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Square Kilometre Array Project - SKA1_MID Heritage Resources Management Training

Training Manual

Prepared for:

South African Radio Astronomy Observatory

Project Number:

SAR6105

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DEFINITIONS

Alter	Any action affecting the structure, appearance or physical properties of a <i>place</i> whether by way of structural or other works, or any other means.
Amphibian	Animal capable of living in water or land. An example would be a frog.
Anapsids	No extra fenestra behind the eye; diapsids have two rather than one opening behind each eye.
Archaeological (as per NHRA Section 2(ii))	<p>Any material remains that were produced or created by humans or that resulted from any human activity and that are unused and older than 100 years. This includes artefacts, human and hominid remains and artificial features and structures.</p> <p>Archaeology also refers to Rock Art that is defined as any form of painting, engraving or other graphic representation on fixed rock surfaces or loose rocks or stones that was made by humans and that are older than 100 years, including a 10 m area surrounding such site.</p> <p>Archaeology also includes:</p> <ul style="list-style-type: none"> • Any wrecks or parts thereof that was wrecked in South Africa more than 60 years ago, including any cargo, debris or artefacts found or associated with it; and • Any features, structures and artefacts older than 75 years that are associated with military history, including the sites on which they are found.
Archaeologist	A trained professional who uses scientific methods to excavate record and study archaeological sites and deposits.
CCS	Crypto-Crystalline Silicates broadly refers to sedimentary rock that has been altered through metamorphic processes resulting extremely fine-grained or microscopic crystals built with a silicon and oxygen structure.
Conservation	The protection, maintenance, preservation and sustainable use of “ <i>places</i> ” to safeguard their “ <i>cultural significance</i> ”.

<p>Cultural Significance (CS)</p>	<p>The aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. A heritage may have cultural significance or other special value because of its:</p> <ul style="list-style-type: none"> • Importance in the community, or pattern of South Africa's history; • Possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage; • Potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage; • Importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects; • Importance in exhibiting particular aesthetic characteristics valued by a community or cultural group; • Importance in demonstrating a high degree of creative or technical achievement at a particular period; • Strong or special association with a particular community or cultural group for social, cultural or spiritual reasons; • Strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and • Significance relating to the history of slavery in South Africa.
<p>Development</p>	<p>Any physical intervention, excavation, or action that could cause changes to the nature, appearance, fabric of a place. In addition, development might also influence the stability or future well-being of a place. Development could include:</p> <ul style="list-style-type: none"> • Construction, alteration, demolition, removal or change of use of a place or a structure at a place; • Carrying out any works on or over or under a place; • Any change to the natural or existing condition or topography of land; and • Any removal or destruction of trees, or removal of vegetation or topsoil.
<p>Excavation</p>	<p>The scientific excavation, recording and retrieval of archaeological deposit and objects through the use of accepted archaeological procedures and methods, and excavate has a corresponding meaning.</p>

Field Rating	<p>SAHRA requires heritage resources to be provisionally rated in accordance with Section 7 of the NHRA that provides a three-tier grading system of resources that form part of the national estate. The rating system distinguishes between four categories:</p> <ul style="list-style-type: none"> • Grade I: Heritage resources with qualities so exceptional that they are of special national significance (<i>E.g. Robben Island</i>); • Grade II: Heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a region (<i>E.g. Corbelled house Complex, Konka</i>); • Grade III: Other heritage resources worthy of conservation (<i>E.g. Rock Art Sites, Buildings, Burial Grounds and Graves</i>); and • General Protected: i.e. generally protected in terms of Sections 33 to 37 of the NHRA.
General Protection	<p>General protections are afforded to:</p> <ul style="list-style-type: none"> • Objects protected in terms of laws of foreign states; • Structures older than 60 years; • Archaeological and palaeontological sites and material and meteorites; • Burial grounds and graves; and • Public monuments and memorials.
Grave	<p>The place of interment (burial ground) and includes the contents, headstone or other marker of such a place, and any other structure on or associated with such <i>place</i>.</p>
Heritage Resource	<p>Any place of cultural significance.</p>
Heritage Resources Authority	<p>Established government entity at a national or provincial level responsible for the management of heritage resources in accordance with the provisions of the national legislative framework.</p> <p>The South African Heritage Resources Agency (SAHRA), established in terms of Section 11, or, insofar as the NHRA is applicable in or in respect of a province, a provincial heritage resources authority, in this instance the Northern Cape Provincial Heritage Resources Authority (NC-PHRA).</p>
Heritage Site	<p>Any place declared to be a national heritage site by SAHRA or a place declared to be a provincial heritage site by a provincial heritage resources authority.</p>
Living/Intangible Heritage	<p>The intangible aspects of inherited culture that could include cultural tradition, oral history, performance, ritual, popular memory, skills and techniques, indigenous knowledge systems, the holistic approach to nature, society and social relationships.</p>
Major Find	<p>If the resource cannot feasibly be rescued in a specified timeframe without compromising the detailed material recovery and contextual observations, the resource is considered a Major Find.</p>

Object	<p>Any movable property of cultural significance that are protected in terms of the NHRA, including:</p> <ul style="list-style-type: none"> • All archaeological artefacts; • All palaeontological and rare geological specimens; • All meteorites; and • Any other object referred to in section 3 of the Act.
Owner	<p>Includes the owner's (National Research Foundation [NRF] or other owners of the land on which a heritage <i>object</i> or <i>place</i> is located) authorised agent and any person with a real interest in the property.</p>
Palaeontological	<p>Any fossil remains or traces of animals or plants that were alive in the geological past, and any site that contains such fossils. Fossil fuels such as coal, and fossiliferous rock intended for industrial use are, however, excluded.</p>
Palaeontologist	<p>A trained professional who uses scientific methods to excavate, record and study fossils and palaeontological sites.</p>
Parareptile	<p>A group of extinct vertebrates very similar to reptiles</p>
Place	<p>A place may include:</p> <ul style="list-style-type: none"> • (a) The site; • (b) A structure such as a stonewall or historic building; • (c) A group of structures such as a werf; and • (d) In relation to the management of a place, includes the immediate surroundings of a place.
Site	<p>Any area of land, including land covered by water, and including any <i>structures</i> thereon.</p>
Structure	<p>Any works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith.</p>
Synapsid	<p>Vertebrate with one fenestra (hole) behind each eye orbit on the lower part of the skull. It allows better attachment sites for jaw muscles than the original anapsid condition.</p>
Tetrapod	<p>Animal with four legs.</p>
Therapsid	<p>Mammal-like reptile, i.e. a reptile that has evolved some mammal-like features. These are synapsids.</p>
Vertebrate	<p>Animal with a backbone, includes fish, reptiles, mammals, dinosaurs, birds</p>

TABLE OF CONTENTS

1	Purpose and Outcomes of the Training	1
2	Lesson 1: What is Heritage	2
2.1	Definitions	2
2.2	Heritage Resources Management	3
3	Lesson 2: What Mechanisms Protect Heritage in the context of the SKA1_MID Project	4
4	Lesson 3: The SKA1_MID Project and the Cultural Landscape	5
4.1	What is the SKA1_MID Project?	5
4.2	Project Location.....	5
4.3	The Cultural Landscape	7
4.4	Heritage Resource Types.....	12
5	Lesson 4: The SKA1_MID Project Impacts and Problems.....	41
5.1	Identified Impacts	41
5.2	Required Management and Mitigations	42
6	Lesson 5: The SKA1_MID Project Conservation Management Plan	44
6.1	The SKA1_MID Project Entity Organogram.....	44
6.2	Roles and Responsibilities	46
6.3	Management Requirements	48
6.3.1	<i>Construction Monitoring Requirements</i>	48
6.3.2	<i>Operational Monitoring Requirements</i>	51
7	Lesson 6: The CONSERVE Protocol	51

LIST OF FIGURES

Figure 2-1: The Heritage Cycle	3
Figure 6-1: High – Very High Palaeo-Sensitivity Areas to be Monitored by Palaeontologist	49
Figure 6-2: High – Very High Archaeological Sensitivity Areas to be Monitored by Archaeologist	50

LIST OF TABLES

Table 3-1: Legislation.....	4
Table 3-2: Guidelines.....	4
Table 4-1: Significance / Value of Cultural Layers in the Context of the Project.....	8
Table 4-2: Common Heritage Types	12
Table 5-1: Identified Potential Impacts	41
Table 5-2: Primary Recommendations to Mitigate Identified Potential Impacts.....	43
Table 6-1: Primary Positions and Responsibilities.....	46
Table 6-2: Palaeontological Monitoring Requirements during Construction of the SKA1_MID Project	49
Table 6-3: Archaeological Monitoring Requirements during Construction of the SKA1_MID Project	50
Table 6-4: Monitoring Requirements during Operation of the Proposed National Park.....	51

LIST OF APPENDICES

Appendix A: Recording Document
Appendix B: Site Specific Examples

LIST OF PLANS

Plan 1: Locality Plan	6
Plan 2: Palaeontological Sensitivity.....	10
Plan 3: Archaeological Sensitivity	11

1 Purpose and Outcomes of the Training

The purpose of the training is to enable you to manage heritage resources within the context of both intangible and tangible heritage during construction and operation of the SKA1_MID Project.

The desired learning outcomes through this training is to:

- Gain an understanding of what heritage, heritage management and heritage resources are;
- Understand what mechanisms are in place to safeguard heritage;
- Sensitise you to the cultural landscape within which the SKA1_MID Project is situated; and
- Promote the preservation and conservation of heritage resources within the SKA1_MID Project development footprint and surrounds.

Through completing this training, you should be capable of:

- Relating heritage resource management practice to national and international frameworks;
- Implementing heritage resource management procedures for specific operational aspects / components;
- Planning day-to-day operations as relevant to heritage resource management; and
- Communicating heritage resource management information to all relevant stakeholders.

2 Lesson 1: What is Heritage

2.1 Definitions



Property that is or may be inherited; an inheritance:

valued objects and qualities such as historic buildings and cultural traditions that have been passed down from previous generations

[as modifier] denoting or relating to things of special architectural, historical, or natural **value** that are preserved for the nation.

