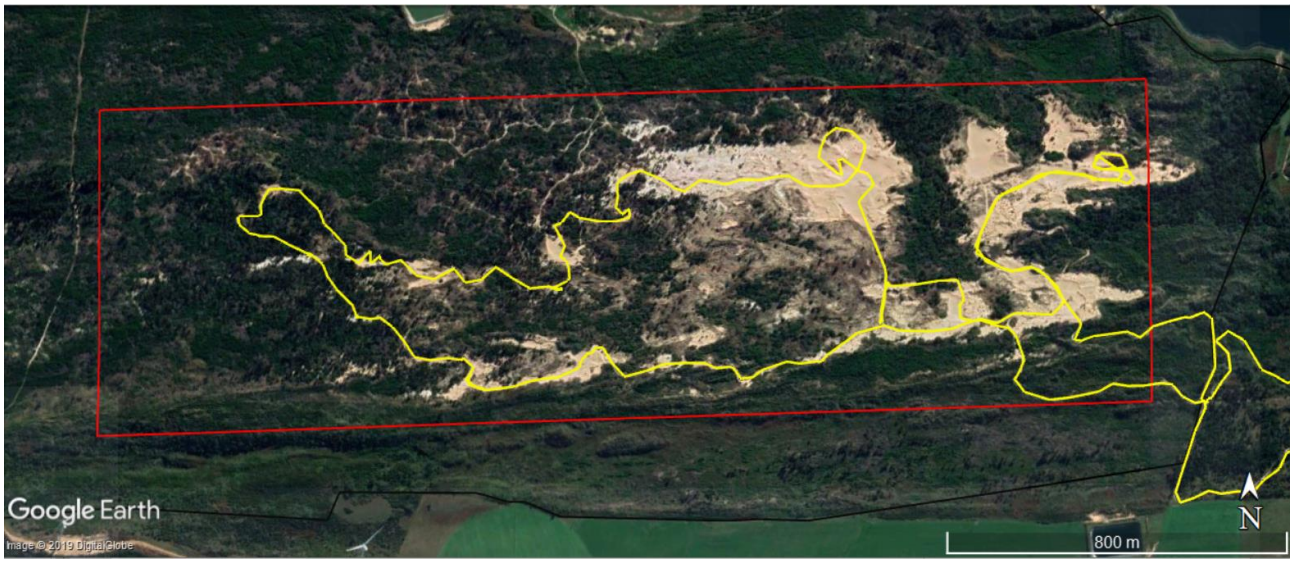

Figure 9: *Aerial view of the CMP area (red polygon) showing the route followed for the 4x4 trail (yellow).*

5. HERITAGE RESOURCES IN THE CMP AREA AND SURROUNDS

This section provides a very brief outline of what heritage resources occur and need to be considered in this CMP. The reader is directed to the archaeological desktop study and survey report in Appendix 4 for a detailed account of heritage resources recorded during the surface survey of the CMP area.

5.1. Archaeology

Stone artefacts are widespread in the most deflated parts of the dune field and CMP area. Their association with dark-coloured, humic palaeosols suggests that they may have been deposited during and immediately after one or more periods of wetter climate. The artefacts appear to date almost exclusively to the Middle Stone Age (MSA) with very minimal input of Early (ESA) and Later Stone Age (LSA) materials. The vast majority of scatters are of low to moderate heritage significance but a few areas had high concentrations of artefacts, including many diagnostic pieces, and these areas are accorded high heritage significance based on their scientific research value. Overall, the CMP area can be considered to be of high archaeological significance. Appendix 4 lists and describes the archaeological observations made within the CMP area.

5.2. Palaeontology

The original palaeontological assessment focused on the bedrock geology and considered the presence of fossils to be unlikely (De Klerk 2010). In his discussion of the Brandewynkop Dunes, Pether (see Appendix 5) notes that the lack of land snail shells suggests that the sand has been decalcified and that fossil bones are unlikely to occur. In support, the archaeological survey (see Appendix 4) found just a single fossil – a tooth fragment associated with stone artefacts.

It should be noted that a short distance to the south of the CMP area an accumulation of fossil bones was discovered in calcified dune deposits on the crest of a dune ridge during construction of the GBWF. It was sampled by Brink (n.d.) who considered the bones to have been collected by brown hyaenas and porcupines that occupied cavities within the aeolianite. The remaining fossiliferous deposits are protected within the GBWF.

5.3. Graves

While farm graveyards are known from the surrounding farms, no graves are known to occur in the sand dunes. It is possible that unmarked pre-colonial burials might occur in the dunes; a few have been found in the area in the past, but all seem to be coastal or near-coastal finds (Morris 1992). As far as can be determined, no burials have ever been found in the CMP area.

5.4. Historical resources

Only one historical artefact – a metal button – was seen in the dunes. It might relate to the historical occupation of the area or could be a trade item left behind by precolonial people during the last few hundred years. Other historical resources are likely to occur in the wider landscape and associated with the agricultural settlement of the area but seem to be absent from the CMP area.

5.5. Cultural landscapes and associations with intangible heritage

There are three aspects of concern here:

- The CMP area forms part of an aesthetically significant natural landscape. This part of South Africa's coastline is unusual for the large west-east trending dune ridges that characterise the dune fields of the area. Parts of these dune fields – generally those located furthest inland – have historically and probably also prehistorically been open, mobile dunes. During the 20th century these dunes have been progressively invaded and stabilised by alien invasive vegetation which has substantially altered their character. This change has been explored in the context of the Brandewynkop area in Appendix 3.
- The great density of archaeological resources in the dune field suggests that it should also be considered as an archaeological landscape. Following Orton (2016), it would be a Type 3 Precolonial Cultural Landscape in which a vast number of archaeological sites occur in close proximity to one another. The archaeology of the area is explored in Appendix 4.
- Although Van Ryneveld (2012) found "no intangible heritage resources or sites associated with oral history", the Gamtkwa Khoisan Council and its members have subsequently expressed the view that the wider area is a landscape with spiritual significance to them (intangible cultural heritage) and they thus must be seen to have a spiritual connection to the landscape. This connection is related to the past use of the landscape by their ancestors (e.g. for hunting, food and medicinal plant collection, livestock herding) and, because of this

use, they recognise all precolonial heritage resources in the landscape as part of their shared heritage. This spiritual association with the landscape is explored in Appendix 6.

5.6. Geological heritage

The Brandewynkop Dunes, through the cross sections formed by deflation and erosion, inform on the evolution of the local landscape to which human history and archaeology is tied. Pether (see Appendix 5) notes that the build-up of sand formed during drier climates when sand was sourced from the coast to the west but that the darker palaeosols are the product of periods of wetter climates. Similar stories are told by dune fields in other areas.

5.7. Botanical heritage

The strong juxtaposition of forest and dune landscapes is a special feature of the area. The forests and dunes are both aesthetically attractive with sections of both landscapes included in the local 4x4 trail. Both of these landscapes, but more so the dunes, are compromised and under continuing threat from the abundance of invasive alien vegetation[7] that has stabilised much of the dune field during the 20th century (see Appendix 3).

5.8. Statement of significance and provisional grading

In terms of Section 2(vi) of the NHRA, ''cultural significance'' means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.

The two most important aspects of heritage are undoubtedly as follows:

- The widespread MSA archaeological resources which can be assigned a high local significance for their scientific value (provisional Grade IIIA); and
- The spiritual association that the local San and Khoekhoen have with the broader landscape of which the Brandewynkop Dunes are a part. This association has high local significance for its spiritual value (Grade IIIA).

Overall the Brandewynkop Dunes are considered to have high local cultural significance and are thus worthy of conservation. The wider area of dune fields extending from Klasies River Mouth to St Francis Bay may be assigned high regional significance for the vast number of archaeological resources present and the spiritual significance of this landscape to the San and Khoekhoen people of the region. While the CMP area on its own is perhaps best seen as a Grade III heritage resource, it is but a representative sample of a wider landscape, perhaps extending inland to about 5 km from the shoreline, that can be accorded Grade II significance.

6. SWOT ANALYSIS

The analysis of Strengths, Weaknesses, Opportunities and Threats (SWOT; Table 4) explores issues related to the conservation, protection and management of heritage in the CMP area, bearing in mind the resources known from neighbouring areas. The SWOT analysis identifies issues requiring

[7] Port Jackson, Pine, Long-leaf wattle, Rooikrans, Myrtle, Black wattle, Blue gum, Hakea and Brambles were seen.

attention according to the strengths, weaknesses, opportunities and threats facing the heritage resources documented on site (see Appendix 4).

The SWOT analysis indicates that promising archaeological research opportunities exist in the area, underscoring the value of protecting the dune and capturing archaeological data. The need for continued funding to cover monitoring is a potential concern but much of the monitoring can be integrated with the daily functioning of the GBWF and existing 4x4 trail through the area. More importantly, a need exists to create greater awareness regarding the archaeological heritage occurring in dune areas.

***Table 4**: A SWOT analysis pertaining to the conservation and management of archaeological resources and places associated with intangible heritage in the CMP Area.*

STRENGTHS	**WEAKNESSES**
• Land owner are an existing support system. • Despite 4x4 trail, the site is quite well protected. • Site is easily accessible for research. • Good communication is possible (internally and externally). • Strong legislative context (permitting process, NHRA and Regulations).	• Archaeological resources can easily be missed by the untrained eye. • The dune environment is fragile and susceptible to damage/erosion. • Resources may be buried and their actual distribution on site is not known. • The area is infested with invasive alien vegetation. • Implementation of the CMP requires intermittent, but ongoing, financial input.
OPPORTUNITIES	**THREATS**
• Better preserved heritage resources may be present beneath the present surface. • Continued sustainable use of the CMP area may result in new finds being made. • Future surveys may record material not currently exposed and contribute to scientific research. • Future archaeological, palaeontological (possibly) and palaeo-environmental research opportunities exist. • Educating 4x4 guides and their clients regarding archaeology could lead to more heritage resources being identified. • Partnership opportunities – NGO's, farmers and private sector.	• Damage to stratigraphy by invasive alien vegetation roots. • Clearing of alien vegetation (for agriculture or firewood collection) can cause unintentional damage and destruction of heritage resources, especially by vehicles. • Although not currently a threat, grazing livestock can severely damage archaeological sites through trampling. • General public lack of awareness of heritage resources and their significance. • Climate change. • Land disputes.

7. RECOMMENDATIONS AND CONDITIONS

7.1. Recommendations: HIA

The HIA did not examine the CMP area but did note it as potentially sensitive (Van Ryneveld 2010). Because no turbines were placed within the dune field, no recommendations specifically pertaining to this area were made. The following more general recommendation was made by Van Ryneveld (2010:7) in connection with the CMP area (referred to by her as Area 2):

- On-site archaeological monitoring to assess surface and sub-surface sections is recommended at the start of construction in the vicinity of Area 1 (WTG 99, 123 and 124) and Area 2 (WTG 104, 105 and 112).

The monitoring was subsequently carried out and reported on by Nilssen (2016).

7.2. Recommendations: Current Survey

The survey carried out to inform the development of this CMP has enabled the formulation of more specific recommendations regarding the dune field, its associated archaeology and its further management. These are as follows:

- Clear alien vegetation in the CMP area and surrounds so as to reduce fire risk. Whenever this is desirable or if the opportunity to have this done arises, then it must be encouraged but must be done with the permission of the heritage authorities (ECPHRA or SAHRA) and landowners. The service provider or workers doing the clearing must be briefed and trained by an archaeologist or by a representative of the GBWF using a method statement compiled by an archaeologist specifically for the CMP area. This will be to enable the activity to occur with minimal damage to the archaeology and cultural landscape. Such notes must include (as appropriate):
    - Impacts to the exposed palaeosols (dark areas of substrate) and associated archaeology should be minimised;
    - No vehicles should drive over any exposed palaeosols;
    - Trees to be cut off as low as possible but roots must not be pulled out (they can be poisoned);
    - All access to the CMP area and surrounds must be only with the permission of the relevant land owners;
- Expansion of agricultural activities or livestock grazing into the CMP area should not be allowed;
- Expansion of agricultural activities into the entire dune field in general is seen as undesirable and should be discouraged. Agriculture would, in any event, have to be subjected to a full impact assessment process as required under the National Environmental Management Act (NEMA) and/or the NHRA;
- The CMP area should be enclosed by a regular farm fence to prevent access by grazing livestock. The fence may enclose a larger area but any parts of the CMP area not already included should be fenced;
- Fencing around the CMP area and adjacent land should be regularly inspected to ensure its integrity and signs at formal access points (i.e. gates) should be installed. The signs should indicate that:
    - Land beyond the gate is a heritage site managed under a CMP;
    - Removal of any archaeological objects or sand is forbidden;
    - Littering is forbidden; and
    - Vehicles should remain on designated tracks;
- No machinery or vehicles will be allowed within the CMP area with the exception of guided 4X4 vehicles using the existing 4x4 tracks and vehicles associated with alien vegetation clearing. The latter must have clearance from the heritage authorities to access the relevant areas;
- All 4x4 activity must remain on the established tracks and no driving may occur on the exposed palaeosols. No new tracks may be opened unless the route is examined and marked out on site in the company of an archaeologist. New routes may not under any circumstances impact on the palaeosols;

- If any dark palaeosol becomes visible in an existing 4x4 track then that track must be closed and, in consultation with an archaeologist, moved elsewhere to avoid the palaeosol. This is to preserve the older landscape for as long as possible (recognising, of course, that it is naturally eroding with time and exposure);
- In the event of a track being so abandoned, the old alignment must not be artificially rehabilitated but must be closed off with small signs at appropriate locations to direct drivers onto the new track;
- It is recognised that the present 4x4 tracks do have a minimal impact on archaeological resources but, on the whole, it is better to keep the tracks where they are rather than adding more tracks to the dune landscape;
- No littering is to occur in the dunes. The survey revealed litter (including toilet paper) in a number of places and stricter control of guests on the 4x4 trail is needed; "Leave only tire/foot prints, take only photographs";
- Litter must be collected when seen and removed from the dunes by guides and/or farm workers;
- Academic research with the necessary heritage permit and landowner permission should be allowed and encouraged in the CMP area and surrounds as it will increase knowledge and thus the cultural significance of the Brandewynkop dunes and surrounding area;
- An archaeologist should visit the site at least every five years to check any new deflation (whether natural or through 4x4 activities), record any new archaeological exposures, and to record the general condition of the CMP area. In their reporting (which is best included in the updated CMP), the archaeologist should comment on:
    - the suitability of the existing CMP boundary and any changes that may be required as a result of new archaeologically sensitive areas being identified (these may be through, for example, expanding the 4x4 trail, cultivation or grazing in the dunes, or expansion of the GBWF into the dunes);
    - any impacts arising from the 4x4 trail as it exists at the time of each visit;
    - any alien vegetation clearing that has occurred and any new exposure of the natural dune field (satellite imagery will be helpful here);
- If any new areas of palaeosol become exposed between archaeological site visits, they should be reported to an archaeologist (with photographs and location data) who will decide if any ground survey or other actions are required;
- Brief annual reports should be provided to ECPHRA to demonstrate compliance; and
- The conservation management plan should be updated as required (e.g. after any changes to the site), but at least every five years in conjunction with a site visit.

7.3. CMP conditions

The above recommendations should be followed on a day-to-day basis in the broader area, but the conditions that need to be formally enforced under this management plan within the CMP area are as follows:

- Alien vegetation clearing is to be done with the permission of the heritage authorities and under the guidance of an archaeologist and a botanical specialist;
- No agricultural activities or grazing may occur within the CMP area;
- The CMP area must be enclosed by a fence;
- Signage announcing the CMP area and appropriate behaviour therein must be placed at every access point;

- No general public access is to be allowed;
- Indigenous groups with spiritual ties to the land must be allowed access to the area in special circumstances (e.g. for a reburial ceremony) but this must be negotiated with the landowner and any conditions imposed (e.g. group size) must be respected;
- All 4x4 activity must remain on the existing tracks;
- Public access to the 4x4 trail without a guide is not allowed;
- If a new 4x4 track is opened for any reason, the route must be examined and marked out on site in the presence of a qualified archaeologist with experience pertaining to Stone Age and Coastal Archaeology; the old track must not be rehabilitated;
- Academic research in the CMP area must not be unreasonably denied by the land owners when/if necessary;
- Academic researchers should consult local indigenous interest groups aspart of theor permit application process;
- Annual reports should be provided to ECPHRA by the management committee; and
- A site inspection must be carried out at least every five years (or more frequently if required) and the CMP updated as necessary.

8. MANAGEMENT ACTIONS AND TIMEFRAMES

8.1. Management Committee

A management committee must be established as soon as this CMP is approved and its membership and contact details communicated to ECPHRA and SAHRA. The committee will oversee the management of the CMP area and should have annual meetings. It is entirely acceptable that these meetings take the form of email discussions. This committee should include at least representatives of:

- Each landowner in the CMP area;
- GBWF and/or EGP (to take overall responsibility); and
- GKC.

Changes in membership should be communicated via the annual reports. It is not required to include an archaeologist but the committee should request the advice of an archaeologist whenever this is deemed necessary (e.g. if an impact is noted or a situation arises that may lead to a future impact). Contact details of archaeologists are included in the stakeholder database (Appendix 7). The management committee will be responsible for ensuring that the CMP area remains adequately protected and will be required to submit brief reports to ECPHRA and/or SAHRA annually[8]. These reports should include mention of the state of conservation and any newly identified potential risks to the integrity of CMP area as well as any actions taken to comply with the CMP (e.g. fence repairs, consulting with archaeologist for advice, etc.). Photographs should be included as required. Should any significant threats to the heritage resource be discovered at any pint, then this should be communicated to ECPHRA and/or SAHRA immediately rather than in the next annual report.

[8] These would be uploaded to SAHRIS.

8.2. Fencing and signage

A fence must enclose the entire CMP area but does not need to follow the CMP area boundary; it may be larger as is convenient. It should be a farm-style fence in order to minimise ground disturbance, allow small animal movement and fit in with the existing cultural landscape but must be sturdy. Existing fences will likely already surround the relevant area. The fence must be maintained to ensure that grazing livestock cannot enter the CMP area so that trampling is avoided. All gates should be kept locked and the key held by the farm owner or manager.

Signage indicating the presence of the CMP area must be placed at all access gates through the fence, whether on foot paths or vehicle tracks, and should indicate that littering is forbidden and that vehicles must remain on designated tracks. The primary functions of the fence will be to keep grazing livestock out of the area and to identify the site via the signage.

8.2.1. Minimum requirements for inspections and maintenance

- The fence must be inspected at appropriate intervals, but at least three times per year, in order to check on the integrity of the fence and enclosed area;
- A log book indicating the inspection dates should be held by the management committee and completed after each inspection (this applies to both fence and other inspections). It should note:
    - The date(s) of the inspection;
    - Who carried out the inspection; and
    - Any remarks regarding the condition of the fence and signage;
- Any repairs that become necessary must be effected as soon as possible and recorded in the log book; and
- A copy of the log book entries for each year should be enclosed in the management committee's annual reports.

8.3. Curation of archaeological or palaeontological material

If archaeological material is collected from the CMP area as part of academic research or in mitigation of other activities, such collection must be done under a heritage permit from ECPHRA or SAHRA. Any material collected must be stored and curated at an approved repository and all future collections must be stored at the same facility[9]. Fragmentation of the collection through storage in multiple facilities will diminished research value and add unnecessary administration.