Section 2: Definitions

“heritage resource” means any place or object of cultural **significance**;

“cultural significance” means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological **value** or **significance**;

“living heritage” means the intangible aspects of inherited culture, and may include -

- (a) cultural tradition;
- (b) oral history;
- (c) performance;
- (d) ritual;
- (e) popular memory;
- (f) skills and techniques;
- (g) indigenous knowledge systems; and
- (h) the holistic approach to nature, society and social relationships;



**The National Heritage
Resources Act, 1999 (Act No.
25 of 1999) (NHRA)**

From these two definitions, there are several key words that assist in developing a framework of what “heritage” is. Notable repetition includes “value” and “significance”. But these are subjective. What is of value or significance to one individual or group, may not be for another.

What we can gather is that heritage is a wide concept encompassing both natural and cultural aspects, where:

- Natural heritage refers to the sum total of elements of biodiversity, including flora and fauna, ecosystems and geological structures.
- Cultural heritage is an expression of the ways of living developed by a community and passed on from generation to generation, including customs, practices, places, objects, artistic expressions and values.

In its broadest sense:

**HERITAGE IS THAT WHICH IS INHERITED FROM PAST GENERATIONS,
MAINTAINED IN THE PRESENT, AND BESTOWED TO FUTURE GENERATIONS.**

2.2 Heritage Resources Management

Heritage Resources Management (HRM) is founded on the principle that heritage resources are finite, non-renewable and irreplaceable. It acknowledges that heritage has lasting value as evidence of the origins of life, humanity and society.

HRM involves the conservation, presentation and improvement of protected heritage resources, as well as the protection, maintenance, preservation and sustainable use of heritage resources to protect their cultural meaning. This process can be conceptualised in terms of a Heritage Cycle.

Adapted from Thurley (2005), the Heritage Cycle can be visualised as follows:



Figure 2-1: The Heritage Cycle

3 Lesson 2: What Mechanisms Protect Heritage in the context of the SKA1_MID Project

Table 3-1: Legislation

Legislation
<ul style="list-style-type: none"> ● National Environmental Management Act, 1998 (Act No. 107 of 1998) ● Environmental Impact Assessment (EIA) Regulations, 2014 (Government Notice Regulation [GN R] 982 of 4 December 2014 as amended by GN R 326 of 7 April 2017) (EIA Regulations, 2014 [as amended]) ● National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) ● GN R 548: NHRA Regulations, 2000 ● National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (NEM: PAA) ● World Heritage Convention Act, 1999 (Act No. 49 of 1999) (WHCA) ● Astronomy Geographic Advantage Act, 2007 (Act No. 21 of 2007) (AGA) and Karoo Central Astronomy Advantage Areas Spectrum Regulations, 2015 (GN R 1166)

Table 3-2: Guidelines

Guideline
<ul style="list-style-type: none"> ● South African Heritage Resources Agency (SAHRA) Archaeology, Palaeontology and Meteorites (APM) Guidelines: Minimum Standards for the Archaeological and Palaeontological Components of Impact Assessment Reports (2007) ● South African Heritage Resources Agency (SAHRA) Site Management Plans: Guidelines for the Development of Plans for Management of Heritage Sites or Places ● GN 1356: NEM: PAA Cultural Heritage Survey Guidelines and Assessment Tools for Protected Areas in South Africa promulgated on 8 December 2017 ● United Nations Educational, Scientific and Cultural Organisation (UNESCO) Convention concerning the Protection of the World Cultural and Natural Heritage of 1972 (World Heritage Convention [WHC]) ● Operational Guidelines for the Implementation of the World Heritage Convention, 12 July 2017

Guideline

- United Nations Educational, Scientific and Cultural Organisation (UNESCO) Convention for the Safeguarding of the Intangible Cultural Heritage, 2003
- International Council on Monuments and Sites (ICOMOS): International Charter for the Conservation and Restoration of Monuments and Sites, 1964 (*Venice Charter*)
- International Council on Monuments and Sites (ICOMOS): Charter for the Protection and Management of the Archaeological Heritage, 1990

4 Lesson 3: The SKA1_MID Project and the Cultural Landscape

4.1 What is the SKA1_MID Project?

The SKA1_MID Project is an international effort to build the world's largest radio telescope, with a square kilometre of data collecting area. It will comprise the deployment of thousands of radio telescopes, in three unique configurations, to enable astronomers to monitor the sky in unprecedented detail and survey the entire sky thousands of times faster than any system currently in existence. The scale of the Project represents a huge leap forward in engineering, research and development. Furthermore, the Project will deliver a correspondingly transformational increase in science capability when operational.

The Project is managed through the International SKA Organisation (SKAO), consisting of eleven member nations - Australia, Canada, China, Germany, India (associate member), Italy, New Zealand, South Africa, Sweden, the Netherlands and the United Kingdom.

In South Africa, the international SKAO proposes to establish an additional 133 antennas to the operational 64-dish MeerKAT telescope. Of these, 112 antennas will be established in the 'core' and the remaining 21 will be installed in three spiral arms (seven in each arm). This installation will include the establishment and development of several ancillary infrastructures.

4.2 Project Location











The South African contingent of the SKA1_MID Project is in the Karoo Region of the Northern Cape. The development footprint is situated within two district municipalities, namely the Namakwa and Pixley ka Seme District Municipality, which comprise the following local affected municipalities:

- Karoo Hoogland Local Municipality;
- Hantam Local Municipality; and
- Kareeberg Local Municipality.

SKA Project

Locality Plan

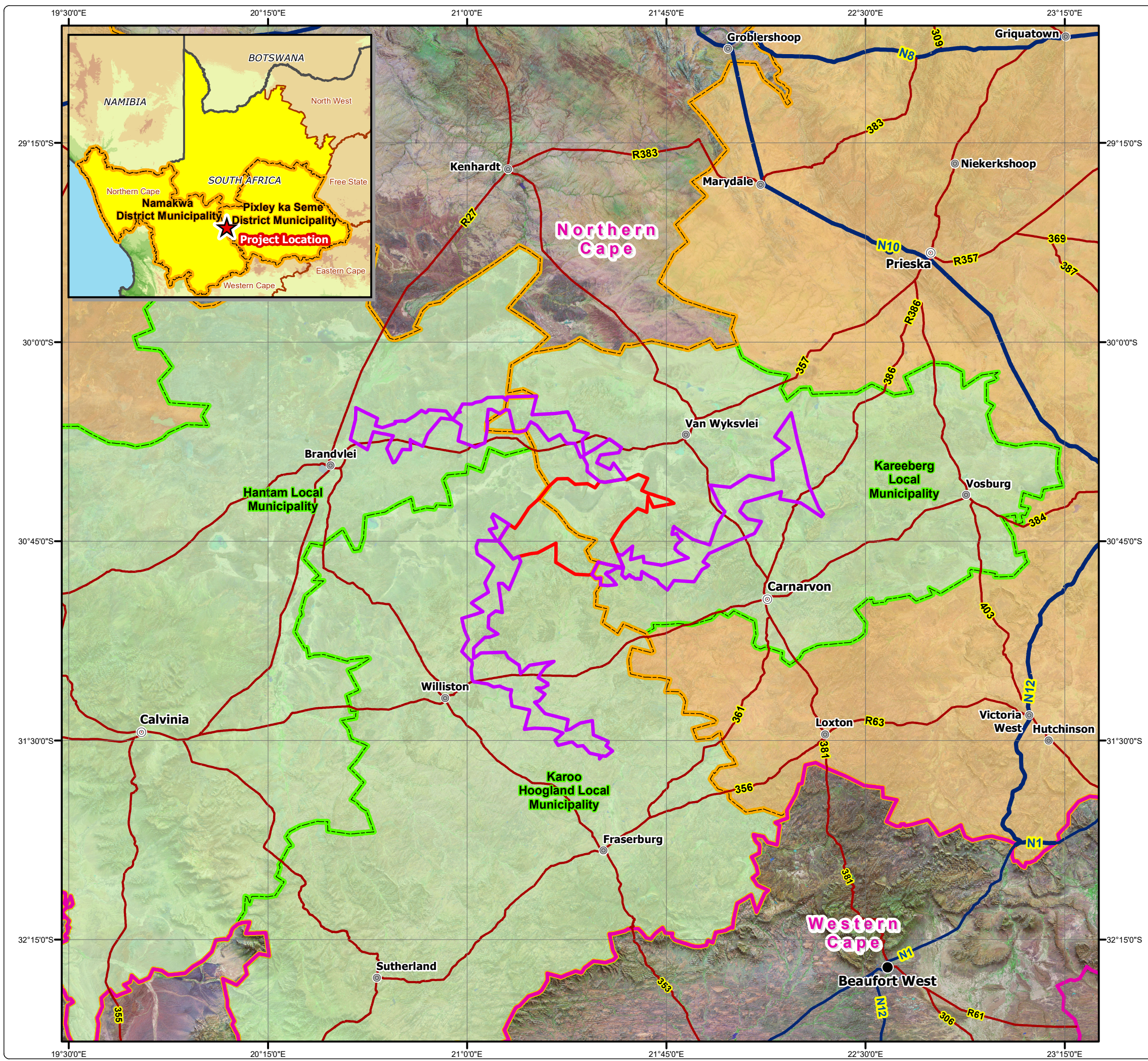
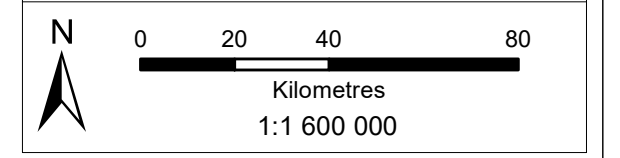
Legend

-  SKA Phase 1 Spiral Arms
-  SKA Phase 1 Core
-  Major Town
-  Secondary Town
-  Other Town
-  National Route
-  Main Road
-  Provincial Boundary
-  District Municipality
-  Local Municipality



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4.3 The Cultural Landscape

The Project is in a region known for its heritage sites and living heritage ranging from palaeontological through to the historical period. These resources do not occur in isolation from one another, but rather as interacting to reinforce a specific sense-of-place. The cultural landscape consists of several layers that contribute to the “spirit of place”. These include:

- The natural landscape comprising flat plains and mountainous features;
- The palaeontological record associated with various fossil remains;
- The archaeological record associated with Earlier (ESA) and Middle Stone Age (MSA) artefacts;
- The archaeological record associated with Later Stone Age (LSA) artefacts attributed to the /Xam group;
- The archaeological record associated with Rock Art engravings attributed to various San groups, and the /Xam in particular;
- The archaeological record associated with LSA artefacts and pottery attributed to Khoekhoe groups;
- The archaeological record associated with Rock Art paintings attributed to Khoekhoe groups;
- 18th and 19th century settlement of Xhosa groups in the Northern Cape, and their interactions with the /Xam, Korana and Griqua;
- Migrations of the frontier farmers from the Cape Colony into the region;
- The present-day farming and rural landscape; and
- A limited 21st century scientific environment with the introduction of the MeerKAT and KAT-7 radio-telescopes (colloquially referenced as the ‘techno-eco’ environment).