8.4. Monitoring

8.4.1. Archaeological monitoring

It is essential that continuous monitoring of the CMP Area occurs because the area is archaeologically sensitive and environmentally fragile. The land owners and 4x4 trail guides will conduct the bulk of the monitoring. Any potentially interesting finds should be left in place and can be photographed for email to an archaeologist if necessary. GPS co-ordinates should be taken if possible and supplied with the photographs. The archaeologist can then advise on whether any

[9] The Albany Museum in Grahamstown is the currently recognised official repository for Eastern Cape.

further actions might be required (i.e. avoidance of the area, or, if resources are under imminent threat, collection under a permit issued by the heritage authorities. It is important that no materials are moved from the place they were found. There is no stipulated frequency for such monitoring since the landscape is fairly stable and the most probable source of impacts is likely to be the 4x4 trail which will, naturally, be inspected every time it is used. Professional archaeological inspections should be carried out at least every five years in connection with the updating of the management plan, but more frequently if a specific need arises. Findings and conclusions of this site visit can be included in the updated CMP via an update to Appendix 4; this will ensure that all archaeological data collected for the site remains together.

8.4.2. Environmental monitoring of the CMP area

The GBWF environmental officer or another designated representative should, in conjunction with their periodic inspections of the wind farm site, inspect the sand dune area to identify any environmental threats that might, in turn, threaten the integrity of the heritage resource. This inspection does not need to be comprehensive but merely a general observation of the area and its environmental characteristics from suitable observation points (the tall dune along the northern edge of the GBWF is a useful vantage point). Visits into the CMP area may be required to verify any potentially significant observations. Invading alien vegetation, illegal activities (e.g. small-scale sand mining) and any other obvious changes to the environment should be noted. All inspections should be recorded in the logbook (see Section 8.2.1) and communicated to the management committee such that they can be listed in the annual report.

8.4.3. Staff training

A short document describing how to identify potentially sensitive materials and areas should be compiled and made available to anyone working in the CMP area. Physical training of staff and landowners in the basic identification of archaeological materials may also be needed. It is not deemed compulsory at this point, but if required in the future then it should be facilitated by an appropriate professional archaeologist.

8.5. Reporting

Assuming no significant issues arise, reporting in terms of this CMP should be undertaken as detailed here; this is the responsibility of the management committee. Reporting is required to ensure and evaluate compliance with the CMP and to evaluate its effectiveness in terms of conservation management. Reports can take the form of a letter listing, amongst other things and as appropriate, the following:

- Copy of the relevant log book pages showing all inspections (fence and general environment) conducted since the previous report;
- Although inspections carried out through use of the 4x4 trail do not need to be specifically itemised, a note regarding any pertinent observations must be included in the report;
- Any archaeological observations made;
- Any actions taken under the CMP must be described (e.g. fence inspections, fence repairs, alien vegetation clearance)
- Actions still to be taken and the expected date of completion of such actions;
- Photographs in support of any of the above items should be included wherever possible;

- If necessary, details of any correspondence with an archaeologist regarding plans for resolution of any issues that have arisen in the CMP area; and
- Any changes in membership of the management committee.

If any significant issues arise that might threaten the integrity of the heritage resource and/or the CMP area then a report should be submitted immediately to facilitate resolution rather than awaiting the next annual report. Brief discussion with an archaeologist prior to submission of the report could hasten the process of resolution.

The reports should include any items that are new since submission of the previous report and must be submitted to ECPHRA and/or SAHRA via upload to the project case on SAHRIS.

In addition to the above requirements, and in the event that any on-site specialist intervention becomes necessary, more detailed reports would need to be submitted by the consulting archaeologist in terms of the standard permitting procedure under the NHRA.

8.6. Tasks and budget

Budget for tasks related to the implementation of the management plan, where needed, will be provided by the GBWF. Once the CMP is operational, many tasks would be incorporated within the daily or monthly schedule of jobs done by existing staff (e.g. 4x4 guides, farm managers and staff, GBWF environmental officer) and may not require a dedicated budget. However, a budget for maintenance and monitoring must be compiled and approved by the management committee before the start of each financial year. Note that, although an official site visit and CMP update is only required once every five years, the annual budget should make allowance for the possibility of an ad hoc archaeological visit in case such becomes necessary.

Table 2 indicates the tasks that will need to be carried out. Some will not require budget (they will be done during the daily activities of relevant personnel) but others must be budgeted for:

Table 2: *Budgeting requirements for the implementation of the CMP.*

Task	Incorporated in daily jobs	Budget required	Suggested responsibility	Frequency
Erection of new fences (if required)		X	GBWF/EGP	Once off
CMP signage for access points		X	GBWF/EGP	Once off
Fence inspections	X		Land owners	As required
Fence repairs	X		Land owners	As required
Litter collection	X		Land owners	As required
Archaeological brief for alien vegetation clearing teams		X	GBWF/land owner	As required
Assessment of changes to 4x4 trail and any associated signage		X	4x4 Trail operator	As required
Annual reporting	X		GBWF/EGP	Once a year
Archaeological site inspections and updates to the CMP		X	GBWF/EGP	Once every five years or as required

Note that, for convenience, a list of tasks and timeframes for their implementation has been included as Appendix 8 at the very end of this report.

8.7. Decommissioning of the facility

The provisions of this CMP, and any updated versions, should continue to apply throughout the lifetime of the GBWF. It is impossible to predict what the economic, environmental or social situations would be like in the area at the time of such decommissioning, which means that no formal recommendation on the future of the CMP area at that time can be made. Should the GBWF be decommissioned, then it is suggested that a discussion be held between the heritage authorities and land owners to determine the future of the Brandewynkop Dune field. This discussion will need to consider any new potential threats to the site that may have arisen, any possibilities for future development in the area and the preservation status of the heritage resources in the CMP area. Logical outcomes of such a discussion could be continuation of the CMP under a new management committee or declaration of the relevant area as a Provincial Heritage Site.

8.8. Review and update of the Conservation Management Plan

The CMP must be reviewed and updated at least every five years. This is to ensure that its provisions remain appropriate to the protection of the site. It may be necessary to include new actions based on new research or to protect the site from a newly identified threat. Such an update may also be requested by ECPHRA or SAHRA at any point in time if:

- During the course of monitoring and reporting it becomes apparent that the CMP is not effective enough; or
- A new threat requires immediate intervention to protect the site.

Because of the fragility of the context in which the archaeological materials occur, a site visit will be required as part of the review and update process. This would be mainly to determine if there has been any physical degradation of the CMP area caused by activities on site. The inspection does not need to be a comprehensive survey and it is envisaged that a single day site visit would provide all the information required.

8.9. Heritage Management Framework

8.9.1. Potential future development

Heritage Management in relation to the management and conservation of the CMP area will be governed by the NHRA and the National Environmental Management Act (Act 107 of 1998) together with recommendations from the management committee, ECPHRA and SAHRA. Any new development (as defined in the NHRA – see Section 2 above) would need to follow the regulated impact assessment process in terms of S.38 (1) or S.38 (8) of the NHRA as appropriate. If an action – other than those contemplated by this CMP – that may affect the CMP area is proposed and that does not trigger S.38 then a permit application in terms of S.35 of the NHRA should be submitted to ECPHRA and SAHRA for approval.

8.9.2. Research and visitors

Academic research on site should be encouraged as this will contribute to and enhance the cultural significance of the CMP Area and the broader cultural landscape. Research will require the permission of the land owner and management committee and any intrusive actions or sampling

should be conducted under a research permit issued by SAHRA in terms of S.35 of the NHRA. Apart from the 4x4 clients who are restricted to the existing trail, it is highly unlikely that the site will be open to the general public or non-academic visitors in the near future. Should this ever become desirable, however, then a visitor management section would need to be added to this CMP that deals with the relevant proposal as necessary.

9. CONCLUSIONS

Recommendations stemming from the original heritage impact assessment for the GBWF have already served to identify and mitigate potential impacts to the archaeology and significance of the CMP area in the Brandewynkop dune field. The area has been protected from development but other activities still occur within its boundary. The CMP is intended to manage the site, its specific heritage resources, and any potential threats to them. The CMP has been compiled to have a simple management, monitoring and reporting process that is easily implementable using existing personnel doing their existing jobs. This is to make compliance more easily achievable. In this way it is envisaged that the cultural significance of the Brandewynkop dune field will be retained and even enhanced if new information comes to light is professionally captured during management activities.

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APPENDIX 1 – Curriculum Vitae of Jayson David John Orton

Curriculum Vitae

Jayson David John Orton

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Driver's License: Code 08
Marital Status: Married to Carol Orton
Languages spoken: English and Afrikaans

Education:

SA College High School	Matric	1994
University of Cape Town	B.A. (Archaeology, Environmental & Geographical Science)	1997
University of Cape Town	B.A. (Honours) (Archaeology)*	1998
University of Cape Town	M.A. (Archaeology)	2004
University of Oxford	D.Phil. (Archaeology)	2013

*Frank Schweitzer memorial book prize for an outstanding student and the degree in the First Class.

Employment History:

Spatial Archaeology Research Unit, UCT	Research assistant	Jan 1996 – Dec 1998
Department of Archaeology, UCT	Field archaeologist	Jan 1998 – Dec 1998
UCT Archaeology Contracts Office	Field archaeologist	Jan 1999 – May 2004
UCT Archaeology Contracts Office	Heritage & archaeological consultant	Jun 2004 – May 2012
School of Archaeology, University of Oxford	Undergraduate Tutor	Oct 2008 – Dec 2008
ACO Associates cc	Associate, Heritage & archaeological consultant	Jan 2011 – Dec 2013
ASHA Consulting (Pty) Ltd	Director, Heritage & archaeological consultant	Jan 2014 –

Professional Accreditation:

Association of Southern African Professional Archaeologists (ASAPA) membership number: 233
CRM Section member with the following accreditation:

- Principal Investigator: Coastal shell middens (awarded 2007)
  Stone Age archaeology (awarded 2007)
  Grave relocation (awarded 2014)
- Field Director: Rock art (awarded 2007)
  Colonial period archaeology (awarded 2007)

Association of Professional Heritage Practitioners (APHP) membership number: 43

- Accredited Professional Heritage Practitioner

- ***Memberships and affiliations:***

South African Archaeological Society Council member 2004 – 2016

Assoc. Southern African Professional Archaeologists (ASAPA) member	2006 –
UCT Department of Archaeology Research Associate	2013 –
Heritage Western Cape APM Committee member	2013 –
UNISA Department of Archaeology and Anthropology Research Fellow	2014 –
Fish Hoek Valley Historical Association	2014 –
Kalk Bay Historical Association	2016 –
Association of Professional Heritage Practitioners member	2016 –

Fieldwork and project experience:

Extensive fieldwork and experience as both Field Director and Principle Investigator throughout the Western and Northern Cape, and also in the western parts of the Free State and Eastern Cape as follows:

Feasibility studies:

- Heritage feasibility studies examining all aspects of heritage from the desktop

Phase 1 surveys and impact assessments:

- Project types
  - Notification of Intent to Develop applications (for Heritage Western Cape)
  - Desktop-based Letter of Exemption (for the South African Heritage Resources Agency)
  - Heritage Impact Assessments (largely in the Environmental Impact Assessment or Basic Assessment context under NEMA and Section 38(8) of the NHRA, but also self-standing assessments under Section 38(1) of the NHRA)
  - Archaeological specialist studies
  - Phase 1 archaeological test excavations in historical and prehistoric sites
  - Archaeological research projects
- Development types
  - Mining and borrow pits
  - Roads (new and upgrades)
  - Residential, commercial and industrial development
  - Dams and pipe lines
  - Power lines and substations
  - Renewable energy facilities (wind energy, solar energy and hydro-electric facilities)

Phase 2 mitigation and research excavations:

- ESA open sites
  - Duinefontein, Gouda, Namaqualand
- MSA rock shelters
  - Fish Hoek, Yzerfontein, Cederberg, Namaqualand
- MSA open sites
  - Swartland, Bushmanland, Namaqualand
- LSA rock shelters
  - Cederberg, Namaqualand, Bushmanland
- LSA open sites (inland)
  - Swartland, Franschhoek, Namaqualand, Bushmanland
- LSA coastal shell middens
  - Melkbosstrand, Yzerfontein, Saldanha Bay, Paternoster, Dwarskersbos, Infanta, Knysna, Namaqualand
- LSA burials
  - Melkbosstrand, Saldanha Bay, Namaqualand, Knysna
- Historical sites
  - Franschhoek (farmstead and well), Waterfront (fort, dump and well), Noordhoek (cottage), variety of small excavations in central Cape Town and surrounding suburbs
- Historic burial grounds
  - Green Point (Prestwich Street), V&A Waterfront (Marina Residential), Paarl

Awards:

Western Cape Government Cultural Affairs Awards 2015/2016: Best Heritage Project.

APPENDIX 2: – Curriculum Vitae of Cecilene L. B. Muller

CURRICULUM VITAE
CECILENE LI-ZAAN BRAAF MULLER
MOBILE: (+27) 722528950 **EMAIL:** loggomuller@gmail.com/lizaanbraafcm@yahoo.co.uk
Linkedin URL: https://za.linkedin.com/in/cecilene-lizaan-braaf-muller-261a3348

PERSONAL INFORMATION

Date of Birth : 30 October 1972 **I.D. No** : 7210300214085
Nationality : South African **Driver's License:** Code 08
Languages : Afrikaans (Excellent), English (Excellent), French (Basic) and IsiXhosa (Basic)

WORK EXPERIENCE

CLANWILLIAM LIVING LANDSCAPE PROJECT: ARCHAEOLOGY DEPT. (UCT).

Position: Researcher and Education Coordinator (Jan. 2002-Dec. 2003).

SOUTH AFRICAN HERITAGE RESOURCES AGENCY (SAHRA)

1. **Position**: Data Processor and Digitizer (Mar. 2004-Jun. 2005)-APM Unit
2. **Position**: Assistant Heritage Objects Officer (Jul. 2005-Oct.2006)-HO Unit
3. **Position**: Grading and Declarations Manager (Nov. 2006-Jan. 2014)-G&D Unit
4. **Position**: Project Manager: External Funding (Nov 2012-Nov 2013)

AFRICA 2009 (ICCROM, NORAD, SIDA)

Position1: *Facilitator for Africa 2009 course.*

Position2: *Guest Editor (2008)*

FIFA: CAPE TOWN STADIUM, 2010

Position*: Volunteer Manager (Jun.-Jul.2010)-*

SOUTH AFRICAN MUSEUMS ASSOCIATION-WESTERN CAPE REGION

Position: Chairperson (Volunteer Jan. 2016-Feb. 2017)

HERITAGE WESTERN CAPE

Position: Committee member (Dec. 2016-Current).

[A]Archaeology, Palaeontology and Meteorites Committee and [B]Impact Assessment Committee.

EDUCATION

Phoenix Senior Secondary- Manenberg **Jan. 1987-Jan. 1991**

University of Cape Town

DEGREE	SUBJECT/S	YEARS
Honours in Social Policy and Management (BSOCSC).	Development Studies, Social Research, Management and Program Planning	2008-2009
Master of Arts (Archaeology)	Research Dissertation: Doing a carbon and nitrogen isotope analysis of cultural and skeletal material from Nelson Bay Cave and Matjies River Rock Shelter.	1999-2002
BA of Arts (Honours)	Dissertation: "*Sutherlandia: An ethnobotany and pharmacological study in Clanwilliam".*	1998
Bachelor of Social Science (BSOCSC)	Social Work and Industrial Sociology	1993-1996

	Community Profiling: Manenberg, Community, Group Work, Carehaven, Centre for Battered women in Bridgetown. Medical Social Work: Ophthalmology Unit, Groote Schuur Hospital, Community Work-Child Welfare-Hout Bay. Anti-gangsterism project. 1993: The Dean's Merit award-St. Ledger Prize for best student	

SKILLS

*Research, *Mapping and Surveying *Data Analysis, *Project Management, *Monitoring and Evaluation (Review), *Reporting, *Presentations (Conference Papers), *Site Inspection, *Management, *Consultation, *Client/Stakeholder Engagement, *Facilitation, *Conference Management, *Design. **Computer Skills:** GIS-MapInfo, GPS (Garmin III) and ArcGIS 9 (2008-GIMS), Microsoft Office (Full Suite:), Statistical – Statistica, Internet – Web Design (Starter and Intermediate module), E-mail – Outlook , Netscape, Gmail, GroupWise and Zimbra, Social Media Platforms (Whatsapp, Facebook etc.) Dropbox and Wordpress.

RELEVANT COURSES

YEAR	COURSE	INSTITUTION
2005	Project Management	UCT
2005	Africa 2009, 7th Regional course, conservation and management of immovable cultural heritage.	ICCROM; Mombasa Kenya
2007	Executive Guide to Project Management	UCT
2007	Training Workshop for South African Rock Art Documentation Rock Art Institute	WITS
2011	Managing Indoor Climate Risks' workshop in Olinda, Brazil (Archives, Museums and Heritage Sites	Olinda, (Archives, Museums and Heritage Sites) Rijksdienst voor het Cultureel Erfgoed Nederland
2015	Basics for Financial Management	Getsmarter/UCT
2017	Becoming a changemaker: Introduction to Social Innovation	Coursera/UCT-Bertha Institute

CONFERENCES ORGANISED

- **2013**: The South African Heritage Resources Agency (SAHRA) Conference on Sacred Sites. Mapungubwe National and World Heritage Site. Mapungubwe.
- **2016:** Cultural Heritage Landscape and Museums Symposium. SAMA Western Cape. University Museum Stellenbosch.

ACADEMIC PUBLICATION

- **2014:** Integrated management planning: Sustainable Development of heritage resources. International Conference on, "Living with World Heritage in Africa'. Johannesburg 2012. African World Heritage Fund.

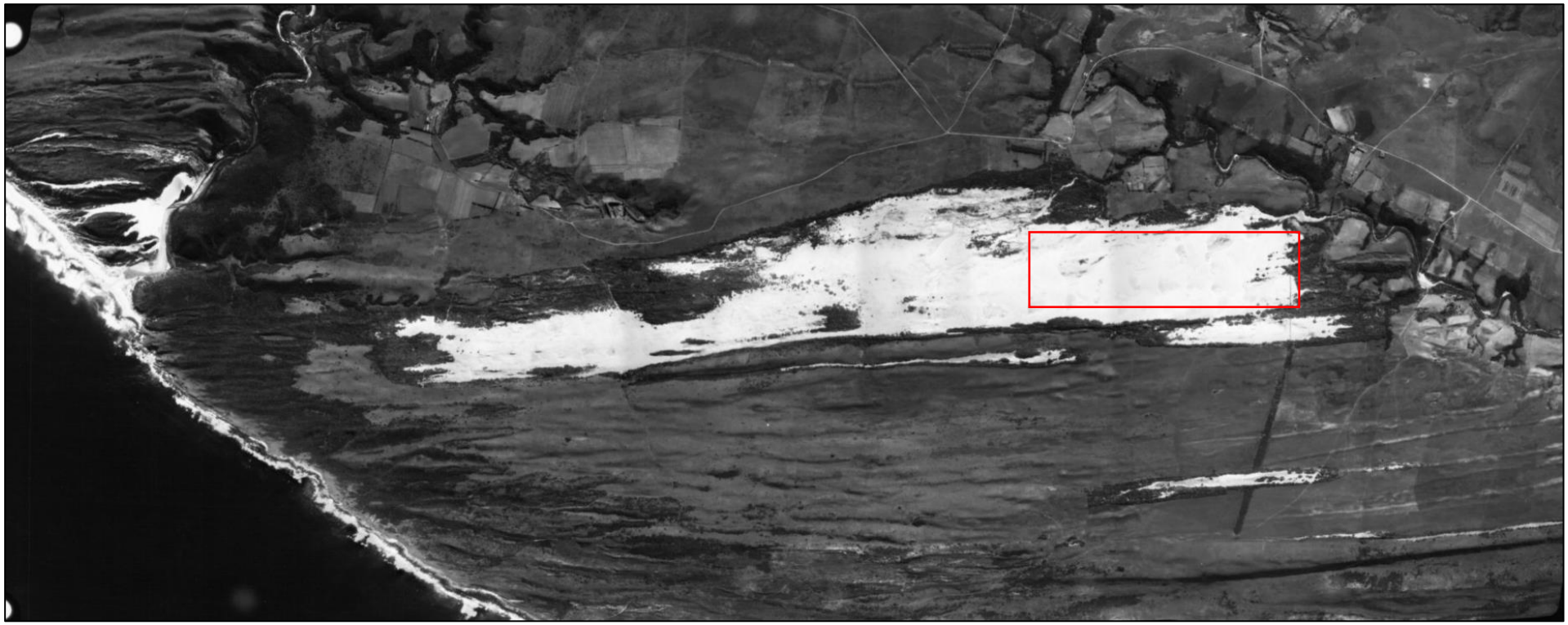
Membership/s

South African Museums Association (SAMA: 2006-current-Member WC65) - Regional Committee Chairperson (Jan. 2016-Feb. 2017), Association of Southern African professional Archaeologists (ASAPA: 2005-current-Member 220).