To determine the value or significance of these “cultural layers”, specialists assessed the contribution of each layer to four broad value categories: aesthetic, historical, scientific and social values.







Table 4-1: Significance / Value of Cultural Layers in the Context of the Project

Resource ID	Resource Period	Description	Designation
Abrahamskraal Formation	Precambrian (1,2 billion years ago [bya]) to late Pleistocene (20,000 years ago [kya])	Sandstone, mudstone lithology with diverse terrestrial and freshwater tetrapods of Tapinocephalus to Lystrosaurus Biozones, palaeoniscoid fish, freshwater bivalves, trace fossils and sparse vascular plants	Very High
White Hill Formation	Precambrian (1,2 bya) to late Pleistocene (20 kya)	Mesosaurid reptiles, rare cephalochordates, variety of palaeoniscoid fish, small eocarid crustaceans, insects, low diversity of trace fossils	Very High
ESA Occurrences	Earlier Stone Age (3 million years ago [mya] to 300 kya) (ESA)	Long blades, cores and low incidences of formal tools moderate to heavily weathered	Low
MSA	Middle Stone Age (c. 300 kya to 30 kya) (MSA)	High proportion of minimally modified blades and points produced from good quality raw material, including hornfels (which is highly patinated) and quartz. Occur widely over the landscape mostly through geological action rather than human.	Negligible
LSA Occurrences	Later Stone Age (c. 30 kya to 2 000 years ago [ya]) (LSA)	Assemblage characterised by un-patinated hornfels.	Low
LSA		Microlithic scrapers and segments. Assemblages characterised by many blades and backed blades on Crypto-Crystalline Silicates (CCS) characteristic of Swartkop assemblages.	High



Resource ID	Resource Period	Description	Designation
Rock Engravings	Later Stone Age (c. 30 kya to 2 000 ya) (LSA)	Images produced by incising, chipping, or pecking to depict imagery of realistic and proportionally correct animals, human figures and shamanistic concepts	Very High
LSA	LSA Herder period (after 2 000 ya to c. 1000 common era [CE])	Lithics dominated by coarse irregular flakes commonly on quarts, with small or absent retouched component. Associated with thin walled ceramics	Medium
Rock Paintings	LSA Herder period (after 2 000 ya to c. 1000 CE)	Limited and distinctive set of geometric forms, such as circular outlines, crosses, lines, concentric circles, oblong forms and finger-applied dots	High
Burial grounds and graves	Later Stone Age (c. 30 kya to 2 000 ya) (LSA)	Unidentified burials associated with the /Xam	Very High
Burial grounds and graves	British Colony and First Boer Republics (1814 to 1880)	Burial grounds and graves affiliated with historic farmsteads and associated labourer homesteads - i.e. Xhosa, Korana and Griqua	Very High
Burial grounds and graves	Union of South Africa (1910 to 1961)	Burial grounds and graves affiliated with historic farmsteads and associated labourer homesteads	Very High
Burial grounds and graves	Apartheid Republic of South Africa (1961 to 1994)	Burial grounds and graves affiliated with historic farmsteads and associated labourer homesteads	Very High
Historic Built Environment	British Colony and First Boer Republics (1814 to 1880)	Corbelled houses - vernacular architecture in the context of setting	High
Historic Built Environment	Union of South Africa (1910 to 1961)	Farmstead ruins and complexes as tangible markers of a historically layered cultural landscape	Low

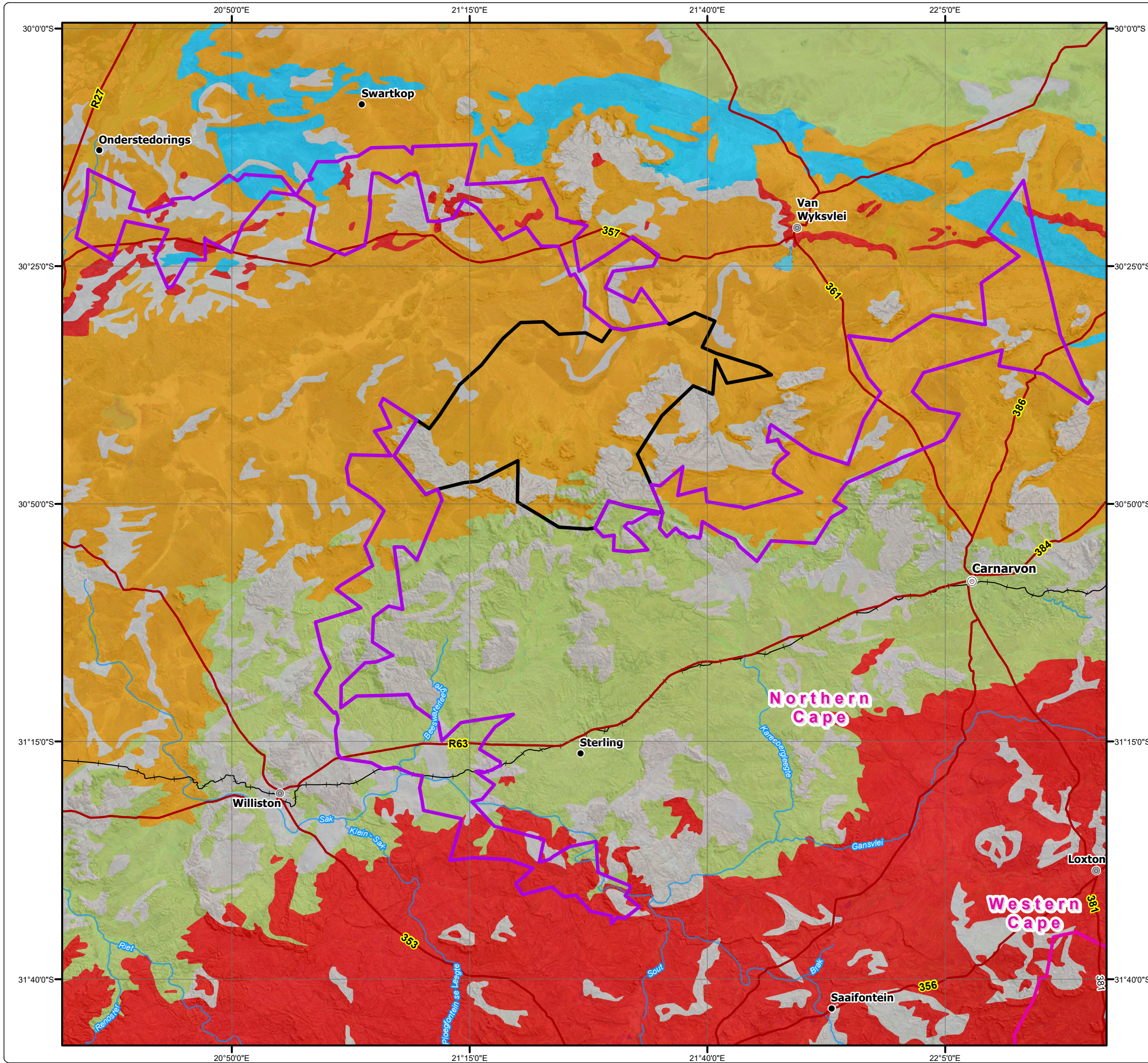
SKA Project Sensitivity Plan - Palaeontology

Legend

-  SKA Phase 1 Spiral Arms
-  SKA Phase 1 Core
-  Secondary Town
-  Other Town
-  Settlement
-  Main Road
-  Railway Line
-  Perennial River
-  Provincial Boundary