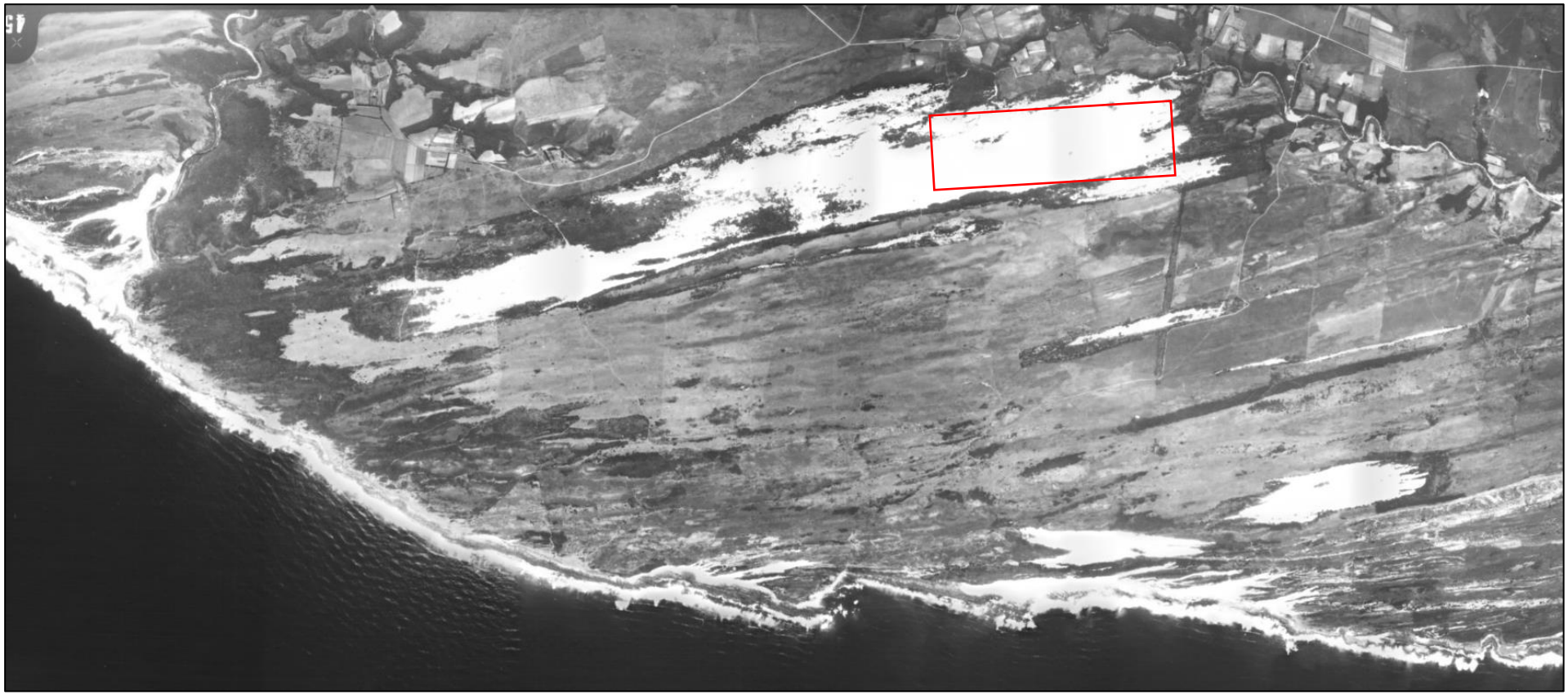
APPENDIX 3 – Aerial photographic survey of the study area

A survey of historical aerial photography is presented in order to understand how the Brandewynkop Dune field has changed over time. The earliest imagery dates to 1942. The 1954 imagery shows only very minor consolidation of vegetation surrounding the dune field but later, from 1971 onwards, there is a massive change with the exposed sand area having become substantially smaller. Alien vegetation roots can damage archaeological deposits and the clearing of such vegetation can also result in considerable damage if not done carefully.

Composite of 1942 aerial images (Job 2, Strip 6, Photographs 00141 to 00148) showing the Brandewynkop Dune Field extending towards the coast in the west. The Tsitsikama River lies to the west and the Kromme River to the east. The CMP area is approximately as indicated by the red polygon. Vegetation encroachment is minimal with alien species possibly still absent at this time.

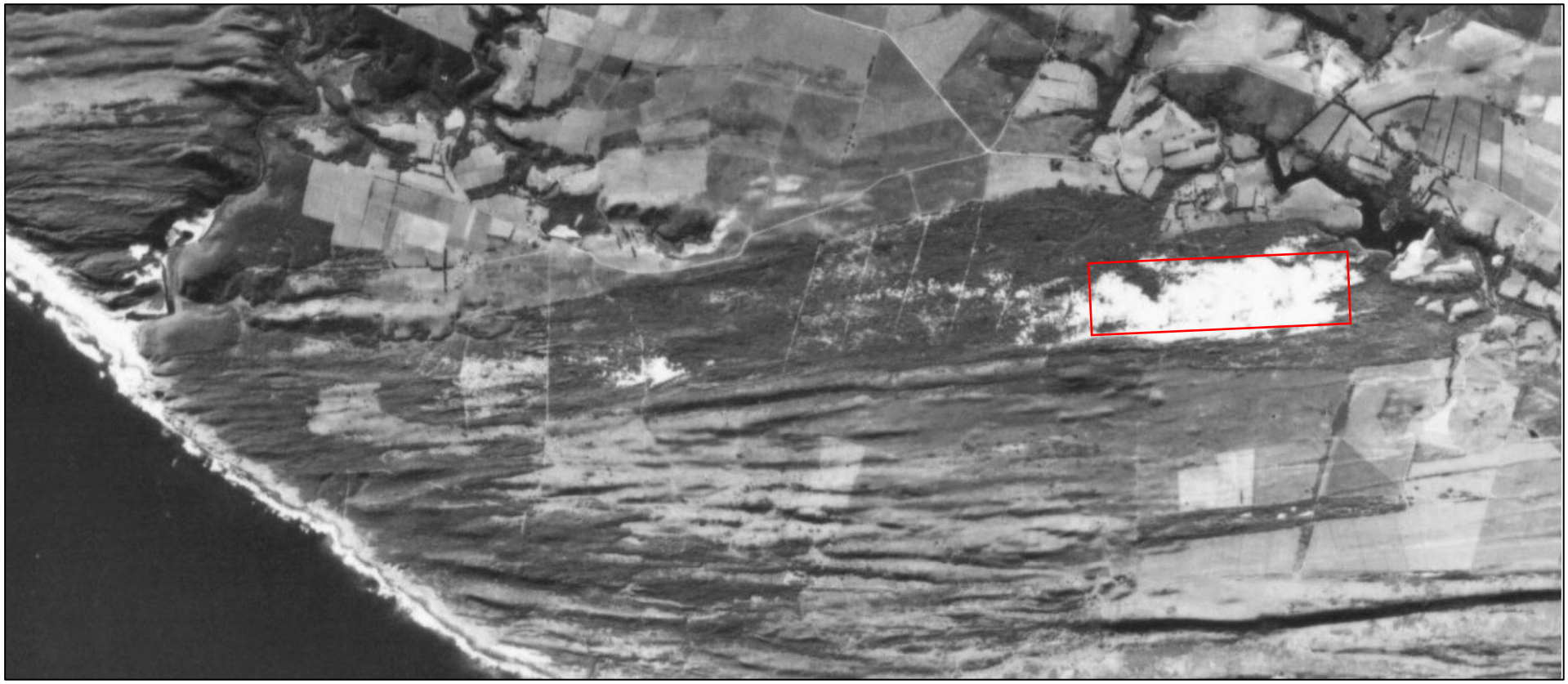


Composite of 1954 aerial images (Job 343, Strip 17, Photographs 00975 to 00979) showing the Brandewynkop Dune Field extending towards the coast in the west. The Tsitsikamma River lies to the west and the Kromme River to the east. The CMP area is approximately as indicated by the red polygon. Vegetation encroachment, presumably by alien species, is evident around the edges of the dune field and at the coast in the west.



Composite of 1961 aerial images (Job 459, Strip C1, Photographs 08307 to 08310) showing the Brandewynkop Dune Field extending towards the coast in the west. The Tsitsikamma River lies to the west and the Kromme River to the east. The CMP area is approximately as indicated by the red polygon. Vegetation encroachment is similar to that 1961 but is becoming mor consolidated.

Composite of 1971 aerial images (Job 622, Strip C3, Photographs 019 to 022) showing the Brandewynkop Dune Field extending towards the coast in the west. The Tsitsikamma River lies to the west and the Kromme River to the east. The CMP area is approximately as indicated by the red polygon. Vegetation encroachment, presumably by alien species, is now very strongly evident around the edges of the dune field and much of the western part of what was once open dunes has been vegetated.



1994 aerial image (Job 973, Strip 005, Photograph 01152) showing the Brandewynkop Dune Field extending towards the coast in the west. The Tsitsikamma River lies to the west and the Kromme River to the east; the latter has now been dammed. The CMP area is approximately as indicated by the red polygon. Alien vegetation encroachment is now very strongly evident with much of the previously open dune field now covered. The CMP area remains largely open.

2011 aerial image (Google Earth) showing the Brandewynkop Dune Field extending towards the coast in the west. The Tsitsikamma River lies to the west and the Kromme River to the east. The CMP area is approximately as indicated by the red polygon. Alien vegetation encroachment has now filled in the last open areas in the west and has further encroached on the CMP area. There are also areas of grassland in the CMP area. Close up viewing of this image on Google Earth reveals patches of standing water in the centre of the CMP area.

2016 aerial image (Google Earth) showing the Brandewynkop Dune Field extending towards the coast in the west. This is from shortly before a wild fire swept through the area. The Tsitsikamma River lies to the west and the Kromme River to the east. The CMP area is approximately as indicated by the red polygon. The GBWF is now visible to the southwest of the CMP area. The grassed areas in the CMP area have become slightly larger.

2019 aerial image (Google Earth) showing the Brandewynkop Dune Field extending towards the coast in the west. The Tsitsikamma River lies to the west and the Kromme River to the east. The CMP area is approximately as indicated by the red polygon. The GBWF is now visible to the southwest of the CMP area. The grassed areas in the CMP area are smaller as a consequence of the earlier wild fire but close examination on Google Earth shows an increase in tree growth after the fire.

APPENDIX 4 - Archaeological survey of the Brandewynkop CMP area

In order to inform the development of the CMP, it was necessary to know what heritage resources were present in the area of concern. This appendix presents both desktop and field research.

Desktop study

Although the Klasies River Mouth caves, which lie about 14 km west-northwest of the Brandewynkop CMP area, are acknowledged as internationally significant sites that have yielded many early human fossils (Deacon 1995; Singer & Wymer 1982), the present review restricts itself to the open air archaeology of the coastal region around Brandewynkop.

The coastal area and dunes between Oyster Bay and St Francis Bay appear to have been well researched. Binneman (2001, 2004/2005) conducted intensive research in several zones through this 17 km long area and documented many archaeological sites, while Hart (2010) surveyed the area around Thyspunt. The majority of sites recorded were Later Stone Age (LSA) shell middens generally located within 300 m of the rocky coastline. However, some middens, along with a number of Early (ESA) and Middle Stone Age (MSA) artefact scatters, were also located in the open dunes up to a few kilometres inland. An important occurrence lies in the dunes just east of Oyster Bay. There a scatter of MSA artefacts is assigned to the Howieson's Poort (HP) period and represents the only known open air HP site in South Africa. The site also revealed fossil hyena coprolites that contained information about past environments (Carrion *et al.* 2000). Goodwin (1946), Cairns (1975) and Binneman (1995) have all reported finding accumulations of stones that are likely to represent cooking features. These lay within the coastal dunes.

A few human burials have been rescued from the area including one that was accompanied by a juvenile dog (Chappel 1968; Voigt 1983). Dogs are known to have been owned during precolonial times by both hunter-gatherers and herders (Mitchell 2008, 2014). A number of other human remains have been found in the wider area, largely during the early 20th century (Morris 1992).

From his recollection of a visit to Brandewynkop in the 1980s, Binneman (2014:5) provides an anecdotal record of the archaeological heritage in the study area. This does not appear in publication thus leaving no formal written record from which to proceed. He has, however, made occasional mention of Brandewynkop as follows:

- "A few kilometres east of Geelhoutboom, in the Brandwynskop dune field, are large numbers of stone tools" (Binneman 2001:78);
- "The archaeological context for these [Brandewynkop] dunes is similar to that of the Geelhoutboom Dunes" (Binneman 2011:13); and
- Labelling the area on maps: "Brandewynkop fossil and Holocene dunes, rich in ESA, MSA and LSA stone tools and Khoi herder sites – 1.5 million to recent historical times" (Binneman 2011a: maps 3 & 4, 2011b: map 3).

Nowhere do these comments appear to be substantiated with actual observations aside from his recollections from the 1980s. The only other mention of the area that could be located in publication was by Deacon and Geleijnse (1988). They provided a map of the wider area naming Brandewynkop (see Figure A4.1). Although researching Klasie's River Mouth, they did briefly discuss the archaeology seen at the nearby Geelhoutboom Dune field which lies some 10 km to the west of

Brandewynkop. Referencing Laidler (1947), they noted that "on the landward side of the dune, deflation has exposed a series of hardpan horizons associated with palimpsests of mid-Pleistocene Acheulian and younger artefacts" (Deacon & Geleijnse 1988:6). Later they state that "there are very extensive surface scatters of Middle Stone Age artefacts associated with the cliff top Geelhoutboom and other dunes in the area which show that the people ranged widely in the local environment. Such deflated sites, however, are not particularly informative archaeologically as they lack any stratigraphy, and organic residues are not preserved." Modern academia would not fully agree with this sentiment and deflated contexts are often found to be highly informative.

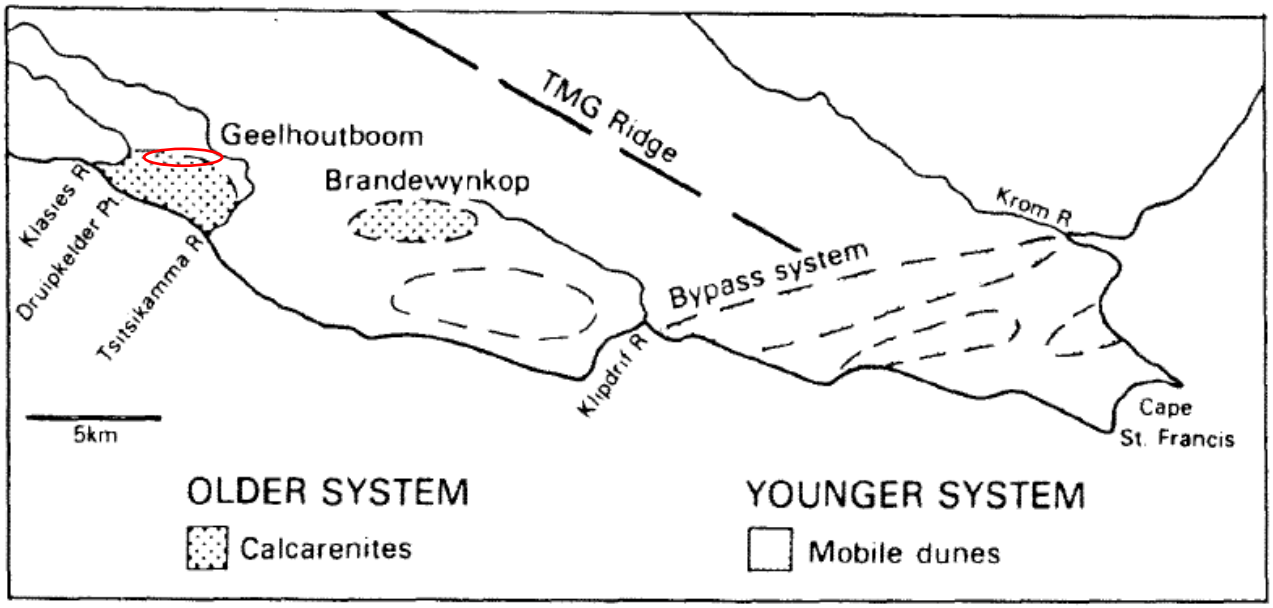


Figure A4.1: *Map of the Klasies River to Krom River area showing various sand dune areas. Source: Deacon & Geleijnse (1988: fig. 3). The red circle indicates the area of open dunes as visible in 1942.*

A closer reading of Laidler (1947:288) shows that he recorded "numerous distinct and separate occupation areas of small size on which artefacts were concentrated in large numbers." This contrasts with Binneman's (2011a, 2011b) observation that the Geelhoutboom exposures "are several kilometres in length and several hundred metres in width". In 1942 the deflated and eroding area of the dunes was some 3.5 km by 1.0 km in extent but by 1969 this had shrunk to about 1.5 km by 0.7 km. It is thus unclear what exactly Binneman's dimensions refer to. Laidler (1947) records the eroded area as being about 3.2 km by 1.2 km[10] and describes the scatters as occurring variably on loess, hardpan or white aeolian sand. He notes both ESA and MSA materials to have been present but with the latter dominating strongly. Laidler notes that 'Stellenbosch' artefacts are rare with more of the ESA material being from the so-called 'Fauresmith' which has been dated to about half a million years ago (Herries 2011; Porat *et al.* 2010). This industry is variably interpreted as a late manifestation of the ESA (Porat *et al.* 2010), an ESA/MSA transitional industry, or an early MSA industry (Herries 2011). The MSA material described by Laidler (1947) includes Levallois artefacts, Kasouga flakes and Howieson's Poort artefacts, although the latter were, at his time of writing, still considered to belong with the LSA. Aside from six bored stones found at one spot near a vlei, he found no other evidence of LSA occupation of the area. Both ostrich eggshell fragments and pottery were noted to be entirely absent.

[10] His text reads "about two miles long by three-quarters of a mile broad" (page 284).

Some 5.8 km from the coast and 7.5 km northwest of the CMP area, Binneman (2011b) located ESA and MSA artefacts in a sand mine suggesting that if the vegetation was removed from the wider area it is possible that such artefacts could be fairly widespread. About 13 km to the east of Brandewynkop, Van Ryneveld (2010) recorded a large sandy (but vegetated) area with ESA and MSA artefacts. The ESA material included typical handaxes and cleavers made on local sandstone. Examination of the 1942 aerial photography shows this area to have also been open dune field at that time.

Nilssen (2016) conducted monitoring work for the construction of the Gibson Bay WEF with a focus along the southern margin of the Brandewynkop dunes (i.e. immediately south of the CMP area. He recorded isolated artefacts in many areas. He also surveyed a transect through the dunes and again found isolated artefacts.

During the mid-20th century Rudner (1968) removed and analysed pottery from many LSA sites along South Africa's coastline. He included sites around Klasies River Mouth and Oyster Bay but appears to have not visited the coast south of Brandewynkop. Binneman (2014), however, notes that shell middens are present at the mouth of the Tsitsikamma River.