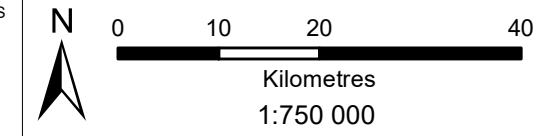
Palaeo-Sensitivity

-  Very High
-  High
-  Moderate
-  Low
-  Negligible



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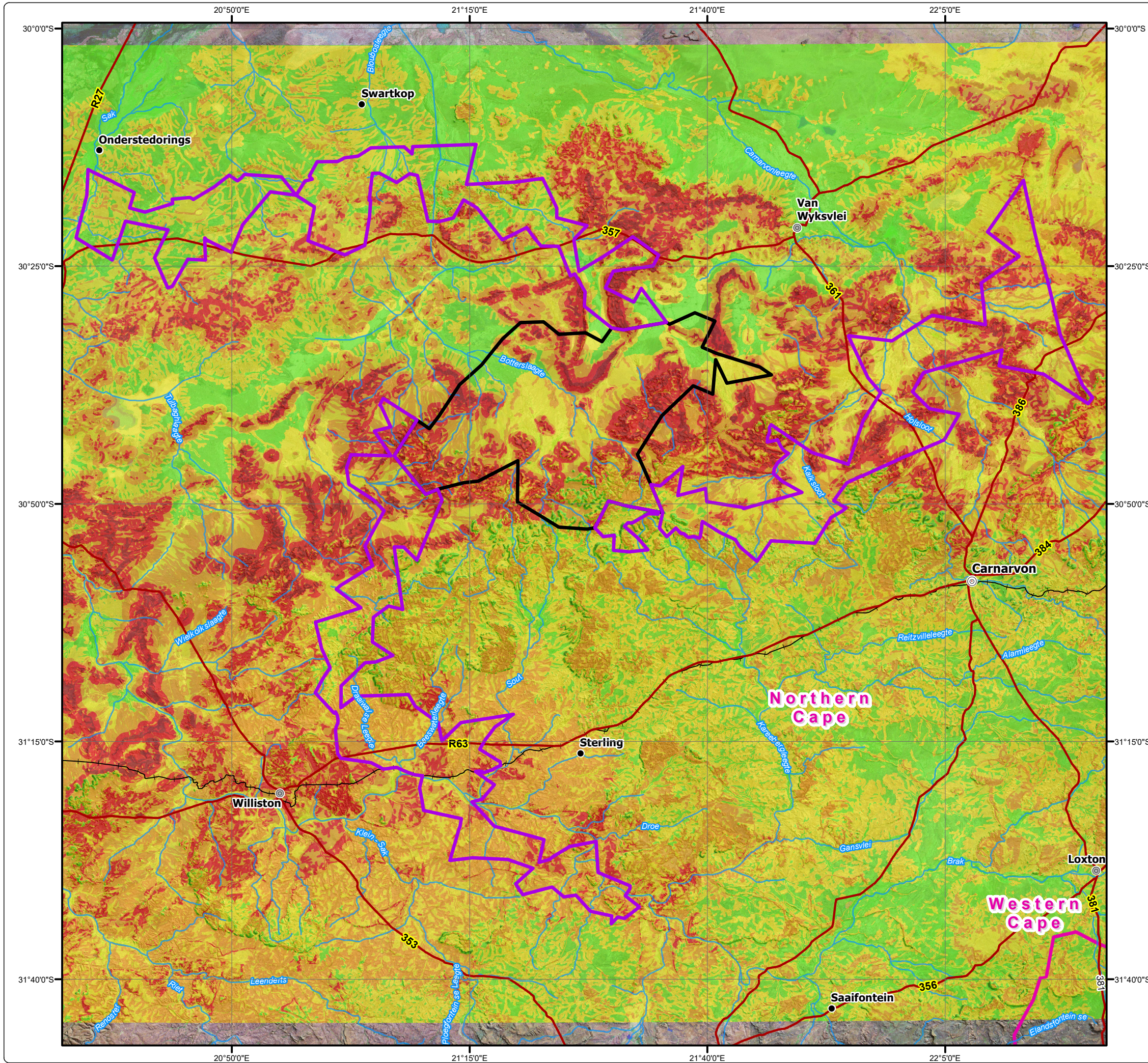



SKA Project

Sensitivity Plan - Heritage (Archaeology)

Legend


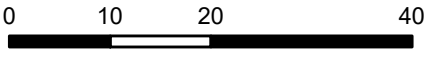
-  SKA Phase 1 Spiral Arms
 -  SKA Phase 1 Core
 -  Secondary Town
 -  Other Town
 -  Settlement
 -  Main Road
 -  Railway Line
 -  River
 -  Provincial Boundary
- ### Heritage Sensitivity
-  Very High
 -  High
 -  Moderate
 -  Low
 -  Very Low
 -  Negligible

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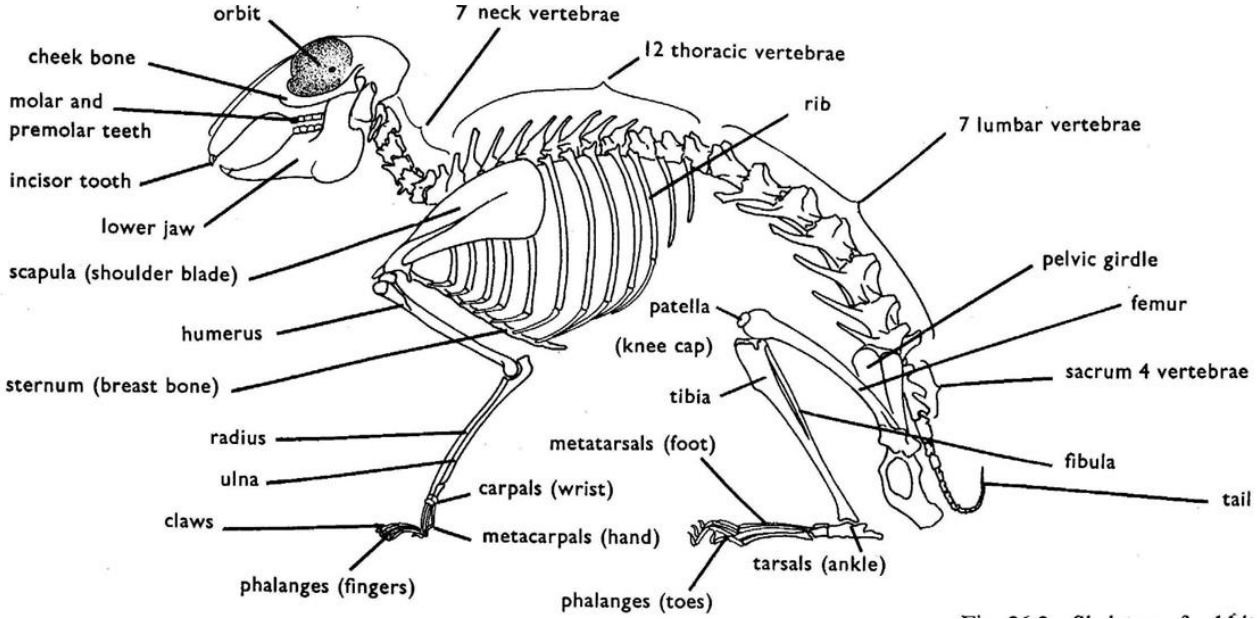



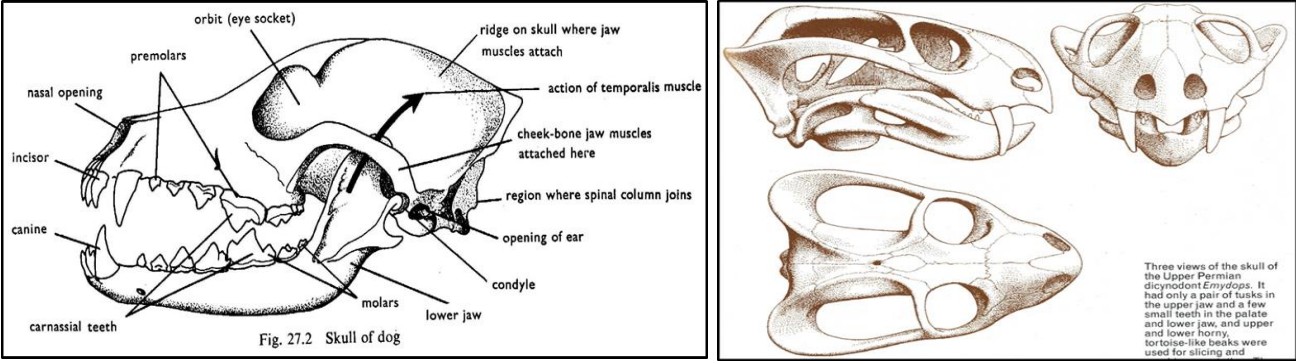
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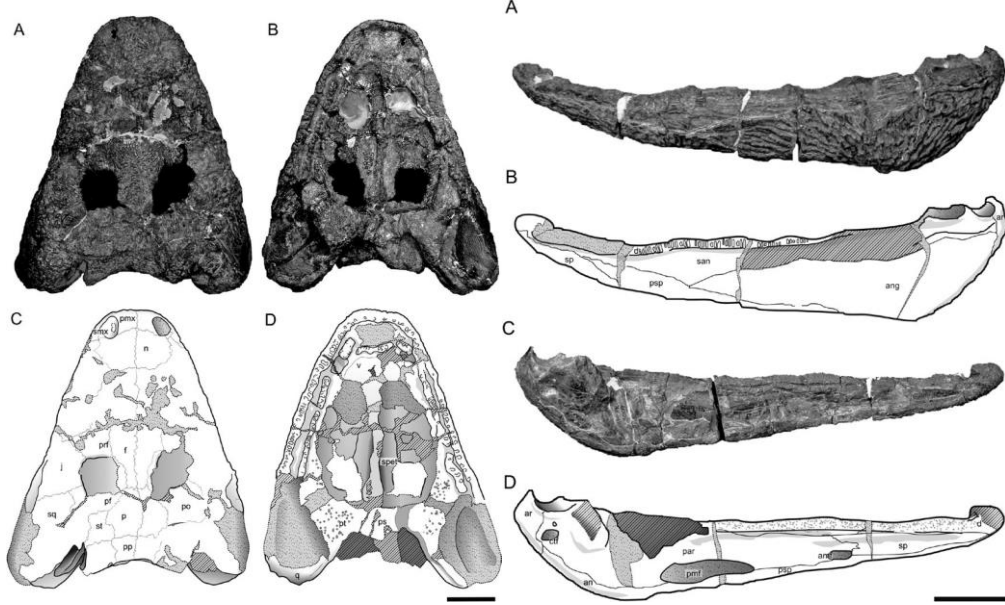
4.4 Heritage Resource Types