No other information on open-air archaeology exists for the study area and its immediate surrounds. Given the very limited information and lack of physical survey of the Brandewynkop Dunes, it was thus deemed to be critical to the successful outcome of this CMP to conduct a survey and record the archaeology in the Brandewynkop Dune field.

Field survey

Although the survey focused on 'Sensitive Area 2', other surrounding areas, especially just to the west, were also briefly checked for the sake of understanding the broader context. Outside of the focus area, survey was heavily constrained by dense alien vegetation with most work limited to available tracks and paths. In addition, a few heritage resources located close to, but outside of, the study area were also recorded while accessing the study area (some were also in the original HIA study by Van Ryneveld [2010]). The findings of this survey are presented in Table A4.1. It should be noted that the descriptions are fairly brief because the main aim was simply to record the presence and character of the finds and understand their distribution. However, further discussion does follow below.

Table A4.1: *List of heritage resources recorded in and around the CMP study area.*

Waypoint	Co-ordinates	Description
1533	S34 07 16.7 E24 32 09.9	A ruined stone shed forming part of Site 3.4 as recorded by Van Ryneveld (2010). Its age cannot be easily determined but it is quite likely to date to the 19th century. A newer (early 20th century) structure lies across the road and, although appearing disused, is not in run.
1534	S34 07 33.7 E24 32 45.0	Five 19th century ceramic fragments in a track through agricultural lands.
1535	S34 07 39.0 E24 32 43.0	Ephemeral quartzite artefact scatter – 2 flakes and 1 core seen.
1537	S34 07 53.9 E24 32 52.9	Scatter of quartzite MSA artefacts with some probable LSA artefacts. There are two quartz flakes, one heavily wind-blasted and the other fresh. There is also a quartzite single platform core that might be an unfinished handaxe.

1538	S34 07 54.5 E24 32 53.3	Scatter of large quartzite flakes on a dark palaeosol.
1539	S34 07 54.6 E24 32 55.1	Scatter of quartzite flakes including several very small flakes on a dark palaeosol.
1540	S34 07 53.9 E24 32 56.1	Scatter of quartzite and quartz artefacts on a dark palaeosol and located alongside a tall stack of the same palaeosol. Includes a truncated bladelet in clear quartz (c that may date to the LSA.
1541	S34 07 51.8 E24 32 56.4	A stack of dark palaeosol with quartzite artefacts and other rock fragments eroding out of the side of it. There are also flakes on the slope below the palaeosol stack.
1542	S34 07 51.8 E24 32 57.2	A light scatter of quartz and quartzite flaked artefacts and a quartzite hammerstone located on an area of dark palaeosol. There is also a large piece of good quality red ochre.
1543	S34 07 51.3 E24 32 57.4	Scatter of quartzite and quartz artefacts on dark palaeosol and with two marine shells (*Perna perna* and *Burnupena* sp.). The shell is assumed to be intrusive and related to waypoint 1544 since no other shell was seen in the dunes.
1544	S34 07 51.5 E24 32 58.7	A scatter of modern materials including broken glass bottles, marine shells, and some fragments of a plastic crate.
1545	S34 07 52.4 E24 32 59.7	Scatter of quartzite and quartz artefacts on an area of dark palaeosol.
1546	S34 07 53.2 E24 33 00.0	Scatter of quartzite and quartz artefacts on an area of dark palaeosol.
1547	S34 07 53.8 E24 32 58.6	Scatter of quartzite artefacts on an area of dark palaeosol. Also includes a hammerstone.
1548	S34 07 54.6 E24 32 58.7	Scatter of quartzite artefacts on an area of dark palaeosol.
1549	S34 07 55.0 E24 32 59.3	A scatter of quartzite MSA artefacts on an area of dark palaeosol. There are many diagnostic MSA artefacts including triangular flakes, long blades and prepared platforms. There are also several blocks of unmodified quartzite.
1550	S34 07 52.0 E24 33 02.8	Scatter of quartzite, quartz and rare silcrete artefacts on an area of dark and heavily ferruginised palaeosol. **This is a scatter of higher significance.**
1551	S34 07 51.0 E24 33 01.6	Scatter of quartzite and quartz artefacts on an area of dark palaeosol.
1552	S34 07 51.3 E24 33 04.4	Scatter of quartzite and quartz artefacts on an area of dark palaeosol. Seems to include both MSA and LSA artefacts.
1553	S34 07 52.5 E24 33 04.7	Scatter of quartzite and quartz artefacts on an area of dark palaeosol. Seems to include both MSA and LSA artefacts.
1554	S34 07 54.3 E24 33 05.1	Light scatter of quartzite artefacts on pale dune sand in a deflated area. There are small nodules of feruginised material on the surface as well indicating proximity of a now eroded and deflated palaeosol.
1555	S34 07 56.4 E24 33 06.4	A small scatter of large quartzite flakes on exposed palaeosol. Given their size they could be ESA but there is nothing diagnostic.
1556	S34 07 55.1 E24 33 07.8	An example of dune cross-bedding visible in the dune face.
1557	S34 07 50.8 E24 33 06.3	Scatter of quartzite and quartz artefacts on an area of exposed dark palaeosol. The scatter includes a diagnostic MSA triangular blade with a prepared platform, an LSA backed blade and a hammerstone/upper grindstone. Also present but probably not associated was a well-patinated button, probably made of bronze or brass.
1558	S34 07 53.6 E24 33 34.8	An isolated quartz flake in the Holocene dune sand. Could have been surfaced by moles or a Holocene drop.
1559	S34 07 54.9 E24 33 28.4	An isolated quartzite flake in the Holocene dune sand. Could have been surfaced by moles or a Holocene drop.
1560	S34 07 58.7 E24 33 22.8	This observation is geological and seems like a palaeosol forming.
1561	S34 08 04.0 E24 33 19.4	An ephemeral scatter of quartzite artefacts on an area of dark palaeosol. There is also a hammerstone/upper grindstone present.
1562	S34 08 04.3 E24 33 18.5	An ephemeral scatter of quartzite artefacts on an area of dark palaeosol. It includes some diagnostic MSA pieces.

1563	S34 08 02.5 E24 33 15.0	A small patch of orange palaeosol with just one quartzite flake present.
1564	S34 07 55.9 E24 33 12.3	A scatter of very small quartzite (16), quartz (7), silcrete (3) and crypto-crystalline silica (3) artefacts spread over the eroding surface of the Holocene dune sand. Certainly the remains of a wind-blown LSA site. Numbers in brackets indicate number of artefacts of each material seen. The site is in very poor context and the artefacts are wind-abraded.
1565	S34 08 03.6 E24 33 10.1	A light scatter of quartzite and quartz artefacts on an area of exposed orange palaeosol.
1566	S34 08 02.4 E24 33 10.3	A scatter of quartzite and quartz artefacts on an area of exposed orange/brown palaeosol.
1567	S34 08 06.7 E24 32 54.4	A scatter of quartzite artefacts (plus one quartz piece) on an area of exposed palaeosol. Some diagnostic MSA is present.
1568	S34 08 02.6 E24 33 02.6	A scatter of quartzite artefacts on an area of exposed palaeosol. Some diagnostic MSA is present.
1569	S34 08 03.5 E24 33 04.8	A scatter of quartzite and quartz artefacts on an area of exposed palaeosol. Some diagnostic MSA is present.
1570	S34 08 03.5 E24 33 05.8	A high density scatter of quartzite and occasional quartz artefacts on an area of exposed palaeosol. There are many diagnostic MSA elements including a number of long, thin blades. There was a cluster of eight blades located in a very small area of the scatter and this was also the densest area. **This is a scatter of higher significance.**
1571	S34 08 03.2 E24 33 06.4	A very high density scatter of quartzite and some quartz artefacts on an area of exposed palaeosol. This is probably all the same site as 1570 but there is a reduction in artefact density between them. There are again many diagnostic MSA elements present. There was also a single fragment of a large tooth. It was stained red owing to its long period of contact with the palaeosol. This opens the possibility that other bones might be present in still buried MSA contexts. **This is a scatter of higher significance.**
1572	S34 08 02.6 E24 33 07.6	An area of exposed palaeosol with just two quartzite flakes on it.
1573	S34 07 58.0 E24 32 55.6	An area of exposed palaeosol with a light scatter of quartzite flakes on it, including some diagnostic MSA pieces.
1574	S34 07 58.5 E24 32 56.1	A scatter of ten quartzite cobbles (one of which is a hammerstone) on sand. There are no flaked artefacts visible.
1575	S34 07 54.9 E24 32 57.1	A scatter of eight quartzite cobbles on sand. There are no flaked artefacts visible.
1576	S34 07 55.9 E24 32 53.1	One quartzite flake and one small core on a sandy substrate.
1577	S34 07 54.6 E24 32 52.1	A scatter of about 20 quartzite artefacts on sand but very close to an area of exposed palaeosol. A quartzite cobble was seen embedded in the palaeosol.
1578	S34 07 53.5 E24 32 50.3	A scatter of quartzite artefacts on exposed palaeosol. There was also one silcrete flake seen.
1579	S34 07 27.6 E24 32 44.4	Historical barn (probably late 19th century) that is in ruin but perhaps still used for storage. It is built of stone and unfired clay bricks with mud mortar but has been renovated with more recent materials at a time when the roof was also raised and replaced. Nearby is a cottage (still in use) that may date the late 19th or early 20th century.
1580	S34 08 20.7 E24 31 58.3	A fossil hyena lair that was discovered during the archaeological monitoring of construction works (Nilssen 2016; Brink 2015).
1581	S34 08 57.7 E24 33 58.2	An isolated radial core seen in a road cutting to the east of the CMP area.
1582	S34 08 00.3 E24 32 28.9	A scatter of quartzite flaked artefacts on a low-lying, flat sandy area but with a small exposure of darker palaeosol present very nearby. Waypoint 1582 to 1588 are regarded as a single semi-continuous exposure.
1583	S34 08 00.8 E24 32 28.2	Quartzite scatter including a diagnostic MSA blade with a prepared platform.

1584	S34 08 00.7 E24 32 27.1	More quartzite artefact scatter and many manuports. There was also a lower grindstone made on a thin sandstone slab and found lying upside down.
1585	S34 08 00.8 E24 32 26.6	More quartzite artefact scatter and many manuports.
1586	S34 08 00.7 E24 32 25.8	More quartzite artefact scatter.
1587	S34 08 01.3 E24 32 27.9	More quartzite artefact scatter including two diagnostic triangular MSA flakes (one broken and the other with a prepared platform).
1588	S34 08 00.6 E24 32 29.9	More quartzite artefact scatter.
1589	S34 08 02.2 E24 32 42.9	A scatter of MSA quartzite artefacts and manuports in a flat, low-lying sandy area. One quartz core was also seen.
1590	S34 07 59.8 E24 32 42.9	A scatter of quartzite flaked artefacts on an area of exposed palaeosol.
1591	S34 07 54.6 E24 32 49.0	A scatter of quartzite artefacts on exposed palaeosol and including some diagnostic MSA blades.
1592	S34 07 54.6 E24 32 46.2	A scatter of quartzite manuports with a few flaked artefacts on an area of exposed palaeosol.
1593	S34 08 02.4 E24 32 45.4	A scatter of quartzite artefacts on an area of exposed palaeosol. Waypoints 1593, 1594, 1627 and 1628 are all one occurrence.
1594	S34 08 02.9 E24 32 45.5	A large scatter of quartzite manuports with some flaked artefacts on a flat, sandy area but close to the palaeosol at 1593. This scatter includes a large notched blade.
1595	S34 08 07.2 E24 32 44.5	A scatter of quartzite flaked artefacts and manuports in a flat, low-lying sandy area with ferruginous nodules indicating that the palaeosol is either very close beneath the surface or, perhaps more likely, that the palaeosol has eroded away leaving the nodules on the deflated surface.
1596	S34 08 06.7 E24 32 42.3	An area of exposed palaeosol with an ephemeral scatter of quartzite artefacts on it.
1597	S34 08 07.7 E24 32 35.3	A scatter of MSA quartzite artefacts on a flat, low-lying sandy area. It includes a hammerstone that is very well weathered suggesting it is not from the LSA.
1598	S34 08 08.2 E24 32 34.7	A small scatter of quartzite artefacts on a flat, low-lying sandy area.
1599	S34 08 09.3 E24 32 33.3	A dense quartzite scatter on a flat, low-lying sandy area with ferruginous nodules. The scatter contains several diagnostic MSA artefacts including blades and flakes and blades with prepared platforms. There are also a few quartz artefacts present. Waypoints 1599 to 1601 are part of the same exposure. **This is a scatter of higher significance.**
1600	S34 08 09.3 E24 32 32.6	More of the above scatter.
1601	S34 08 09.3 E24 32 31.4	More of the above scatter but now with a lower artefact density. An area of exposed palaeosol right next to the scatter is well-weathered and shows that in the vicinity of this scatter the palaeosol has weathered away leaving the artefacts deflated onto the underlying older sand from below the palaeosol.
1602	S34 08 08.1 E24 32 16.2	A light scatter of quartzite manuports with rare quartzite flaked artefacts on a flat, low-lying sandy area.
1604	S34 08 01.5 E24 32 44.8	A light scatter of quartzite artefacts in a flat, low-lying area with ferricrete nodules on the surface.
1605	S34 07 59.2 E24 32 21.6	A scatter of quartzite artefacts in a flat, low-lying area with ferricrete nodules on the surface. Diagnostic MSA artefacts (triangular flakes, blades and prepared platforms) were seen.
1606	S34 07 59.5 E24 32 19.1	A scatter of quartzite artefacts in a flat, low-lying area with ferricrete nodules on the surface. A small 'informal' biface was seen. It does not look like an ESA handaxe and is assumed to be MSA in age. There is a large outcrop of exposed palaeosol immediately north of the scatter. Waypoints 606 to 609 are one semi-continuous scatter.
1607	S34 07 59.6 E24 32 18.8	Large cluster of manuports including a possible lower grindstone (which looks wind-blasted).

1608	S34 07 59.8 E24 32 18.1	A scatter of quartzite artefacts in a flat, low-lying area with ferricrete nodules on the surface. An MSA triangular flake was seen.
1609	S34 08 00.2 E24 32 15.7	A light scatter of quartzite artefacts in a flat, low-lying area with ferricrete nodules on the surface.
1610	S34 08 03.7 E24 32 26.1	A large scatter of manuports with very few flaked artefacts. More flaked artefacts are located just to the west of the manuport cluster. Most artefacts are quartzite but there is some quartz and silcrete. More quartz than usual at the west end of this scatter. There is also a hammerstone. The quartz artefacts are small but seem wind-blasted and not fresh as would be expected if they were from the LSA. There is a 4x4 track that goes through the east end of this scatter where the manuports are.
1611	S34 08 03.7 E24 32 27.9	A small scatter of quartzite manuports and some flaked artefacts on an area of exposed palaeosol.
1612	S34 09 57.6 E24 31 05.2	Marine shell seen in the dunes inland of the beach. Midden strongly dominated by *Oxystele* sp. Also has *Scutellastra argenvillei*, *Scutellastra longicosta*, *Perna perna*, *Cymbula oculus*, *Turbo sarmaticus* and *Haliotis spadicea*. The Oxystele dominance is an unusual pattern also documented by Binneman (1995) and Hart (2010).
1613	S34 10 15.3 E24 31 50.0	Marine shell seen in the dunes just behind the beach.
1614	S34 10 37.9 E24 33 50.2	Shell midden in the dunes behind the beach revealed during excavation for installation of a pump and pipeline.
1615	S34 10 21.2 E24 33 40.9	Several quartzite flakes were found in a disturbed area where aeolianite has been dug up from a pipeline trench.
1616	S34 10 44.1 E24 33 57.0	A large shell midden just behind the high water mark at Wreck Point and immediately east of a permanent fresh water spring that wells up on the beach. Shell species seen include: *Scutellastra argenvillei*, *Scutellastra tabularis*, *Scutellastra longicosta*, *Scutellastra cochlear*, *Cymbula oculus*, *Turbo sarmaticus*, *Oxystele* sp., *Perna perna*, *Chiton* sp., *Burnupena* sp. and *Haliotis spadicea*. There were many stone artefacts, all in quartzite. There were also many manuports of both quartzite and a rock thatlooks like burnt calcrete and may have been to do with hearths (although the site is on the face of a steep dune). Two small pottery clusters were seen with some sherds having extremely thin walls (c. 3 mm).
1617	S34 10 45.2 E24 33 59.0	Another similar midden to 1616 and just to its east in the same kind of location. It is a smaller site.
1618	S34 09 55.6 E24 31 07.3	Marine shell seen in the dunes inland of the beach.
1619	S34 07 48.6 E24 32 47.3	A single isolated quartzite flake on pale sand.
1620	S34 07 49.5 E24 32 43.5	A quartzite artefact scatter with a few manuports. The artefacts included a radial core and some flakes.
1621	S34 07 50.3 E24 32 32.5	A patch of exposed palaeosol with no archaeology at all.
1622	S34 07 49.2 E24 32 40.3	An ephemeral scatter of quartzite manuports with rare flaked artefacts. It is located on a flat, sandy area with ferricrete nodules and there is an area of exposed palaeosol nearby.
1623	S34 07 49.8 E24 32 46.3	A scatter of quartzite artefacts on sand with ferricrete nodules.
1624	S34 07 52.6 E24 32 43.9	A scatter of quartzite, quartz and silcrete artefacts on a sandy area with ferricrete nodules. There are more quartz artefacts than usual. Most artefacts are quite small but there are a few very large quartzite flakes as well. There is a remnant raised patch of exposed palaeosol nearby. This could be MSA or LSA.
1625	S34 07 56.9 E24 32 41.3	An ephemeral quartzite artefact scatter in a flat, low-lying area.
1626	S34 08 04.2 E24 32 43.3	A light quartzite manuport scatter in a flat, low-lying area.
1627	S34 08 03.5 E24 32 45.1	A light quartzite manuport scatter in a flat, low-lying area with occasional flake artefacts including a triangular MSA flake. Waypoints 1593, 1594, 1627 and 1628 are all one occurrence.