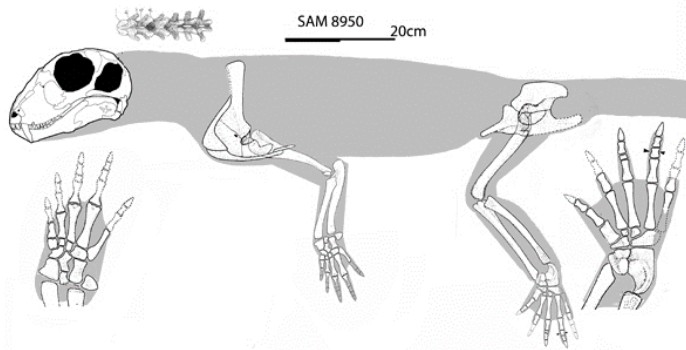
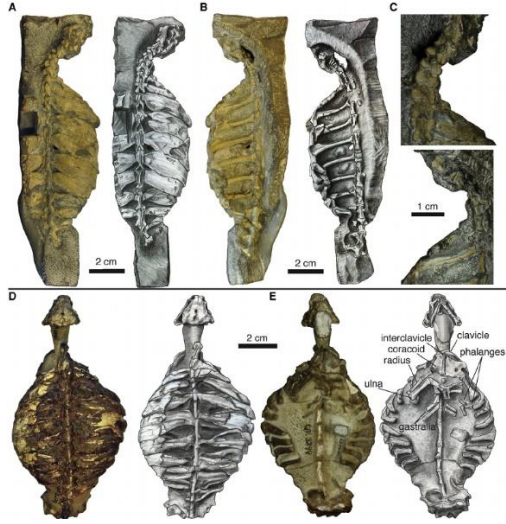
Table 4-2: Common Heritage Types

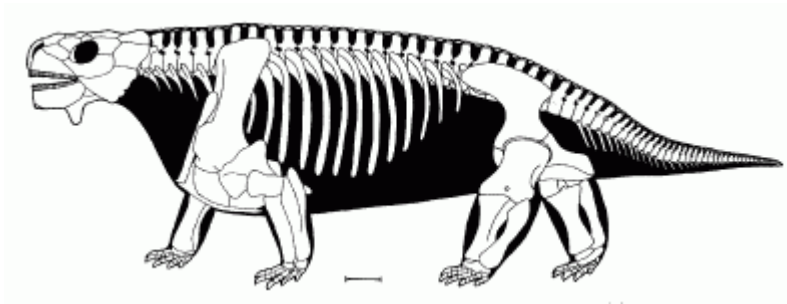
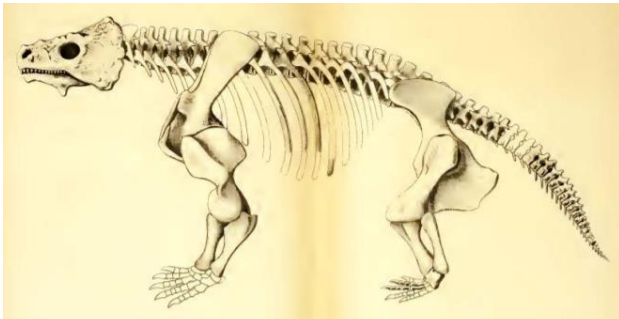
Heritage Type	Image / Figure	Description
Palaeontological Fossil Record		
Vertebrate Palaeontology		
Skeletal Structure / Components	 <p>The diagram shows a lateral view of a vertebrate skeleton. Labels include: orbit, cheek bone, molar and premolar teeth, incisor tooth, lower jaw, scapula (shoulder blade), humerus, sternum (breast bone), radius, ulna, claws, phalanges (fingers), 7 neck vertebrae, 12 thoracic vertebrae, rib, patella (knee cap), tibia, metatarsals (foot), phalanges (toes), 7 lumbar vertebrae, pelvic girdle, femur, sacrum 4 vertebrae, fibula, tarsals (ankle), and tail.</p>	<p>Vertebrates, including mammals, reptiles, amphibians, mammal-like reptiles and dinosaurs, have a similar body plan:</p> <ul style="list-style-type: none"> - Skull; - Vertebrae & Ribs; - Forelimbs & hind limbs.

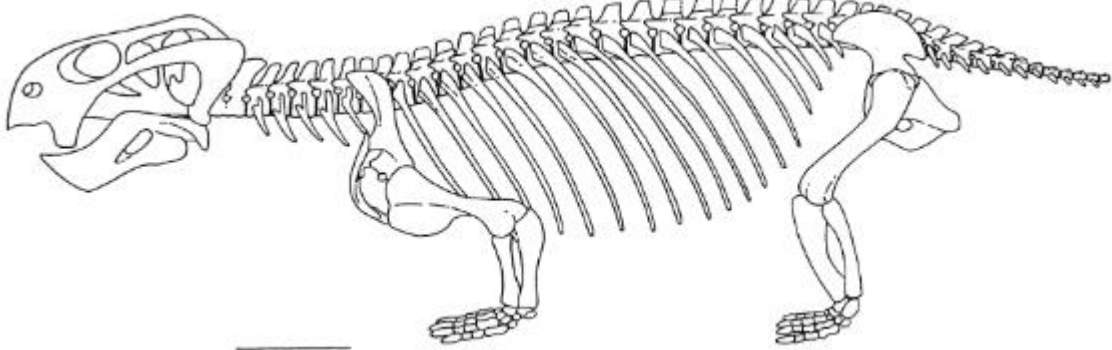
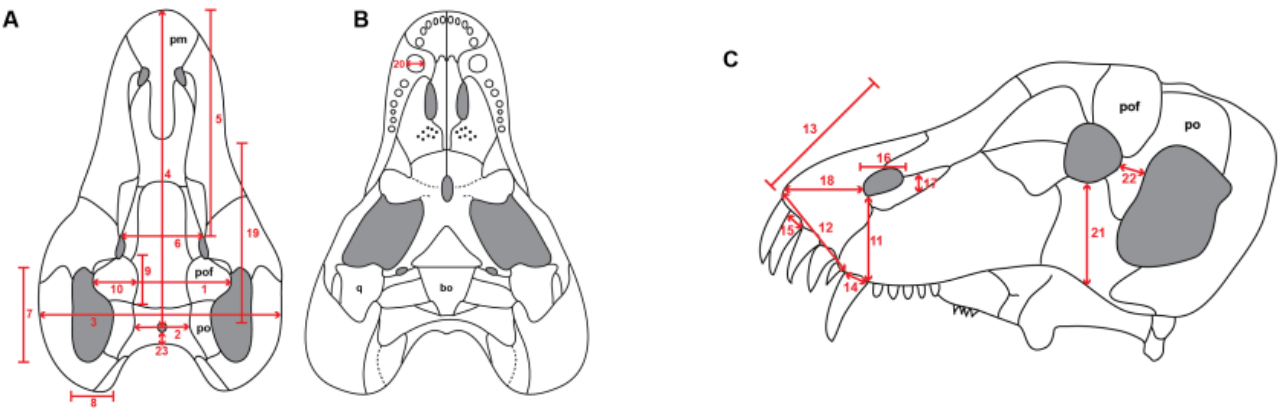
Heritage Type	Image / Figure	Description
Skull		<p>Note the various skulls all have 2 holes for nostrils and 2 holes for eyes.</p> <p>Some skulls have another pair of holes (temporal fenestrae).</p> <p>Teeth can be quite different too and are important for recognising the animal – as well as diet (herbivore, carnivore, omnivore).</p>


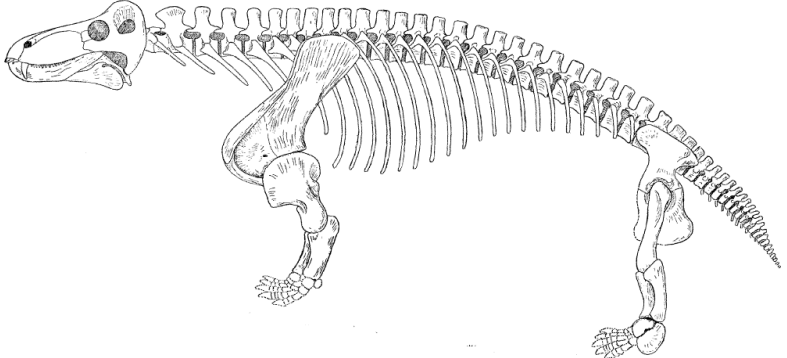
Heritage Type	Image / Figure			Description
Vertebrate Fossils		 <p data-bbox="887 743 1339 807">A fossil in a 'jacket' of plaster of paris to protect it during transport to the lab.</p>	 <p data-bbox="1402 743 1794 807">Fossils that are in the process of being prepared</p>	<p data-bbox="1850 392 2063 711">Fossils found <i>in situ</i> (i.e. 'in place') look very different from fossils which have been prepared and are photographed in the laboratory.</p> <p data-bbox="1850 727 2063 1015">Fossils found <i>in situ</i> are found in a matrix of sediment that has become rock as the organic matter has fossilised.</p> <p data-bbox="1850 1031 2063 1254">These photos show what the fossils look like at different stages of the process.</p> <p data-bbox="1850 1270 2063 1350">All photographs were taken by Marion Bamford.</p>
	 <p data-bbox="436 1308 848 1372">A fossil with the the bones partially exposed</p>	 <p data-bbox="913 1264 1312 1327">Fossil bones in a tray, after being removed from the matrix</p>	 <p data-bbox="1402 1308 1794 1372">Prepared fossils. These are foot bones.</p>	