1628	S34 08 02.5 E24 32 46.4	A dense quartzite manuport scatter on an area of exposed palaeosol but with some quartzite flaked artefacts as well. Waypoints 1593, 1594, 1627 and 1628 are all one occurrence.
1629	S34 08 35.1 E24 31 43.7	Occasional quartzite artefacts are visible eroding from the brown sand in the road cutting.
1630	S34 08 35.0 E24 31 39.4	Occasional quartzite artefacts are visible eroding from the brown sand in the road cutting.
1631	S34 08 35.1 E24 31 20.6	Occasional quartzite artefacts are visible eroding from the brown sand in the road cutting.
1632	S34 08 00.6 E24 30 25.1	Light scatter of quartzite flaked artefacts and manuports visible in a track that cuts through the crest of a small sand dune ridge. The substrate here looks like it might be weathered palaeosol (darker and more clay present than the dune sand).
1633	S34 07 52.4 E24 30 29.2	Many small fragments of water worn shell that have been collected from a storm beach and presumably ploughed into the sand. Extends widely in this area. Not archaeological.
1634	S34 07 43.4 E24 31 05.4	Exposed palaeosol with a light scatter of quartzite flaked artefacts and manuports.
1635	S34 07 43.1 E24 31 09.7	One core and an MSA blade on sand with ferricrete nodules.
1636	S34 07 44.2 E24 31 19.7	Ephemeral scatter of quartzite flaked artefacts in a flat, low-lying area that sees ponding water attimes.
1637	S34 07 44.2 E24 31 21.3	Exposed palaeosol with a large scatter of quartzite manuports. Just one core and one flake were seen here.
1638	S34 07 43.8 E24 31 22.8	Exposed palaeosol with an ephemeral scatter of quartzite flaked artefacts and manuports.
1639	S34 07 44.1 E24 31 23.3	Exposed palaeosol with an ephemeral scatter of quartzite flaked artefacts and manuports.
1640	S34 07 44.2 E24 31 24.1	Exposed palaeosol with a scatter of quartzite flaked artefacts and manuports.
1641	S34 07 43.8 E24 31 25.0	A light scatter of quartzite manuports on sand. One rock may have been a lower grindstone but weathering makes it hard to be sure.
1642	S34 07 42.8 E24 31 25.7	A scatter of quartzite and quartz artefacts on sand with ferricrete nodules.
1643	S34 07 48.1 E24 30 46.4	Ephemeral scatter of quartzite flaked artefacts on sand.
1644	S34 07 47.4 E24 30 44.7	A scatter of quartzite manuports and flaked artefacts on sand with occasional ferricrete nodules.
1645	S34 08 13.1 E24 30 24.9	A light scatter of quartzite flakes on sand. Waypoints 1645, 1646, 1647, 1654 and 1655 are all part of the same occurrence.
1646	S34 08 12.5 E24 30 26.3	A light scatter of quartzite flakes on sand with some ferricrete nodules.
1647	S34 08 12.9 E24 30 27.4	A light scatter of quartzite flaked artefacts on an area of exposed palaeosol.
1648	S34 08 11.2 E24 30 52.1	A light scatter of quartzite flakes on sand with some ferricrete nodules. Waypoint 1648 to 1653 are all part of the same occurrence.
1649	S34 08 11.1 E24 30 55.0	An ephemeral scatter of quartzite flakes on sand with some ferricrete nodules.
1650	S34 08 10.8 E24 30 58.2	An ephemeral scatter of quartzite flakes on sand with some ferricrete nodules.
1651	S34 08 11.0 E24 31 05.3	A light scatter of quartzite flaked artefacts and manuports on sand.
1652	S34 08 11.3 E24 31 02.3	A dense scatter of quartzite artefacts and manuports on sand with ferricrete nodules exposed in a jeep track and concentrated by erosion. The scatter includes MSA radial cores and some flakes with prepared platforms. One radial core looks like a handaxe but is probably not one.
1653	S34 08 11.4 E24 30 59.7	Scatter of quartzite artefacts on sand with ferricrete nodules.

1654	S34 08 13.3 E24 30 29.8	Scatter of quartzite artefacts on a ferricrete outcrop.
1655	S34 08 13.2 E24 30 25.8	Scatter of quartzite artefacts on sand.
1656	S34 08 45.3 E24 32 12.1	Occasional quartzite artefacts are visible eroding from the brown sand in the road cutting.
1657	S34 08 53.2 E24 32 15.6	Occasional quartzite artefacts are visible eroding from the brown sand in the road cutting.

Figures A4.2 to A4.4 show the distribution of the recorded finds.

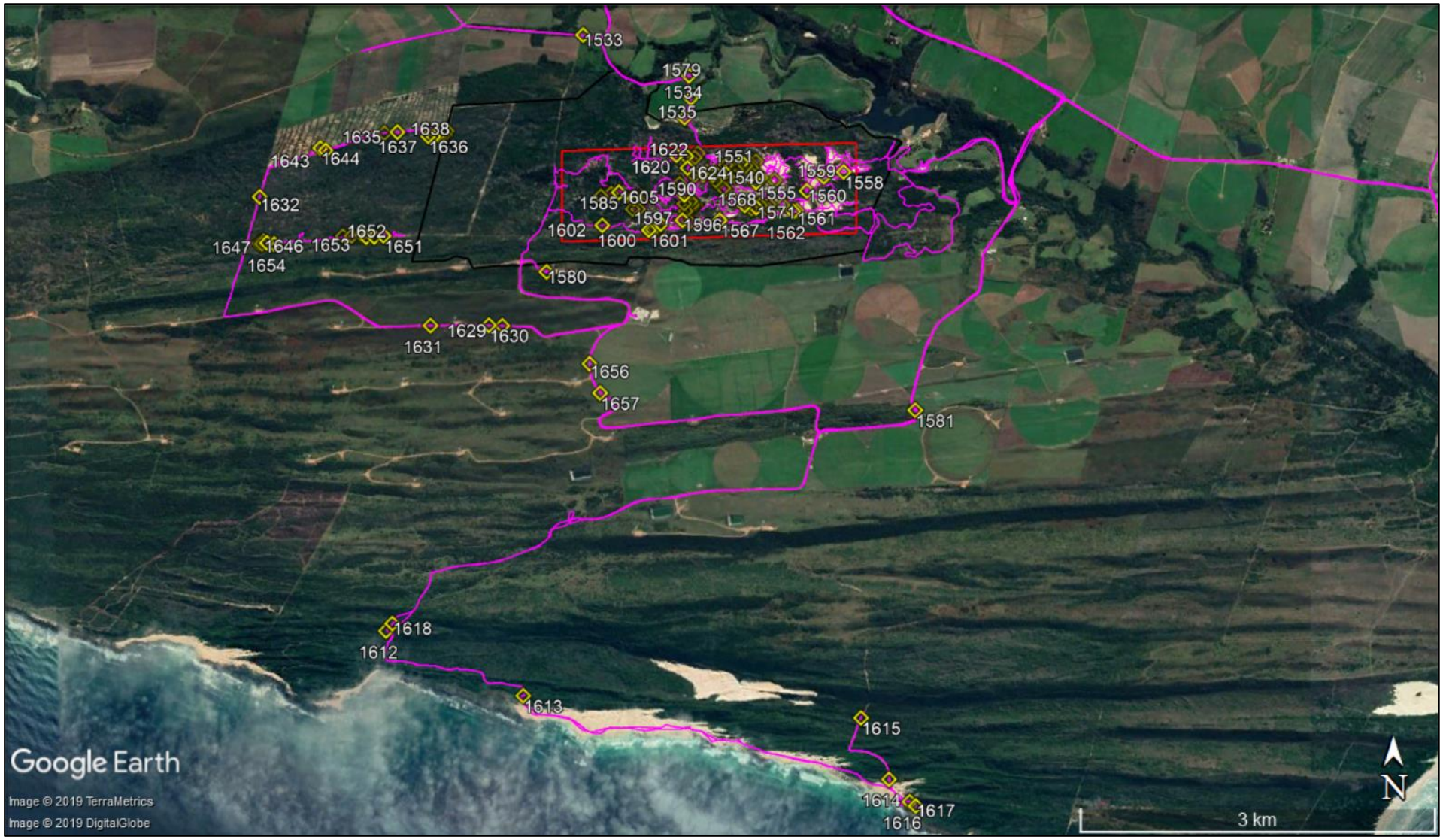


Figure A4.2: *Map of all recorded finds in and around the CMP area. The pink lines represent the survey tracks.*

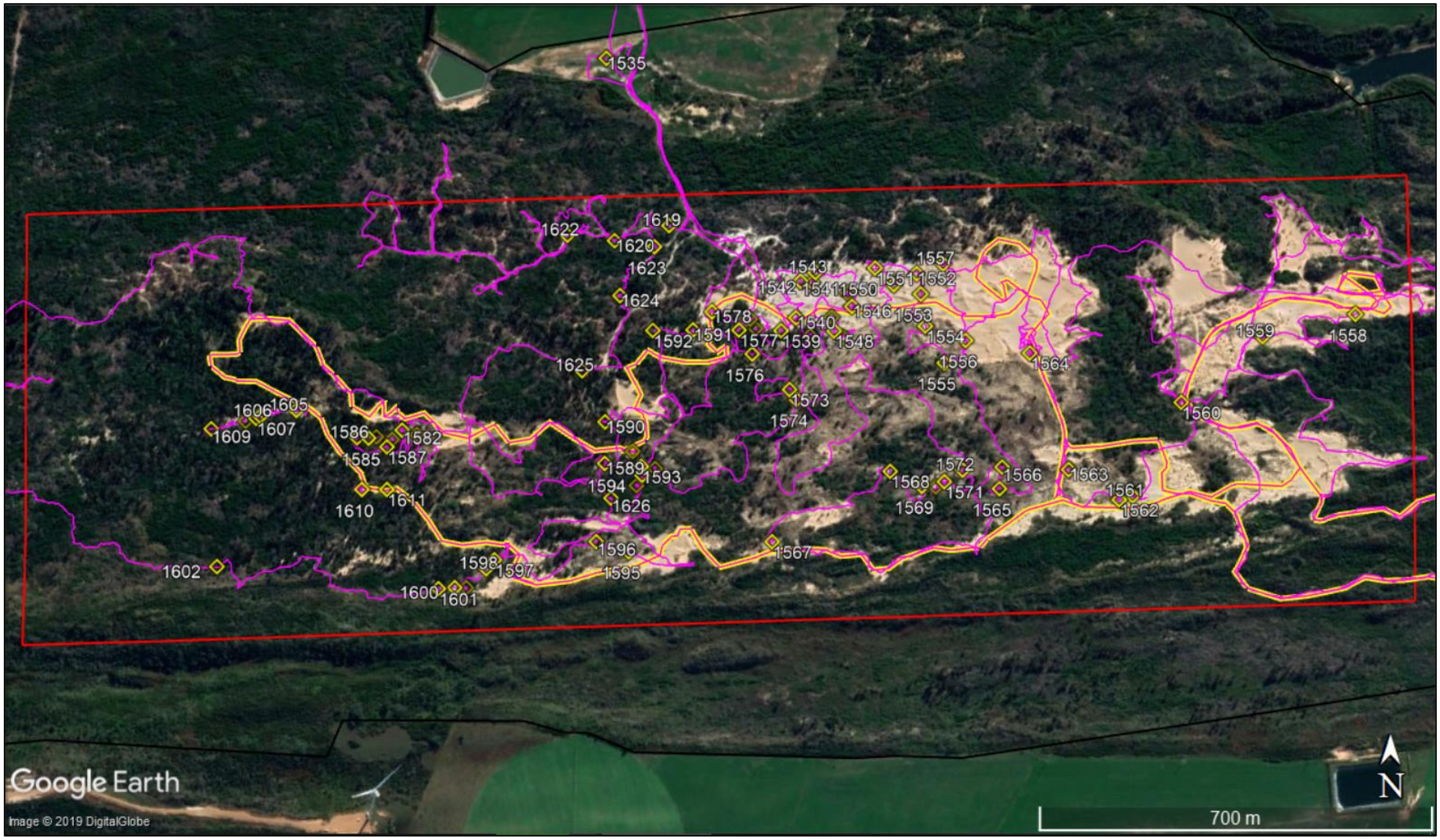


Figure A4.2: *Map of all recorded finds within the CMP area. The pink lines represent the survey tracks and the yellow track is the 4x4 route.*

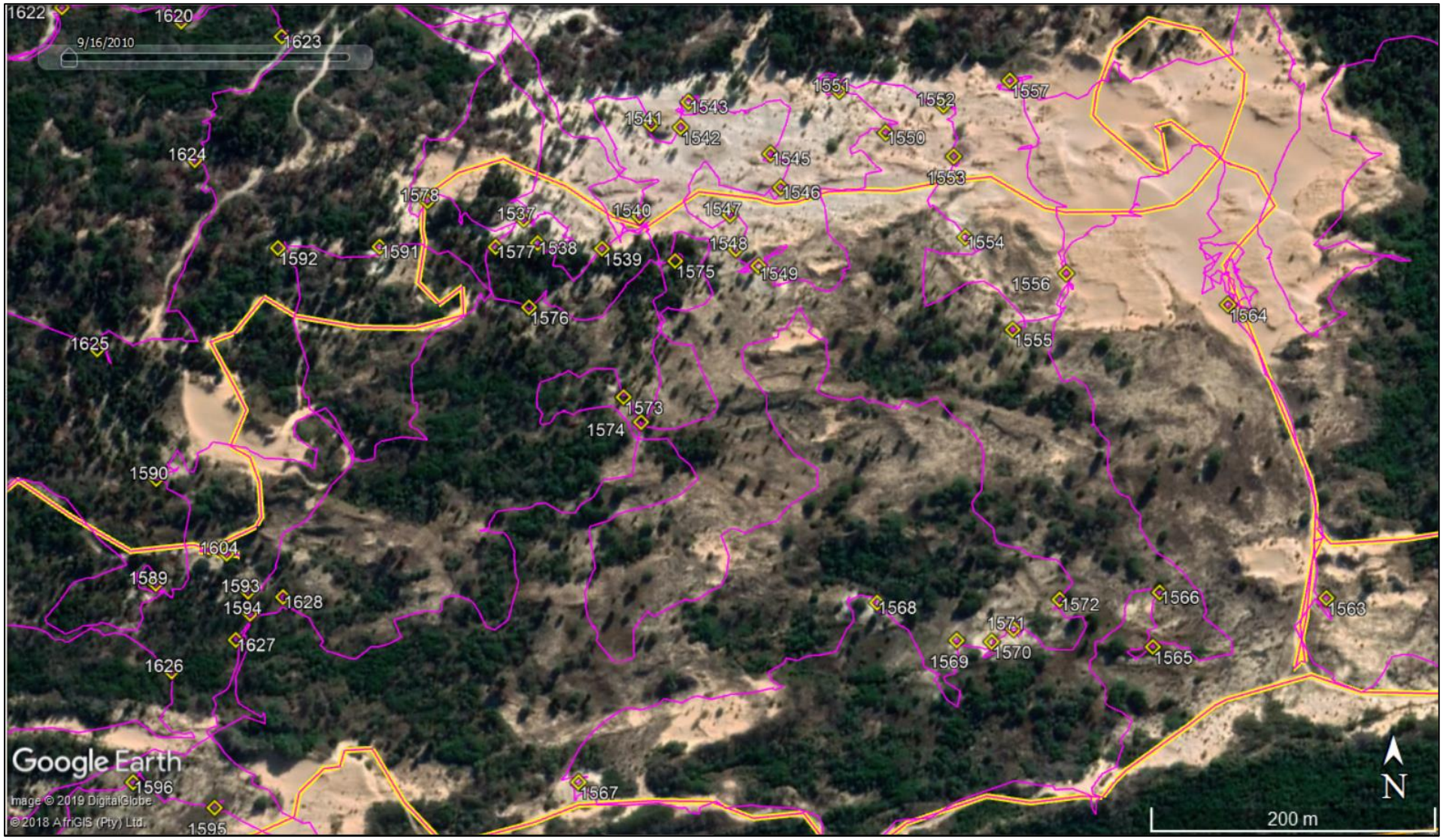


Figure A4.3: *Map of finds within the north-central part of the CMP area. The pink lines represent the survey tracks and the yellow track is the 4x4 route.*

Unlike in the Geelhoutboom dunes to the west as reported by Deacon and Geleijnse (1988) and at Van Ryneveld's (2010) Site 2.3, the ESA seems to not be represented much, if at all, in the finds from Brandewynkop. A few artefacts were considered to be possibly ascribable to the ESA but this seems doubtful. They were restricted to a small scatter of unusually large but otherwise undiagnostic flaked artefacts at waypoint 1555 and three bifacial artefcats from waypoints 1606 and 1653. The first, although possibly unfinished, did not look like a typical ESA handaxe and is thus more likely to be from the MSA (Figure A4.4). the two bifacial artefacts shown in Figures A4.5 and A4.6 are also not typical handaxes and may be MSA cores. Given the large number of artefact scatters recorded, the general absence of obvious ESA artefacts is likely to hold true throughout the CMP area, and perhaps the rest of the dune field stretching towards the west.

Figure A4.4: *Both sides and both edges of the bifacial artefact from waypoint 1606. Scale in cm.*

Figure A4.5: *Both sides and both edges of one the two bifacial artefacts from waypoint 1653. Scale in cm.*

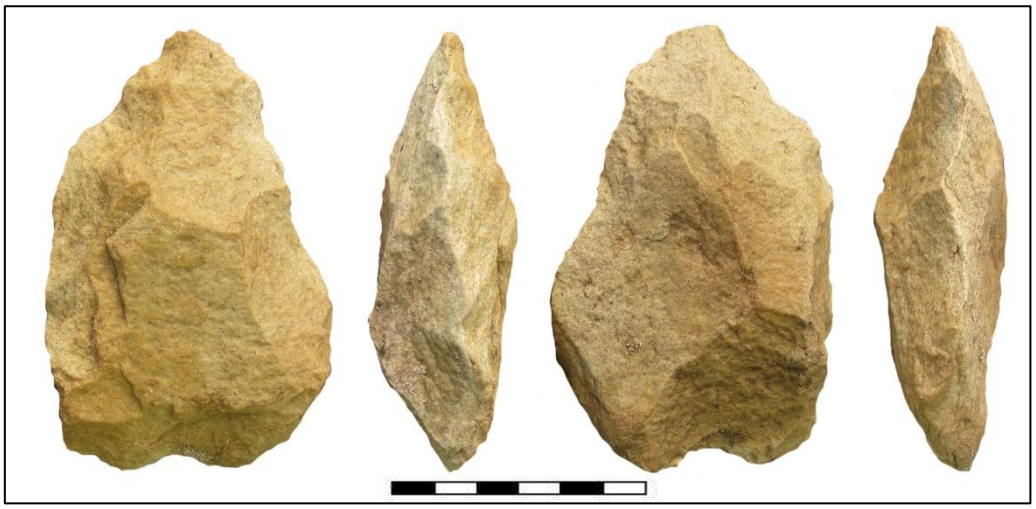


Figure A4.6: *Both sides and both edges of one the two bifacial artefacts from waypoint 1653. Scale in cm.*

The survey revealed that MSA artefacts very strongly dominate the Brandewynkop landscape. The dominant reduction strategy noted on site was a recurrent uni- or bidirectional Levalllois technique used to produce convergent (i.e pointed) flakes and blades. Many of these artefacts showed typical prepared platforms. Although cores were generally infrequent, a number of Levallois cores and tested cobbles were seen. The latter have had just one or two flakes removed. Interestingly, several scatters of artefacts were found to be quite discrete and to have been made from very few stone nodules. This suggests short term occupations with the low number of cores likely meaning that people were moving through the area taking their cores with them and just leaving behind the flaking debris created while they were there (A. Blackwood, pers. comm. 2020).

The vast majority of artefacts are in deflated surface contexts and nothing can be said of their relative position in the stratigraphic profile. They were never found on white aeolian sands but always associated with exposures of dark-coloured hardpan (Figure A4.7). In rare instances artefacts were noted embedded within the hardpan deposits (Figure A4.8) as was more frequently the case at Geelhoutboom. These constrain the age of these hardpans showing that while most MSA occupation seems to have occurred after their formation, at least some were formed during the MSA period. Figures A4.9 to A4.14 show examples of diagnostic MSA artefacts and some of their contexts. Figure 4.14 shows the only fossilised bone (in this case a tooth fragment, likely of a large bovid) found in the survey. It almost certainly relates directly to the artefact scatter. Such material is very rarely found and, as Pether (2019; see Appendix 5) notes, organic materials are generally not expected to survive in this context. Teeth, however, are far denser than bones and slightly more resistant. Also, those organic items associated with finer sediments (as occurs in the palaeosols) are likely to preserve for longer.