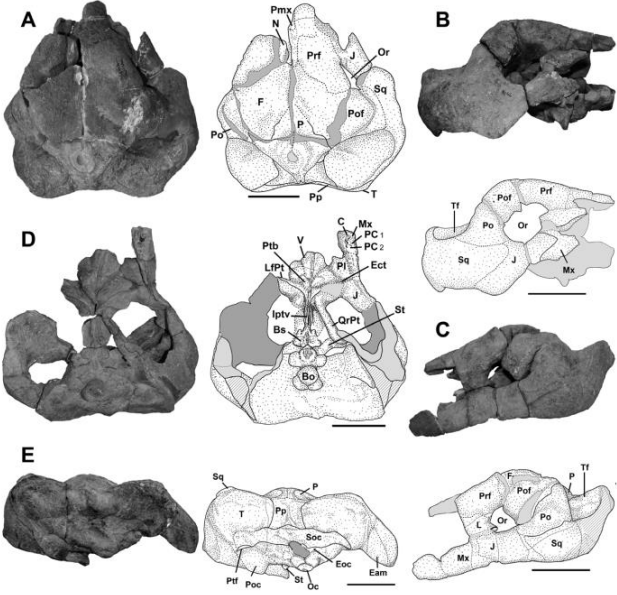
Heritage Type	Image / Figure	Description
Aquatic Fauna and Vertebrates		
Rhinesuchus	 <p style="text-align: center;">(Marsicano et al, 2017)</p>	<p>Rhinesuchus is a large temnospondyl amphibian. Occur in the South African Karoo Basin's Tapinocephalus and Cistecephalus assemblage zones, both belonging to the Beaufort Group.</p>

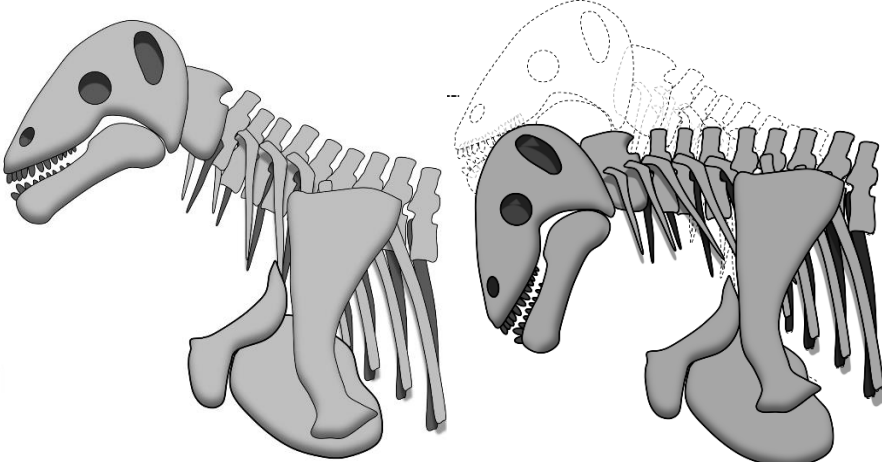
Heritage Type	Image / Figure	Description
<p>Hipposaurus</p>		<p>An extinct genus of basal therapsids known from the Tapinocephalus Assemblage Zone of the Main Karoo Basin, South Africa</p>
<p>Eunotosaurus</p>	 <p>(Lyson et al, 2013)</p>	<p>An extinct genus of reptile, possibly a close relative of turtles, from the late Middle Permian (Capitanian stage) Karoo Supergroup of South Africa.</p>

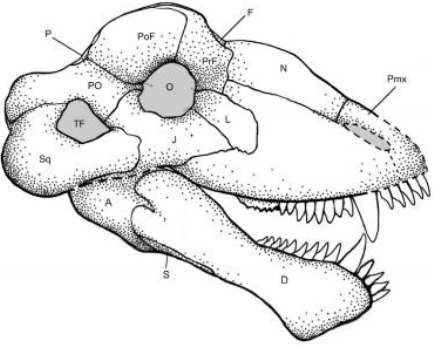
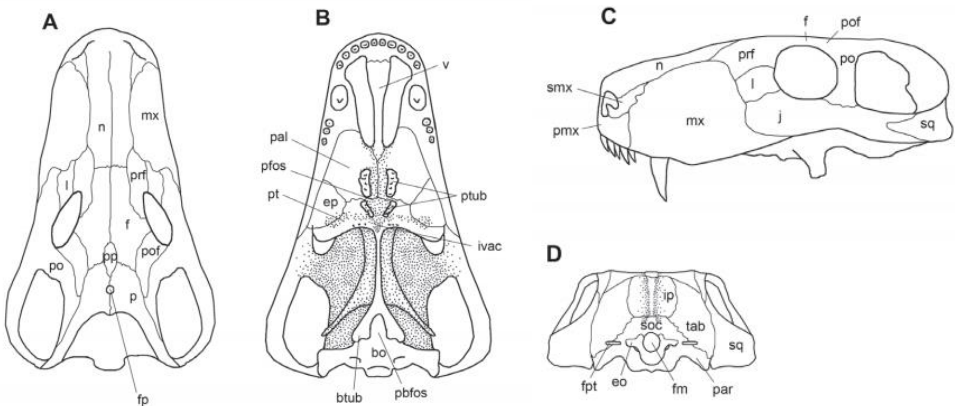
Heritage Type	Image / Figure	Description
Bradysaurus	 <p data-bbox="907 742 1355 766">(Lee 1997, accessed from http://palaeos.com/)</p>	<p data-bbox="1848 359 2060 829">Bradysaurs were herbivorous megafauna of the late Middle Permian Period and fossils are known from the Tapinocephalids Assemblage Zone (Capitanian stage). Karoo Basin of South Africa.</p>
Embrithosaurus	 <p data-bbox="1019 1189 1232 1212">(Van den Brandt 2016)</p>	<p data-bbox="1848 869 2038 1197">Herbivorous parareptiles of the Middle to Late Permian Period (Capitanian stage). Karoo Basin of South Africa.</p>

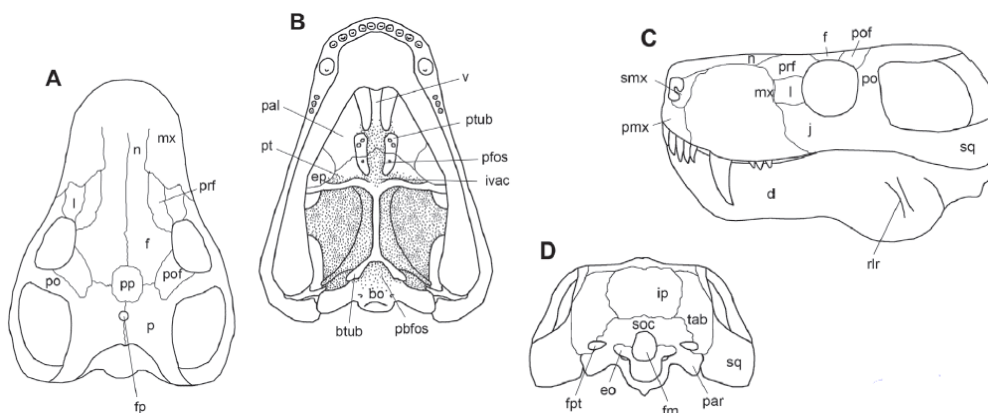
Heritage Type	Image / Figure	Description
<p>Diictodon</p>	 <p>(Ray & Chinsamy 2003)</p>	<p>A mammal-like synapsid which existing during the Late Permian period. Fossils can be found in the Teekloof, Abrahamskraal and Balfour Formations.</p>
<p>Anteosaurus</p>	 <p>(Kruger 2014)</p>	<p>Large carnivorous synapsids which lived during the Capitanian epoch (late Middle Permian) which resembles a crocodile in posture and hunting strategies. Karoo Basin of South Africa.</p>

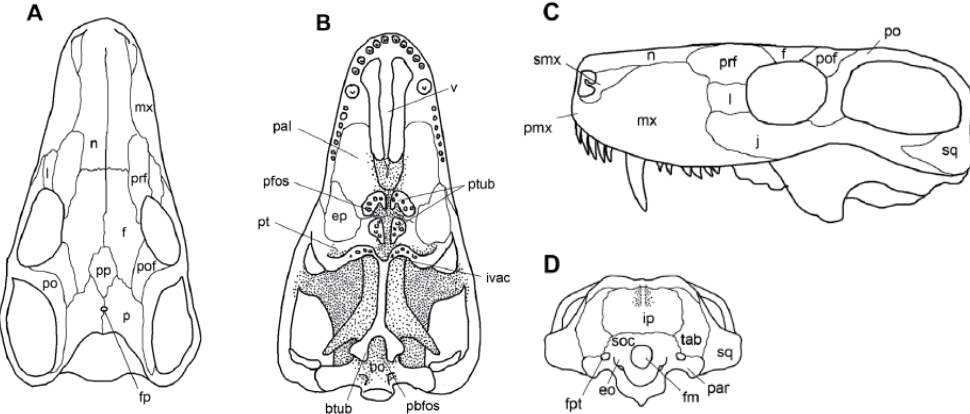
Heritage Type	Image / Figure	Description
Titanosuchus	 <p data-bbox="996 734 1265 758">(Cloudsley-Thompson 2005)</p>	<p data-bbox="1848 454 2049 662">Carnivorous species of dinocephalian therapsid. Lived during the mid-Permian epoch.</p>
Jonkeria	 <p data-bbox="1064 1189 1198 1212">(Broom 1929)</p>	<p data-bbox="1848 821 2049 1173">Species of omnivorous dinocephalians from the Tapinocephalus assemblage zone, of the Lower Beaufort Group, Karoo Supergroup.</p>

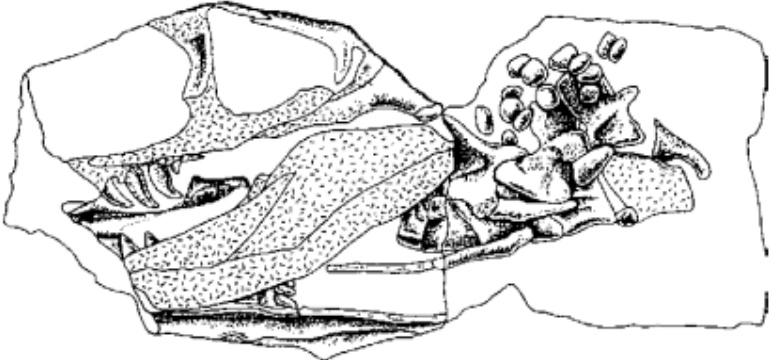
Heritage Type	Image / Figure	Description
Avenantia	 <p>(Güven <i>et al</i> 2013)</p>	<p>Herbivorous terrestrial tetrapod which existed during the Middle Permian.</p> <p>Fossils are found in the Lower Beaufort Group, Karoo Basin.</p>

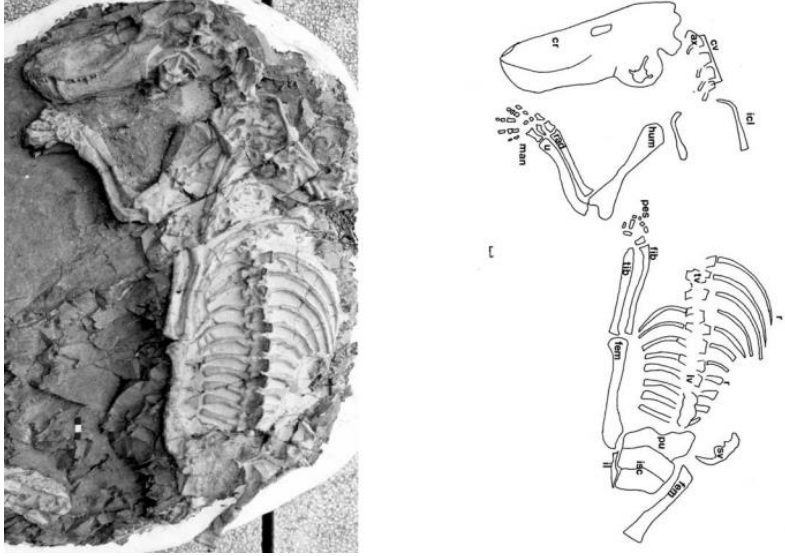
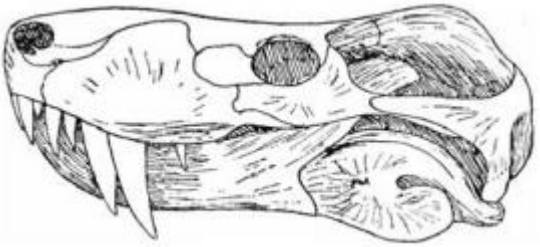
Heritage Type	Image / Figure	Description
Moschops	 <p>(Benoit <i>et al</i> 2017)</p>	<p>Species of dinocephalian therapsid (tapinocephalid dinocephalian) which occurred during the Middle and Late Permian.</p> <p>Fossils occur in the Tapinocephalus Assemblage Zone of the Beaufort Group (Karoo Supergroup).</p>

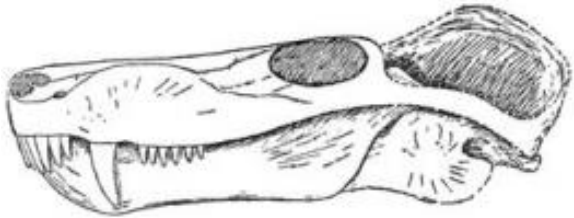
Heritage Type	Image / Figure	Description
Styracocephalus	 <p>(Fraser-King <i>et al</i> 2019)</p>	<p>Species of tapinocephalian therapsids. These species existed within the Guadalupian Epoch within the Capitanian.</p>
Scylacognathus	 <p>(Gebauer 2007)</p>	<p>Species of gorgonopsian therapsids known from the Middle Capitanian Stage of the Middle Permian. Fossils occur in the Tapinocephalus Assemblage Zone of the Karoo Supergroup.</p>

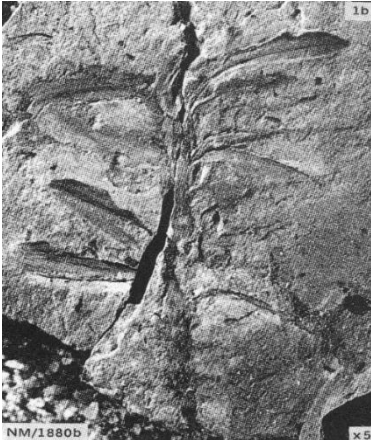
Heritage Type	Image / Figure	Description
Eoarctops	 <p>(Gebauer 2007)</p>	<p>Species of gorgonopsian therapsids known from the Middle Capitanian Stage of the Middle Permian.</p> <p>Fossils occur in the Tapinocephalus Assemblage Zone of the Karoo Supergroup.</p>

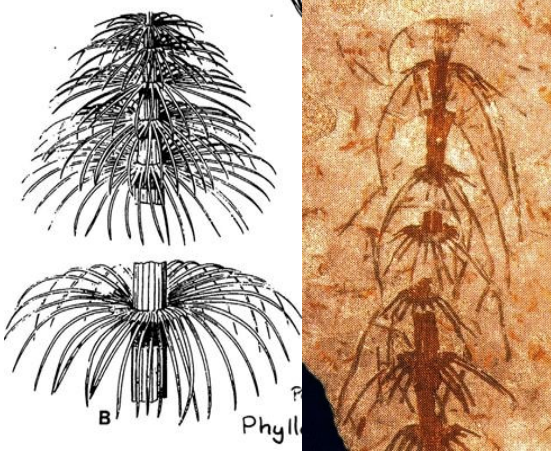
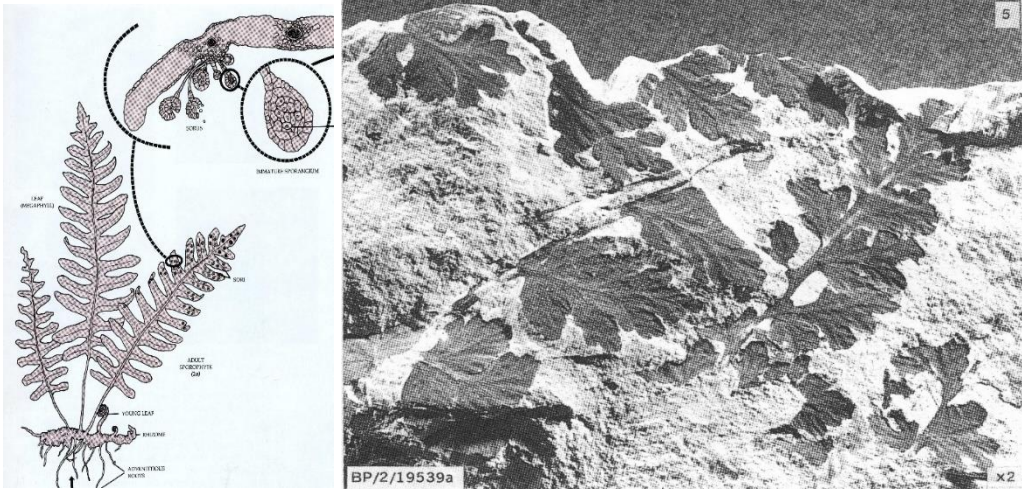
Heritage Type	Image / Figure	Description
<p>Aelurosaurus</p>	 <p>(Gebauer 2007)</p>	<p>A small carnivorous gorgonopsian therapsid which occurred in the Mid to Late Permian. Fossils are found in the Tapinocephalus and Pristerognathus Assemblage Zones which occur in the Beaufort Group of the Karoo Basin.</p>


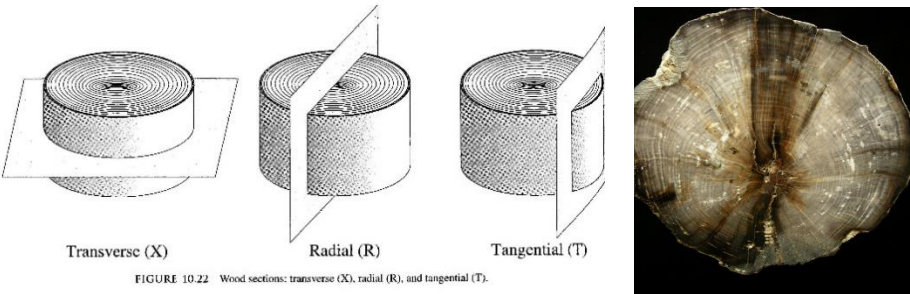
Heritage Type	Image / Figure	Description
Elliotsmithia	 <p data-bbox="940 813 1317 885">Elliotsmithia skull preserved in rock (Kemp 2005)</p>	<p data-bbox="1848 359 2049 901">Species of small varanopseid synapsid which existed in the late Middle Permian. Fossils occur in the Abrahamskraal Formation and within the boundaries of the Tapinocephalus Assemblage Zone.</p>

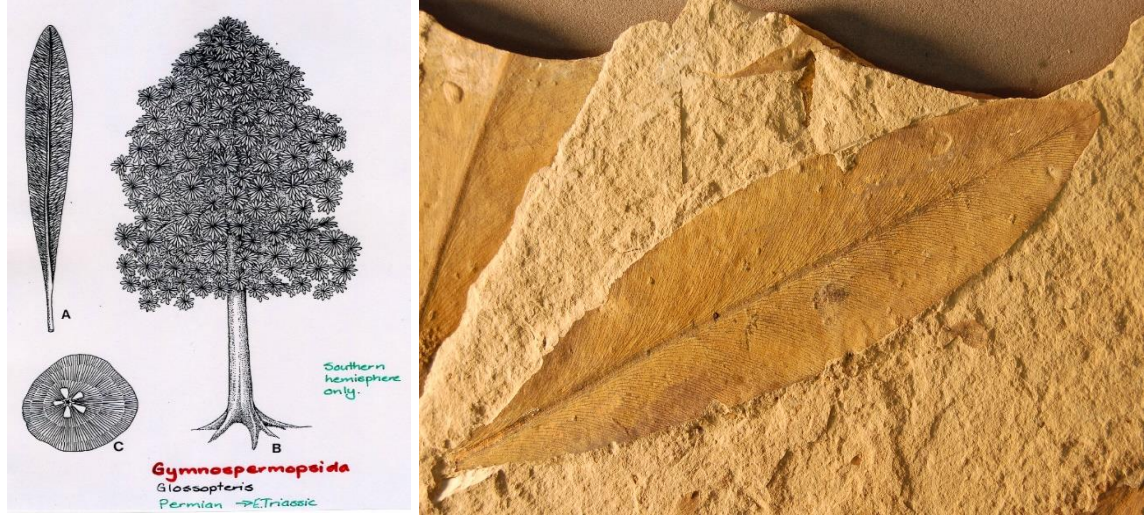

Heritage Type	Image / Figure	Description
Glanosuchus	 <p>(Fourie & Rubidge 2009)</p>	<p>Species of scylacosaurid therocephalian from the Late Permian. Fossils occur in the Pristerognathus Assemblage Zone within the Beaufort Group.</p>
Lycosuchus	 <p>(Kemp 2005)</p>	<p>Species of carnivorous therocephalians from the Middle Permian and which is present in the Tapinocephalus Assemblage Zone.</p>