Figure A4.7: *A scatter of diagnostic MSA artefacts and unworked rocks located on a dark hardpan exposure at waypoint 1549.*

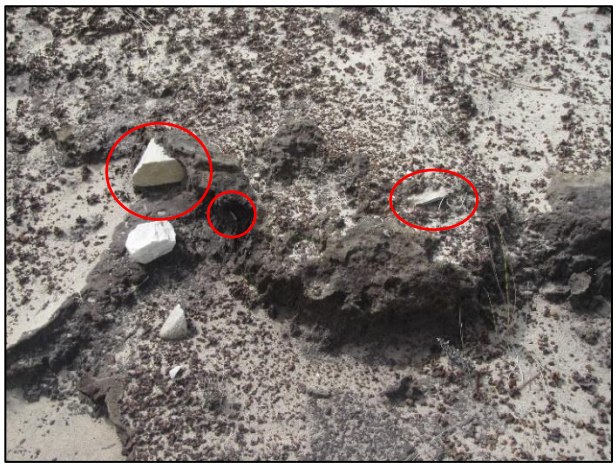


Figure A4.8: *Evidence of variably-sized stone artefacts embedded in hardpan at waypoint 541.*

Figure A4.9: *Examples of diagnostic MSA artefacts from the scatters at waypoints 1562 (above) & 1568 (below). They include triangular flakes (points), parallel sided blades and flakes with faceted platforms. Scale in cm.*

Figure A4.10: *Examples of diagnostic MSA artefacts with some smaller ones that may be LSA from waypoint 1537. The former include a faceted platform, an MSA blade and an MSA proximal blade. Scale in cm.*

Figure A4.11: *A set of MSA blades found together on the scatter at waypoint 1570. This is one of the more significant sites. Scale in cm.*

Figure A4.12: *The context of the MSA scatter at waypoint 1570. The dark fragments visible on the sand are palaeosol that is breaking up on exposure at the surface.*

Figure A4.13: *The context of the MSA scatter at waypoint 1571. The dark fragments visible on the sand are palaeosol that is breaking up on exposure at the surface.*

Figure A4.14: *Close-up of the surface of the MSA scatter at waypoint 1571. The inset shows a mineralised tooth fragment, likely from a large bovid. It is about 30 mm long.*

A peculiar feature of the Brandewynkop dunes is the large number of unmodified rocks and rock fragments seen. Most are associated with artefact scatters, generally including diagnostic MSA elements (e.g. Figure A4.15). In one instance, however, a scatter of manuports had no associated flaked artefacts although one of the stones did appear to have been used as a hammer stone. Also unusual was that the scatter lay on a sandy substrate with no visible dark palaeosol. This could suggest it is younger than the MSA.

Figure A4.15: *An area of quartzite manuports at waypoint 1594 associated with a scatter of flakes that includes two MSA elements. They are on a revegetated exposed palaeosol.*

Figure A4.16: *A scatter of quartzite manuports including one hammerstone but no flaked artefacts at waypoint 1574. The stones lie on a sandy substrate.*

LSA materials are rare but identifiable LSA artefacts were located at a few places. A single backed blade at waypoint 1557 (Figure A4.17), a truncated blade at waypoint 1540 (Figure A4.18), and a scatter of small artefacts located in aeolian sand at waypoint 1564 (Figure A4.19) all seem likely candidates for an ascription to the LSA; backed artefacts of this size – and made in quartzite – have been noted to form part of the so-called 'Kabeljous Industry' (Binneman 1995, 2001). It is also possible, however, that they relate to the Howieson's Poort period of the MSA. Aside from the context of the latter and their small size, the inclusion of a number of artefacts in silcrete and crypto-crystalline silica also supported an ascription to the LSA. All MSA materials seen were in quartzite. A lower grindstone found at waypoint 1584 may date to the LSA (Figure A4.20) but, while such artefacts would be very unusual in MSA contexts, there is no way to prove this. A scatter of undiagnostic artefacts at waypoint 1624 was found to have more quartz and a smaller average flake size than most scatters and could date to the LSA (Figure A4.21). Other signs of LSA occupation were limited to occasional smaller artefacts that seemed less patinated than the bulk of the finds. While this suggests a younger age, this cannot be seen as conclusive since there are many factors affecting patination. In contrast to the abundant MSA materials, there seemed to be very little evidence of LSA activity in the Brandewynkop Dunes. No evidence of cooking platforms/hearths or any other LSA material culture was seen.

Figure A4.17: *A backed blade (below) and a small unmodified bladelet from waypoint 1557 that are assumed to date to the LSA. Scale bar is 10 mm.*

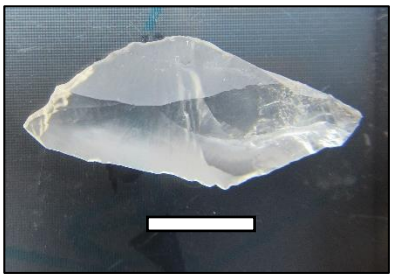


Figure A4.18: *A quartz truncated bladelet from waypoint 1540. The platform is to the right and the backed truncation at upper left. Scale bar is 10 mm.*

Figure A4.19: *A scatter of small artefacts assumed to date to the LSA from waypoint 1564. Scale bar is 10 mm.*

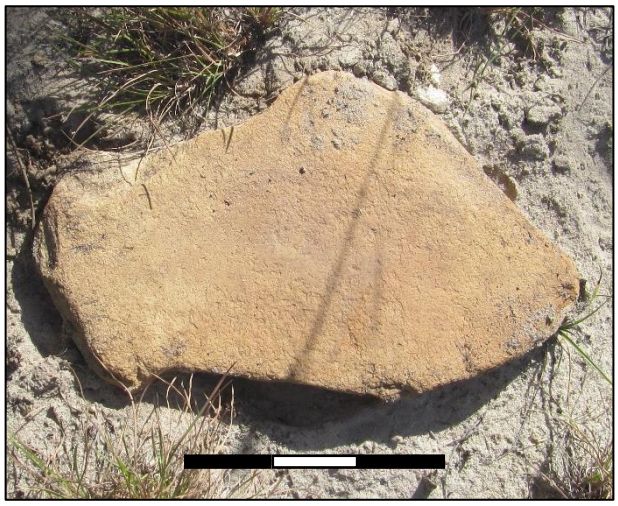


Figure A4.20: *An isolated lower grindstone found at waypoint 1584. Scale bar is 15 cm.*

Figure A4.21: *A scatter of quite small but undiagnostic artefacts that might be LSA at waypoint 1624. Scale in cm.*

Although outside of the CMP area, a brief visit was paid to the coastline nearest the CMP area in an effort to better understand the local archaeology. Several shell scatters and middens were seen, with one of them including much pottery.

While rare modern items (litter and a scatter of recently discarded shellfish) were noted in places, historical archaeology was essentially absent from the dune field. Just one historical item was seen. This was a button – probably made of bronze or brass – at waypoint 1557 (Figure A4.22). Following Hinks (1988), it might date the mid-18th to early 19th centuries. The only other historical artefacts seen during the survey were at waypoint 1534 in agricultural land about 0.5 km north of the dune field. They included brown transfer ware and some hand-painted ceramics typical of the 19th century (Figure A4.23.

Figure A4.22: *Opposite sides of a button found in the dunes at waypoint 1557. It is about 30 mm in diameter.*

Figure A4.23: *Nineteenth century historical ceramics from waypoint 1534 in agricultural lands. Scale bar is 30 mm.*

General discussion

Based on the stone tool technology observed during the survey, it is clear that the vast majority of archaeological material in the Brandewynkop Dunes is of MSA origin with the technological standardisation across the area suggesting that it may only have been in use for a relatively short part of the MSA (A. Blackwood, pers.comm. 2020). Materials from the ESA and LSA, while almost certainly present, are quite rare in comparison. Taking Laidler's (1947) observations in tandem with those of Binneman (2001), it seems that ESA material is more common in dunes closer to the coast. Binneman notes very few handaxes and cleavers in the larger bypass system between Oyster Bay and St Francis Bay but found them to be common in the smaller dune field closer to the coast east of Thysbaai, as was the case at Geelhoutboom (Laidler 1947). This leads us to conclude that, because of their distance from the coast, the Brandewynkop Dunes are unlikely to contain much ESA. This conclusion is supported by the survey. It appears that Brandewynkop, like Geelhoutboom, preserves very little LSA material. This is surprising, especially given that a number of LSA shell middens were recorded by Binneman (2001, 2004/2005) at a similar distance from the coast in the dune fields further to the east.

Due to the heavily deflated context of most of the stone artefacts seen and the rarity of artefacts embedded in the palaeosols, it seems likely that very little, if any, other archaeology is still buried beneath the deflated part of the dune field. The presence of archaeological materials in lower-lying areas to the west of the exposed dunes does suggest that similar materials do extend further westwards beneath the dense alien vegetation as suggested by Binneman (2014:5).

It is important to note that the vast majority of archaeological finds were located on or alongside areas of exposed palaeosol. A palaeosol is an older soil surface, in this context likely formed under wetter conditions, that has become consolidated and then later buried by more recent sand. There are likely to be similar palaeosols extending beneath all the dune fields of the area. While the archaeology may have been deposited either on or above this surface, deflation of the younger dunes has resulted in the vast majority of materials ending up on the palaeosol and wherever the latter is exposed so too is the archaeology. It is likely that much archaeology lies buried beneath the aeolian dunes and will remain there until such time as a dune slack within the aeolian sand reveals them. In the west this would require clearing of the alien vegetation and remobilisation of the dunes.

One cannot tell the relative age of stone artefacts based purely on their surface patination and weathering because their burial and exposure histories may vary considerably. Nevertheless, high degrees of weathering were not noticed on the Brandewynkop artefacts recorded during the survey suggesting that they have spent much of their post-depositional history buried. Unweathered artefacts as found here are of relatively greater scientific value because technological features are better preserved. The artefacts may have been largely deposited by people living around wetland areas during a wetter climate and then, when the climate became drier and perhaps in association with a sea level change, the sand was mobilised burying the artefacts.

Very rare LSA finds and isolated artefacts of indeterminate age were noted in the younger covering dunes but the vast majority of the dunes appear to be entirely free of archaeology with marine shell absent. This suggests that the Brandewynkop Dunes – or at least the eastern area under consideration here – were only very rarely used by LSA hunter-gatherers and/or herders.

It is clear that, despite the deflated context of many parts of the dunefield, the Brandewynkop archaeology has high research potential. This is enhanced by its proximity to both the well-dated Klasies River Mouth caves and several other local dunefields containing similar archaeology.

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APPENDIX 5 – Formation and context of the Brandewynkop dunes

BRANDEWYNKOP DUNES – FORMATION AND CONTEXT

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ASHA Consulting (Pty) Ltd

2 JUNE 2019

CONTENTS

1. THE SETTING

The coastal edge has been beveled during past periods of high sea levels associated with periods of global warming, when erosion of the bedrock by waves formed gently seaward sloping "marine platforms". While successive high sea levels eroded the edge of the continent, it was also raised to higher levels by episodes of uplift, caused by inexorable tectonic forces affecting the Earth's crust. The result is a series of rough steps or platforms, from highest and oldest, to lower and younger (Figure 1). During many intervening periods of low sea levels, the edges of the marine platforms were eroded away by expanding river valleys.

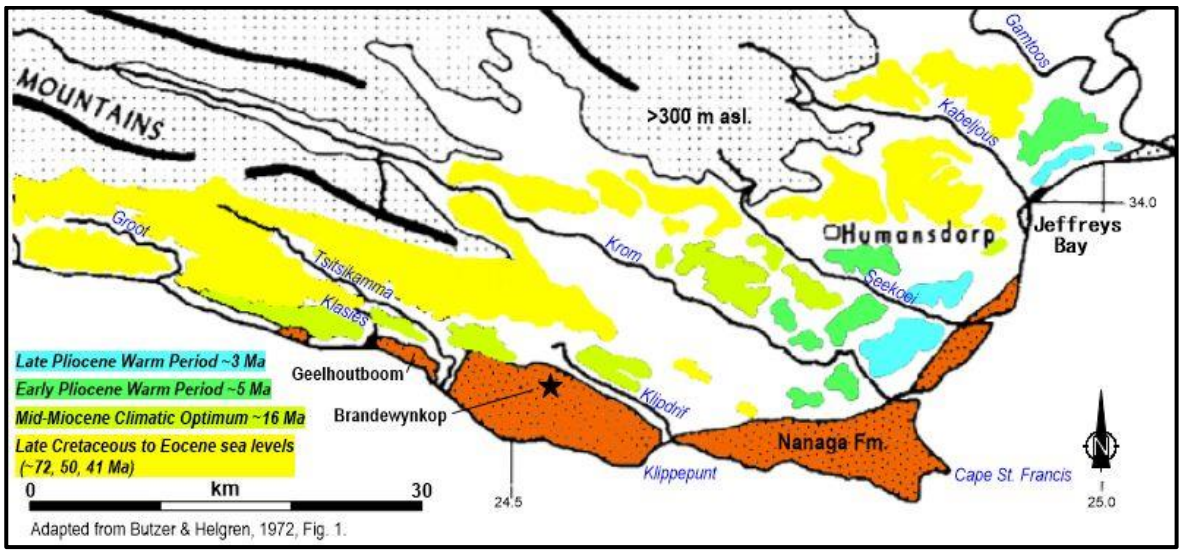

Figure 1. Marine platforms, Cape St. Francis coastal plain, which shows the times when the marine platforms were last occupied by the sea, in millions of years ago (Ma).

The marine platforms in this area, formed on the bedrock of planed-off, folded strata of the Cape Supergroup rocks (Figure 2), have been schematically outlined by Butzer & Helgren (1972) and these are correlated with the ages of high sea-level deposits preserved around southern Africa (Figure 1). The formations which overlie these bedrock platforms are named the **Algoa Group**. The basal marine deposits of mid-Miocene to late Pliocene age are all accommodated in the **Alexandria Formation** while the overlying fossil dune field sand accumulations are called the **Nanaga Formation**. Although outcrops of the Alexandria Formation are not mapped in this area, the marine deposits certainly covered the coastal plain, but are now evidently concealed beneath coversands and hillslope colluvia.

The composite of dune fields comprising the Nanaga Formation are only depicted on the geological map where they are thickest at the coast, but aeolian (wind-blown) coversands are much more widely distributed in the landscape. The oldest dune sands in the Nanaga Formation dune pile of interest (Figure 2C) can be no older than the underlying Pliocene marine beds (5 and 3 Ma), but are probably somewhat younger. Episodic dune activity has been ongoing up to the present and these latest areas of active to semi-active dunes are mapped as and named the **Schelm Hoek Formation**, including the Brandewynkop dunes (Figure 2C, Qw).

2. DUNE PLUMES

Sandy beaches are the usual sources of the sand blown inland to form dune plumes. Sandy beaches generally occur were the hard bedrock is below sea level, such as across buried valleys. Sand delivered by rivers is distributed to beaches by longshore drift currents in the nearshore, caused by waves impinging on the coast at an angle. Along this coast the effective waves approach from the southwest, generating an eastwards longshore drift. The strong westerly winter winds scour sand from beaches on the west sides of capes and headlands and the dune plumes may extend right across the headland to feed sand to the downwind bay (headland bypass plume),or may be terminated by a river.

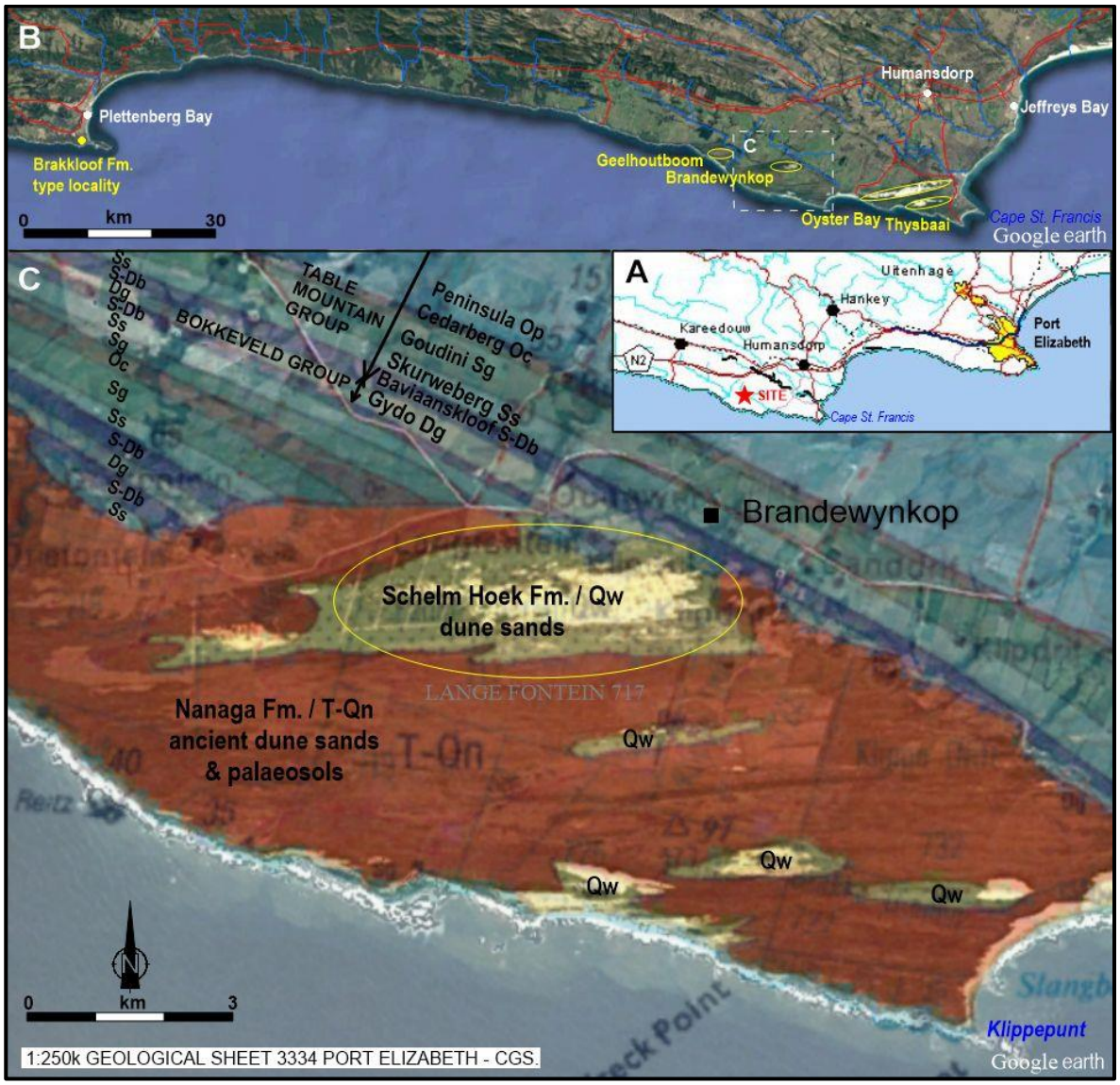

Figure 2. A & B: Locations. C: Surface geology of the Brandewynkop area, showing tightly folded Cape Supergroup sandstones and shales, dating from 500-400 million years ago (Ma), which underlie the cultivated soils, the old aeolianite ridges of the Nanaga Formation and the recent Schelm Hoek Formation dune fields.

Changes in relative sea level have a major influence on the supply of sand and the locations of sandy beaches and dune plumes. After the dramatic lowering of sea level during the Last Ice Age, the sea approached the present level again about 9 thousand years ago (ka) and by 7 ka had exceeded the

present level by about 3-4 m, before receding to its modern position. It is possible that this oscillation of sea level induced the latest phase of dune plume activity of the Brandewynkop dunes, by eroding the edge of the older aeolianites. The times of dune deposition can be established by sophisticated laboratory techniques which can estimate how long sand grains have been buried, called thermoluminescence (TL) and optically stimulated luminescence (OSL) dating techniques.

There are several types of dune shapes depending on the supply of sand, the wind strength and its directional variability, and the influence of vegetation/climate. A common type in dune plumes are parabolic or "hairpin" dunes which form when the edges of the migrating dune are stabilized by vegetation, so that these sands are left behind to form a trailing ridge (Figure 3). An earlier generation of vegetated parabolic dune ridges can be remobilized, such as when stabilizing vegetation is destroyed by fire, persistent drought, or human agency, and the new active dunes are usually patches of dunes with sinuous crests and lee sides transverse to the wind direction.

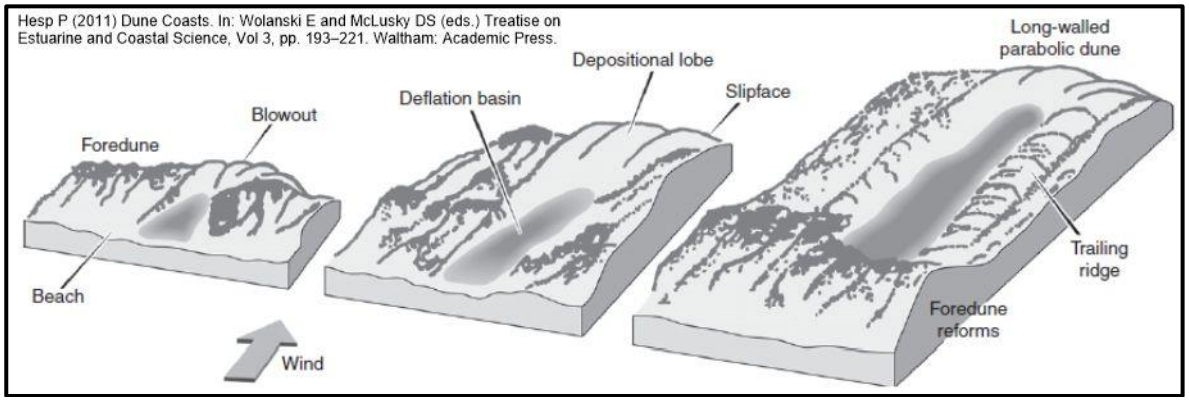

Figure 3. Initiation of a parabolic dune from the beach.

3. DUNE PROCESSES

The processes by which sand dunes migrate and the bedding or stratification produced are illustrated in Figures 4 and 5. The accumulation of fallen sand grains on the lee dune slope becomes unstable, inducing grainflow avalanches (Figure 4A, B, E). Importantly, the growth of the dune affects the wind flow over it (Figure 5A) and eddy airflows develop in the "wind shadow" of the steep slipface, forming laterally-migrating wind ripples which then modify the grainfall and grainflow surfaces (Figures 4A, B; 5B). Grainfall, grainflow and wind ripples produce subtly different stratification styles in the detail of their laminations (Figure 4C, D), but as can be imagined, grainflow stratification usually dominates the slipfaces, while wind ripples tend to be preserved where covered up in the dune toe and apron.

4. THE BRANDEWYNKOP DUNES

The dune and vegetation patterns evident in satellite and aerial images indicate that the present main area of bare dune activity is the downwind part of a dune plume that extends from the coast in the west. Most of this dune plume is now partially stabilized by vegetation, but in the east the older dunes are being eroded and reworked. The erosion has exposed the slipface stratification in plan view (Figure 5D) and shows slipfaces at high angles to each other. This may suggest that these older dunes were of a complex shape (e.g. Figure 5C), and/or had a complex history of changes in wind direction. Indeed, although strong Westerlies dominate sand transport, the dunes in this area are subject to wind reversals in summer, when strong winds blow from the east to southeast.

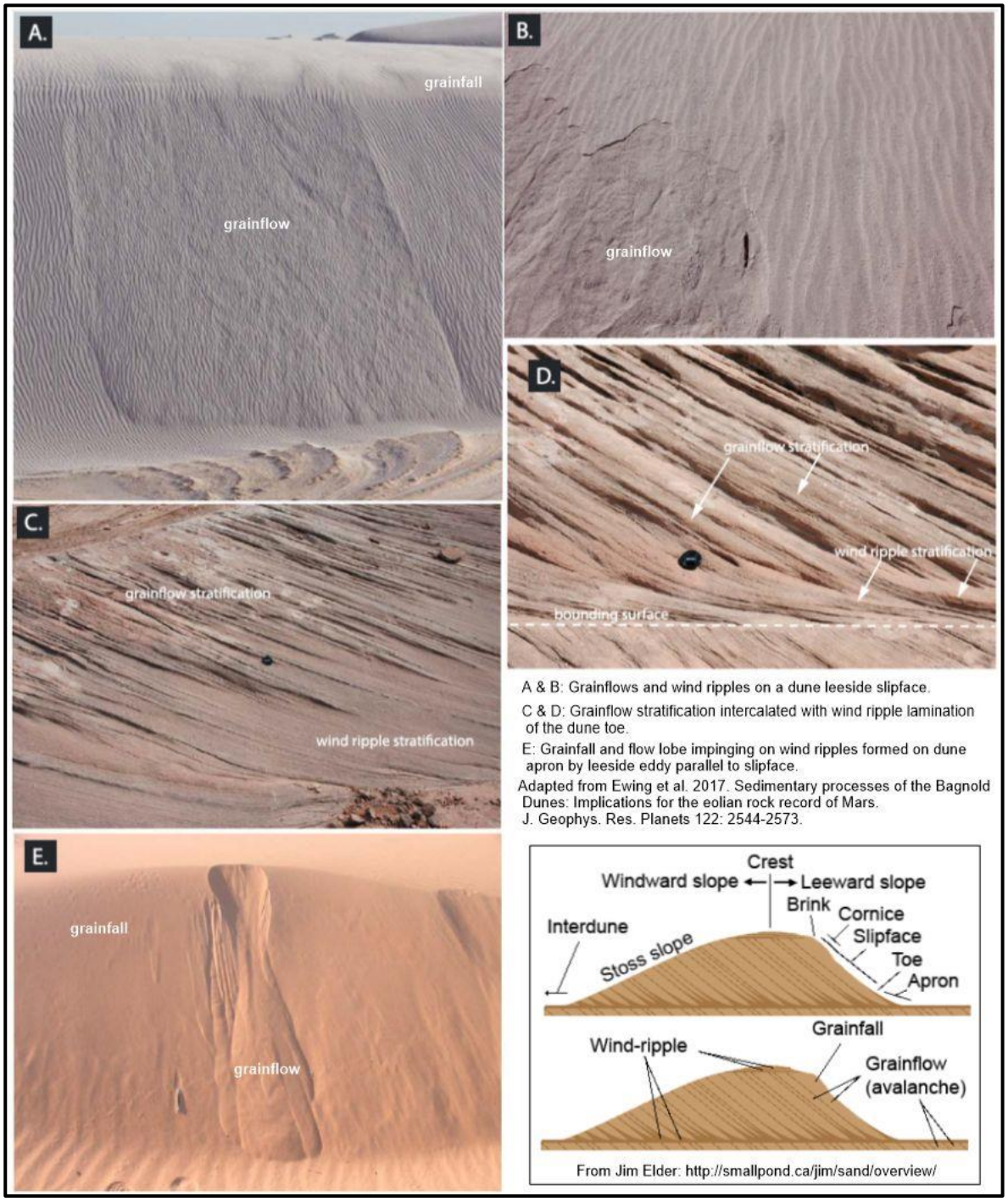

Figure 4. Dune processes and stratification.

The erosion of the older dune deposits has exposed an upper lateritic soil profile and underlying dark, humic palaeosols (fossil soils) (Figure 6A, B, C). Figure 6D illustrates the effect of a wetter period on earlier dunes. The dunes are rounded off by slopewash and sand creep (colluviation), are colonized by vegetation, and a soil profile develops across the new surface. Surfaces of long duration develop more evolved, cementing soils such as calcretes in semi-arid climates, and iron-oxide enriched, yellow-brown, lateritic soils (*koffieklip*) in climates with a wet season. Such well-developed soils and pedocretes may be semi-regional in extent.

Less developed palaeosols, such as those evident mainly by their humic carbon content, reflect fossil surfaces (palaeosurfaces) marking palaeo-topographies of relatively shorter durations. Thick dune accumulations include several palaeosols which mark the stable palaeosurfaces formed between phases of dune sand deposition. Stacked humic palaeosols are evident in Figure 6A and reflect an area of low deposition, with intermittent accumulation of sand sheets there, whereas a thin humic lens (Figure 6C) evidently formed in a very ephemeral local interdune area.

Dune sands readily soak up the rainfall of a wetter phase, raising the water table and subjecting the wet sands to post-depositional effects such as the breaking down of unstable mineral grains to clays and the formation of new cements from molecules dissolved in the groundwater. The zone within which the top of the water table fluctuates can be a zone of post-depositional cementing, such as the forming of groundwater calcretes or ferruginous segregations. These groundwater effects can be distinguished from palaeosols as they crosscut the sedimentary layering and lack the characteristics of a pedogenic (soil) profile beneath a palaeosurface. Under the influence of percolating groundwater, the very tiny clay crystals formed from weathered mineral grains can filter between the sand grains. The clay lamellae seen in Figure 6C are thought to form by successive "wetting fronts" of infiltrating water carrying clay downwards, but their location may also roughly reflect clay trapping by original laminae of finer sand. In general, post-depositional processes in the soil profiles and water table tend to destroy the original sedimentary structures and enhance the superimposed inhomogeneity features such as plant roots, trace fossils (burrows) and compaction features.

The high water tables of a wetter climatic cycle intersect the interdune areas where springs and vleis/ponds form (Figure 6D). The locations of old springs are marked by very local, irregular accumulations of dense iron (Fe) oxide cements (ferricretes). The deposits of interdune ponds/vleis may resemble humic palaeosols as they may not include much mud, but are usually distinguished by the presence of fossils such as abundant, small aquatic snail shells. These waterhole deposits also include other fossils of vlei life such as aquatic plant remains, frogs, birds and the local, surrounding palaeosurface hosts the fossil bones of contemporary land mammals, and Stone Age archaeological material, in greater concentrations.

Unfortunately, fossil bones and shells are destroyed by prolonged immersion in groundwater and the Brandewynkop old dunes are evidently decalcified, lacking even the occasional land snails.

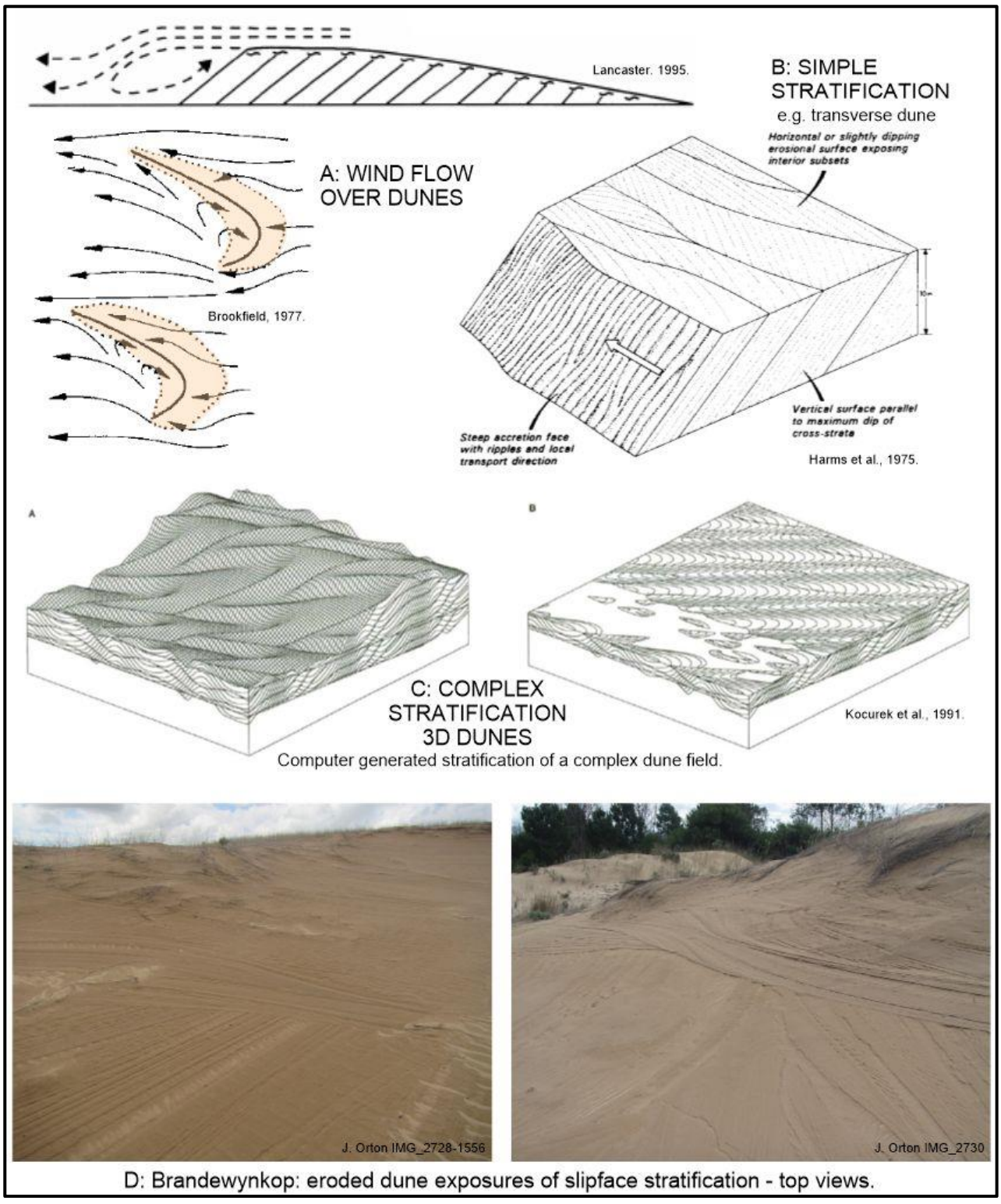

Figure 5. Wind flow and stratification.

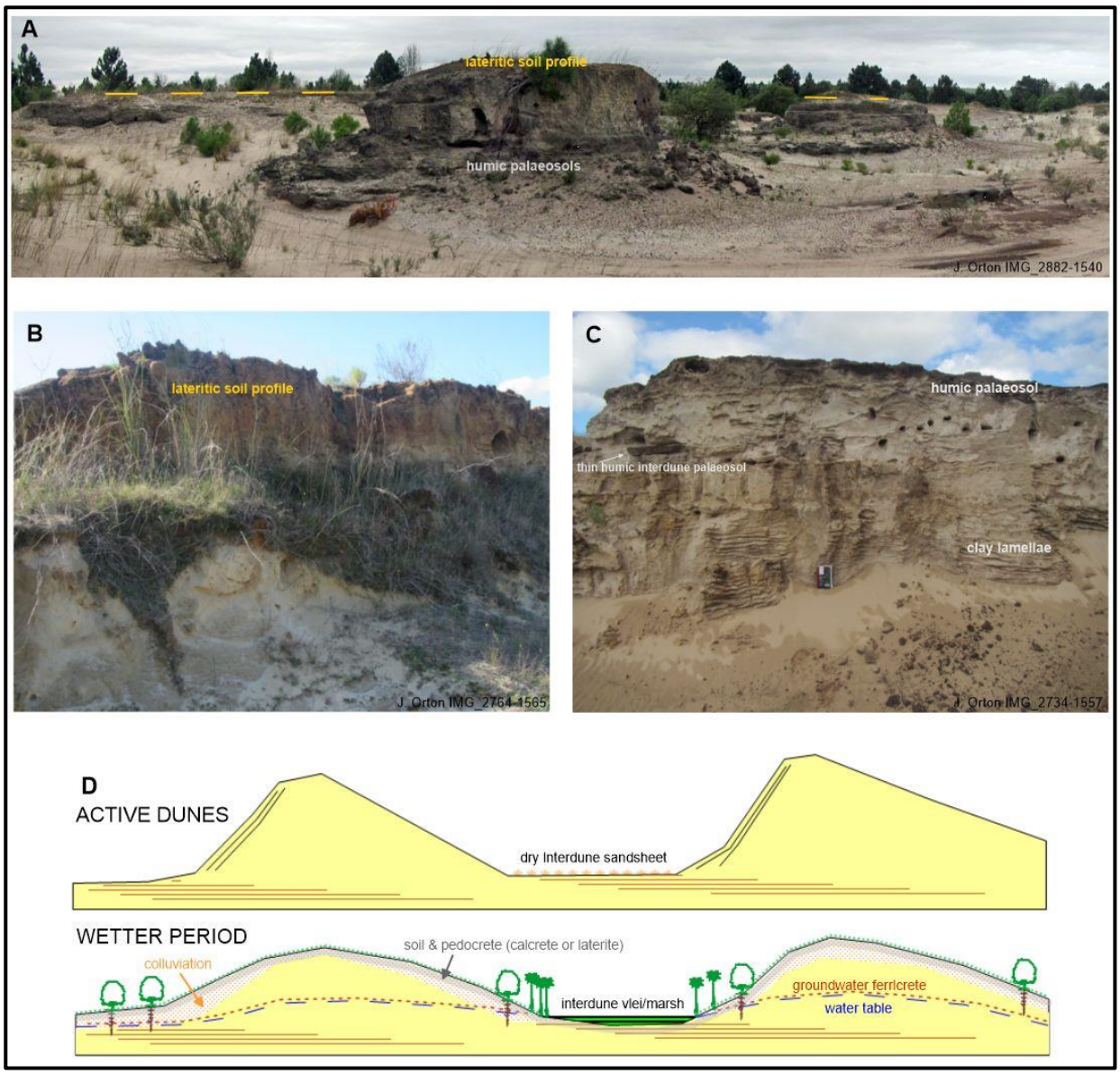

Figure 6. Brandewynkop – exposures of older aeolianites and palaeosols.

5. STONE AGE FINDS

In common with other areas of wind erosion (deflation) of old coastal dunes, Stone Age archaeological material is being exposed, often in spatial association with the palaeosols. The Stone Age technologies which occur provide a broad indication of the age of the dunes and palaeosurfaces which were occupied by ancient people.

Early Stone Age (ESA) tools, typically larger Acheulean handaxes and cleavers, have been found in weathered aeolianites with capping lateritic soil profiles at a number of localities along the South Coast. Near Keurboomsrivier at ~120 m asl., ESA tools are associated with rounded quartzite cobble-gravel outcrops and nearby ESA material occurs in a bed of lateritic nodules (Davies, 1971). Exposures along the N2 east of the Keurbooms River show reddened aeolianite capped with a thick laterite, with ESA artefacts in the base of the lateritic profile and Middle Stone Age (MSA) on top (Davies, 1971). Other occurrences of "Late Acheulean" associated with eroding, old reddened aeolianite and laterite are mentioned by Davies. Inland of Knysna in the Simola area, a 4 m thick

exposure of lateritic aeolianite at ~180 m asl. exposed ESA artefacts in the base of the section (Holmes *et al*., 2007).

On Brakkloof 443, adjacent to the Robberg Peninsula of Plettenberg Bay (Figure 2B), are gullied and eroding weathered aeolianites with considerable quantities of ESA material being exposed. Butzer and Helgren (1972) described the occurrence and named the aeolianites as the Brakkloof Formation and the capping laterite profile as the Brakkloof Palaeosol. The site is downslope from an outcrop of quartzite bedrock which was an ESA artefact production source and material was distributed downslope and incorporated in colluviated aeolian sands. Subsequently, the sands were strongly weathered and the lateritic soil profile was superimposed. The latter has since undergone erosion and redeposition of its derived ferruginous lateritic gravel and the weathered aeolianites have become gullied, releasing the ESA material from the profile. It thus appears that the ESA activity in the area pre-dated the superimposition of the lateritic weathering profile. The quartzite resources continued to be exploited during the MSA.

The Geelhoutboom dune field nearby (Figure 2B) is also an area of "ferruginized dunes" undergoing deflation where "hardpan horizons" (palaeosols) are exposed and numerous artefacts have been exposed (Deacon, 1970; Deacon & Geleijnse, 1988). Most of the material is MSA, but there are "very elegant" ESA Acheulean handaxes. Laidler (1947) recorded a sequence of up to ~6 m of hard red aeolianite, succeeded by ~0.3 m of mottled yellow sand which is capped by a "hardpan" (a thin, lateritic pedocrete?). The latter is succeeded by brown humic sands ~0.3 m thick which are overlain by white sands up to ~3 m thick. The ESA material apparently occurred between the hard red aeolianite and the "hardpan".

In the Brandewynkop area the capping lateritic soil is not as developed as that at Brakkloof, the aeolianites are not as strongly weathered, and weathered and altered old aeolianite has not been exposed by the erosion. This is consistent with the lack of ESA artefacts, nearly all of the exposed artefacts being MSA material (J. Orton, pers. comm.).

The formation of lateritic soil profiles in the Southern Cape, on stable surfaces of varying ages and longevity, and their reworking, has been occurring from Miocene times. The advanced lateritic profile at Brakkloof formed after the inception of the ESA (early mid-Quaternary), whereas at Brandewynkop a lesser lateritic soil developed after the inception of the MSA (later mid-Quaternary).

6. TRACKS IN AEOLIANITES

The traces of burrows and chambers made by a variety of animals, insects and spiders are preserved in aeolianites, but the footprint trackways of animals, or fossil spoor, are of more tangible and general interest. These are preserved on the bedding planes, so that their shape is seen in normal plan view. The bedding planes are revealed when cemented calcareous dunes are eroded, mainly as sea cliffs, and blocks of aeolianite are detached along the bedding. In contrast, in vertical sections a trackway is not visible and only the deeper footprints are seen as sharp downward distortions of the bedding.

The trackways exposed in the aeolianites of the South Cape coast have lately been in the scientific news with several new discoveries, including human tracks. The tracks complement the sparse fossil bone finds, adding to the knowledge of the past fauna. The reports are available through Open

Access and the reader is referred to the following links, rather than reproduce some selected figures herein.

Late Pleistocene vertebrate trace fossils in the Goukamma Nature Reserve.
http://wiredspace.wits.ac.za/handle/10539/23736
A New Pleistocene Hominin Tracksite from the Cape South Coast.
https://www.nature.com/articles/s41598-018-22059-5
Palaeoecology of giraffe tracks in Late Pleistocene aeolianites on the Cape south coast
https://www.sajs.co.za/article/view/4335
The Pleistocene fauna of the Cape south coast revealed through ichnology at two localities.
https://www.sajs.co.za/article/view/5135

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8. GLOSSARY

~ (tilde): Used herein as “approximately” or “about”.

Aeolian: Pertaining to the wind. Refers to erosion, transport and deposition of sedimentary particles by wind. A rock formed by the solidification of aeolian sediments is an aeolianite.

Archaeology: Remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures.

asl.: above (mean) sea level.

Bedrock: Hard rock formations underlying much younger sedimentary deposits.

Calcareous: sediment, sedimentary rock, or soil type which is formed from or contains a high proportion of calcium carbonate in the form of calcite or aragonite.

Calcrete: An indurated deposit (duricrust) mainly consisting of Ca and Mg carbonates. The term includes both pedogenic types formed in the near-surface soil context and non-pedogenic or groundwater calcretes related to water tables at depth.

Colluvium: Hillwash deposits formed by gravity transport downhill. Includes soil creep, sheetwash, small-scale rainfall rivulets and gullying, slumping and sliding processes that move and deposit material towards the foot of the slopes.

Conglomerate: A cemented gravel deposit.

Coversands: Aeolian blanket deposits of sandsheets and smaller dunes.

Duricrust: A general term for a zone of chemical precipitation and hardening formed at or near the surface of sedimentary bodies through pedogenic and (or) non-pedogenic processes. It is formed by the accumulation of soluble minerals deposited by mineral-bearing waters that move upward, downward, or laterally by capillary action, commonly assisted in arid settings by evaporation. Classified into calcrete, ferricrete, silcrete, gypcrete, sepiocrete etc.

ESA: Early Stone Age. The archaeology of the Stone Age between ~1.4 Ma and ~300 ka.

Ferricrete: Deposits which have been cemented by the deposition of iron oxides from groundwater solution (absolute iron enrichment). Formed around springs, in fissures, zones of groundwater surfacing and in bogs.

Fluvial deposits: Sedimentary deposits consisting of material transported by, suspended in and laid down by a river or stream.

Fm.: Formation.

Fossil: The remains of parts of animals and plants found in sedimentary deposits. Most commonly hard parts such as bones, teeth and shells which in lithified sedimentary rocks are usually altered by petrification (mineralization). Also impressions and mineral films in fine-grained sediments that preserve indications of soft parts. Fossils plants include coals, petrified wood and leaf impressions, as well as microscopic pollen and spores. Marine sediments contain a host of microfossils that reflect the plankton of the past and provide records of ocean changes. Nowadays also includes molecular fossils such as DNA and biogeochemicals such as oils and waxes.

Laterite: Soils in which iron oxides are concentrated and segregated in the form of mottling, nodules/pisoliths and cementation. Distinctive by various reddish, dark-brown to yellow-brown hues. The name laterite is derived from Latin - *later* = brick, which alludes to the brick-like hues. Also called plinthite (Greek *plinthos* = brick). Also known as iron pan, ouklip or koffieklip, ngubane and murram. A warm, sub-humid to humid climate with a distinct dry season and a wet season is commonly associated with laterite formation. As used herein laterite refers to the pedogenic, relative iron enrichment type formed on a palaeosurface by removal of silica and alkali from the weathering profile. See ferricrete.

LSA: Late Stone Age. The archaeology of the last ~40 ka associated with fully modern people.

MIS: Marine isotope stages (MIS), marine oxygen-isotope stages, or oxygen isotope stages (OIS), are alternating warm and cool periods in the Earth's paleoclimate, deduced from oxygen isotope data reflecting changes in temperature derived from data from deep sea core samples. Working backwards from the present, MIS 1 in the scale, stages with even

numbers representing cold glacial periods, while the odd-numbered stages represent warm interglacial intervals (see Figure 7).

MSA: Middle Stone Age. The archaeology of the Stone Age between ~400 and ~40 ka associated with early humans.

OSL: Optically stimulated luminescence. One of the radiation exposure dating methods based on the measurement of trapped electronic charges that accumulate in crystalline materials as a result of low-level natural radioactivity from U, Th and K. In OSL dating of aeolian quartz and feldspar sand grains, the trapped charges are zeroed by exposure to daylight at the time of deposition. Once buried, the charges accumulate and the total radiation exposure (total dose) received by the sample is estimated by laboratory measurements. The level of radioactivity (annual doses) to which the sample grains have been exposed is measured in the field or from the separated minerals containing radioactive elements in the sample. Ages are obtained as the ratio of total dose to annual dose, where the annual dose is assumed to have been similar in the past.

Palaeontology: The study of any fossilised remains or fossil traces of animals or plants which lived in the geological past and any site which contains such fossilised remains or traces.

Palaeosol: An ancient, buried soil formed on a palaeosurface. The soil composition may reflect a climate significantly different from the climate now prevalent in the area where the soil is found. Burial reflects the subsequent environmental change.

Palaeosurface: An ancient land surface, usually buried and marked by a palaeosol or pedocrete, but may be exhumed by erosion (*e.g*. wind erosion/deflation) or by bulk earth works.

Pedogenesis/pedogenic: The process of turning sediment into soil by chemical weathering and the activity of organisms (plants growing in it, burrowing animals such as worms, the addition of humus *etc.*).

Pedocrete: A duricrust formed by pedogenic processes.

Rhizolith: Fossil root. Most commonly formed by pedogenic carbonate deposition around the root and developed in palaeosols.

Tectonic: Relating to the structure of the earth's crust and the large-scale processes which take place within it (faulting and earthquakes, crustal uplift or subsidence.

Trace fossil: A structure or impression in sediments that preserves the behaviour of an organism, such as burrows, borings and nests, feeding traces (sediment processing), farming structures for bacteria and fungi, locomotion burrows and trackways and traces of predation on hard parts (tooth marks on bones, borings into shells by predatory gastropods and octopuses).

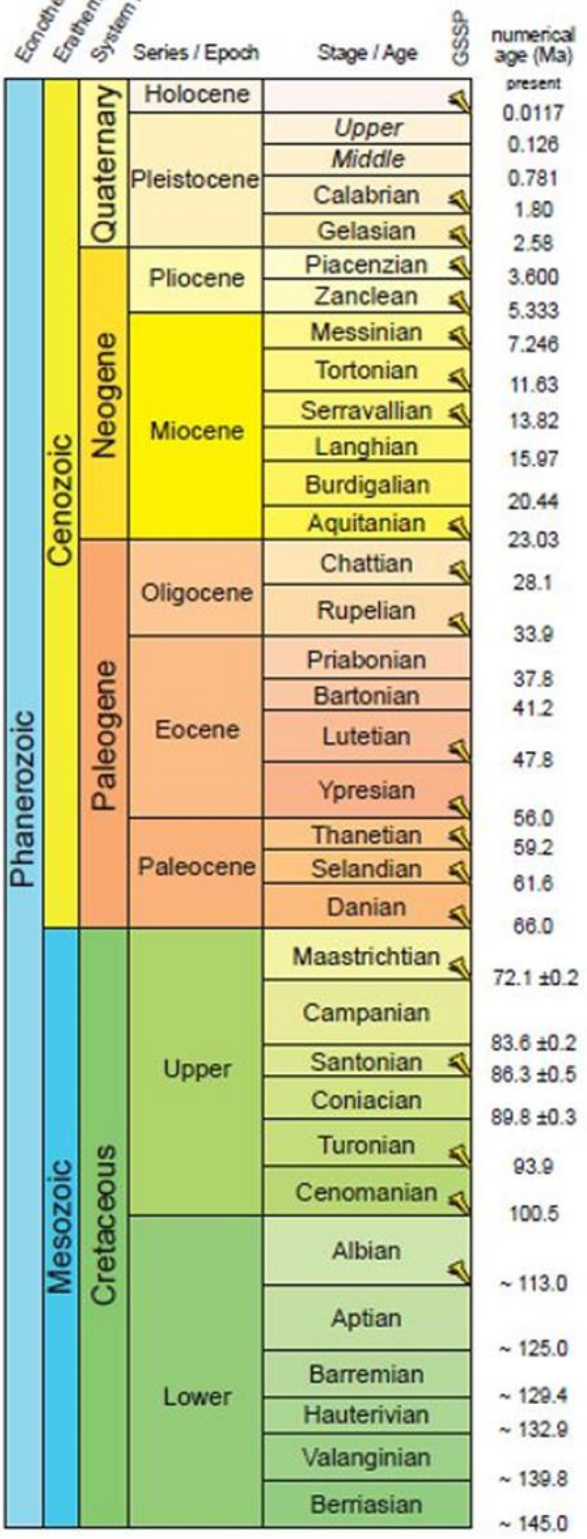
9. GEOLOGICAL TIME SCALE TERMS

For more detail see www.stratigraphy.org.

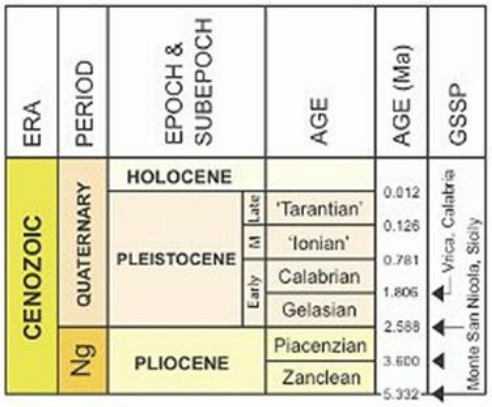
ka: Thousand years or kilo-annum (10^3 years). Implicitly means “ka ago” *i.e*. duration from the present, but “ago” is omitted. The “Present” refers to 1950 AD. Not used for durations not extending from the Present. For a duration only “kyr” is used.

Ma: Millions years, mega-annum (10^6 years). Implicitly means “Ma ago” *i.e.* duration from the present, but “ago” is omitted. The “Present” refers to 1950 AD. Not used for durations not extending from the Present. For a duration only “Myr” is used.

Mesozoic and Cenozoic Chronostratigraphy
From: International Commission on Stratigraphy.
Chronostratigraphic Chart 2016-12.pdf



ICS-approved 2009 Quaternary (SQS/INQUA) proposal



Holocene: The most recent geological epoch commencing 11.7 ka till the present.

Pleistocene: Epoch from 2.6 Ma to 11.7 ka.
Late Pleistocene 11.7–126 ka.
Middle Pleistocene 135–781 ka.
Early Pleistocene 781–2588 ka.

Quaternary: The current Period, from 2.6 Ma to the present, in the Cenozoic Era.
The Quaternary includes both the Pleistocene and Holocene epochs. As used herein, early and middle Quaternary correspond with the Pleistocene divisions, but late Quaternary includes the Late Pleistocene and the Holocene.

APPENDIX 6 – Spiritual significance of the Brandewynkop CMP area

The entire CMP area and surrounding landscape are considered to be associated with intangible heritage because the landscape was used by precolonial people – as evidenced by the artefacts found in it – and is still relatively pristine (with the exception of the invading alien vegetation).

"We find artefacts that can be linked to the Khoisan[11] culture as important and of spiritual significance" (Reichert 2014:3). The archaeological survey described in Appendix 4 revealed no artefacts that can be linked to the Khoekhoen but a few artefacts appeared to be from the LSA signalling at least a San presence in the dunes.

While there do not appear to be any physical remains relating to the Khoekhoen and those likely left by the San are minimal, it cannot be disputed that both population groups made regular use of the broader local landscape. As reviewed in Appendix 4, numerous sites that include pottery and that date to within the last 2000 years occur along the coastline. There is also a high likelihood that precolonial human remains will be present in the coastal dunes. The generally untransformed nature of the area is important because it reflects the landscape approximately as it was in the precolonial past when the San and Khoekhoen were the only regular users of the area. Maintaining this untransformed state is thus important.

[11] This term is a termed coined by early 20th century researchers to refer collectively to the San (the original inhabitants of southern Africa) and Khoekhoe (migrants who arrived in southernmost Africa about 2000 years ago). While better considered as separate populations, we use the term here following its use by the GKC.

APPENDIX 7 – Stakeholder database

Individual/Organisation	Role	Contact person	E-mail address	Telephone
Mr Conrad Dreyer	Landowner in CMP area		brandkop@intekom.co.za	082 774 8772
Mr Dawid Zeitsman	Landowner in CMP area		romilda@telkomsa.net	082 873 4793
Mr Choppie Linstrom	Landowner adjacent to CMP area		choppie@brakkeduine.co.za	083 400 3720
Mrs Elise Kommer	Landowner adjacent to CMP area		groenvlei@igen.co.za	082 321 1467
Mr Hennie Vermaak	Landowner adjacent to CMP area		groenvlei@igen.co.za	083 228 3595
Mr John Strydom	Landowner adjacent to CMP area		johnstrydom@telkomsa.net	082 321 4685
Sparreberg (Pty) Ltd	Landowner adjacent to CMP area	Mr Walter Kunitz	splendorafarms@gmail.com	072 340 0694
Mr Johan Linstrom	Runs 4x4 trail in CMP area		franlinstrom@gmail.com	
Mr Arthur Loretz	Runs 4x4 trail in CMP area		a.loretz@absamail.co.za	082 336 2055
Enel Green Power	EGP representative	Ms Pamela Mabece	pamela.mabece@enel.com	010 344 0217
EGP & GBWF	EGP & GBWF manager	Bongani Moroka	bongani.moroka@enel.com	082 886 6460
EGP & GBWF	EGP & GBWF representative	Nhlakanipho Kunene	nhlakanipho.kunene@enel.com	
EGP & GBWF	EGP & GBWF representative	Nthabiseng Mosehle	nthabiseng.mosehle@enel.com	
EGP & GBWF	EGP & GBWF representative	Agreepa Neduvhuledza	agreepa.neduvhuledza@enel.com	
EGP & GBWF	EGP & GBWF representative	Precious Namo	precious.namo@enel.com	
EGP & GBWF	EGP & GBWF representative	Roger Quesada	roger.quesada@enel.com	
Eastern Cape Provincial Heritage Resources Agency (ECPHRA)	Provincial heritage authority responsible for compliance	Mr Sello Mokhanya	info@ecphra.org.za smokhanya@ecphra.org.za	072 017 0072
South African Heritage Resources Agency (SAHRA)	Heritage Resources Authority that requested the CMP	Dr Ragna Redelstorff Ms Natasha Higgit Mr Philip Hine	rredelstorff@sahra.org.za nhiggit@sahra.org.za phine@sahra.org.za	021 462 4502
Kouga Local Municipality	Municipal Manager	Mr Charl du Plessis (PA: Ms Joezay Reed)	jreed@kouga.gov.za	042 200 2200
Gamtkwa Khoisan Council (GKC)	Represent San and Khoe I&APs	Mr Kobus Reichert	kobusreichert@yahoo.com	
Dr Johan Binneman	Local archaeologist, assists GKC		jnfbinneman@gmail.com	
Dr Peter Nilssen	CRM archaeologist, previously worked on site		peter@carm.co.za	
Karen van Ryneveld	CRM archaeologist, previously worked on site		kvanryneveld@gmail.com	
Dr Alex Mackay	Academic archaeologist		amackay@uow.edu.au	
Alex Blackwood	Academic archaeologist		alexfblackwood@gmail.com	

Prof Lyn Wadley	Academic archaeologist		lyn.wadley@wits.ac.za	
Prof Marlize Lombard	Academic archaeologist		mlombard@uj.ac.za	
Dr Naomi Cleghorn	Academic archaeologist		cleghorn@uta.edu	
Dr Alexandra Sumner	Academic archaeologist		asumner2@depaul.edu	
Dr Sarah Wurz	Academic archaeologist		Sarah.Wurz@wits.ac.za	
Prof Andy Herries	Academic archaeologist		A.Herries@Latrobe.edu.au	
Dr Erich Fisher	Academic archaeologist		Erich.Fisher@asu.edu	
Dr Matt Lotter	Academic archaeologist		mattlotter@gmail.com	
Dr Kathleen Kuman	Academic archaeologist		kathleen.kuman@wits.ac.za	
Dr Matt Caruana	Academic archaeologist		mattc@uj.ac.za	
Prof. Christopher Henshilwood	Academic archaeologist		Christopher.Henshilwood@uib.no	
Dr Karen van Niekerk	Academic archaeologist		Karen.Niekerk@uib.no	

APPENDIX 8 – List of actions and timeframes for the implementation of the CMP

Action	Timeframe	Responsibility	Deliverable / Objective
Establish a Management Committee including at least the landowners, representatives of EGP and/or the GBWF and the GKC.	On approval of the CMP by SAHRA/ECPHRA	GBWF	• Letter to SAHRA providing membership details of committee
Create budget availability for any actions requiring funding.	On approval of the CMP by SAHRA/ECPHRA	GBWF	• Budget set aside and available when required
Appoint an archaeologist for ad hoc work and/or 5-yearly inspections and CMP updates	As required	GBWF	• Required reporting to be submitted to SAHRA/ECPHRA
Procure and provide a log book for the recording of fence inspections and repairs and any monitoring or other visits to the CMP area	On approval of the CMP by SAHRA/ECPHRA	Management Committee	• Log book ready for use
Monitoring of fence enclosing CMP area	3 times per year	Land owners (inspections) and Management Committee (logbook entries)	• Records in log book •
Maintain the fence	As required	Land owners and/or Management Committee	• Repairs effected timeously
Manage access to fenced CMP area for monitoring or research	As required	Land owners and/or Management Committee	• Access to responsible persons granted as required
Annual reporting	Annually	Management Committee	• Annual reports submitted to SAHRA and/or ECPHRA
Review and update CMP	5 yearly or as required	Archaeologist	• Updated CMP that remains relevant and effective
Determine status of CMP area if GBWF is decommissioned	On decommissioning	SAHRA and/or ECPHRA in consultation with land owners	• To be determined at the time.