Heritage Type	Image / Figure	Description
Pristerognathus	 <p data-bbox="1066 715 1189 738">(Kemp 2005)</p>	<p>Species of therocephalian. These species date to the Capitanian Stage of the late Middle Permian. These species lend their name to the Pristerognathus Assemblage Zone.</p>

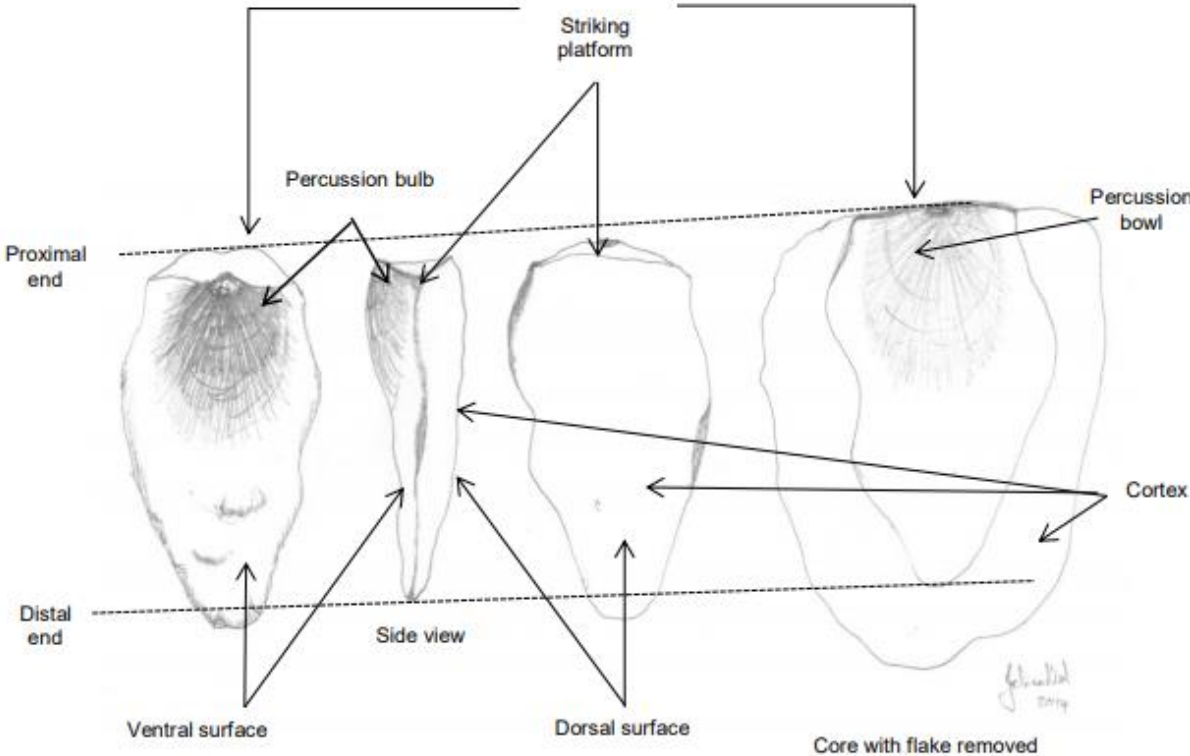
Heritage Type	Image / Figure	Description
Flora		
<p>Buthelezia</p> <p>Bryophytes (mosses)</p>	 <p>(Anderson, 1985)</p>	<p>Informal group consisting of three divisions of non-vascular land plants: the liverworts, hornworts and mosses. They are characteristically limited in size and prefer moist habitats although they can survive in drier environments</p>

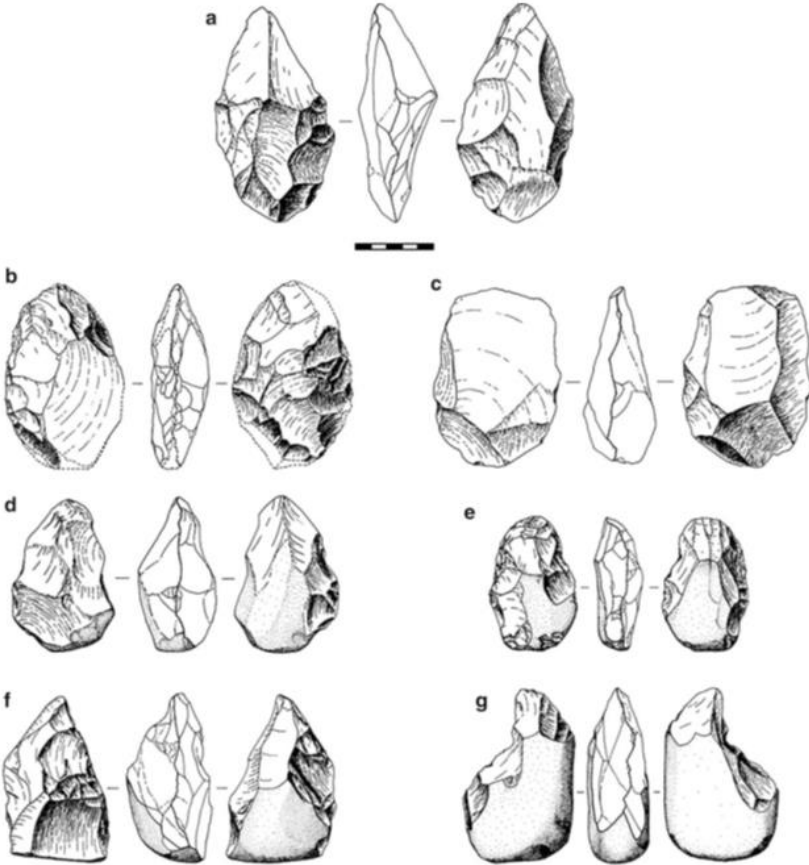
Heritage Type	Image / Figure	Description
<p>Sphenophyllum Sphenophytes</p> <p>Sphenopsida Equisetales Calamitales</p>		<p>A genus of articulate land plants which occurred within the Devonian to the Triassic.</p>
<p>Sphenopteris lobatifolia</p>	 <p>(Anderson, 1985)</p>	<p>Genus of Paleozoic fossil plants (order Cycadofilicales) based primarily on leaf blades with cuneate pinnules.</p>

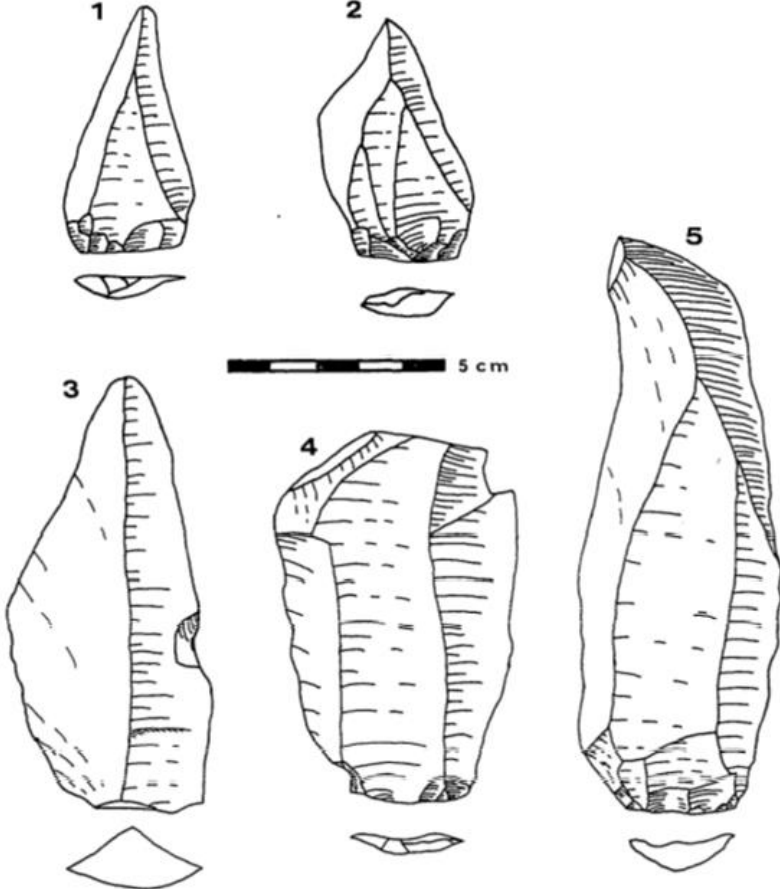
Heritage Type	Image / Figure	Description
Lycopods		<p>More common in the Ecca sediments.</p> <p>Most were small plants but some grew to large trees and looked a bit like palm trees</p>
Fossilised Wood	 <p>Transverse (X) Radial (R) Tangential (T)</p> <p>FIGURE 10.22 Wood sections: transverse (X), radial (R), and tangential (T).</p>	<p>Some very large trees occurred and looked like the conifer trees of today with growth rings and branches sometimes visible</p>


Heritage Type	Image / Figure	Description
Glossopteris		<p>Largest and best-known genus of the extinct Permian order of seed ferns known as Glossopteridales . The genus Glossopteris refers only to leaves</p>
Cordaitales		<p>Trees grew in swampy areas. Leaves have parallel veins.</p>

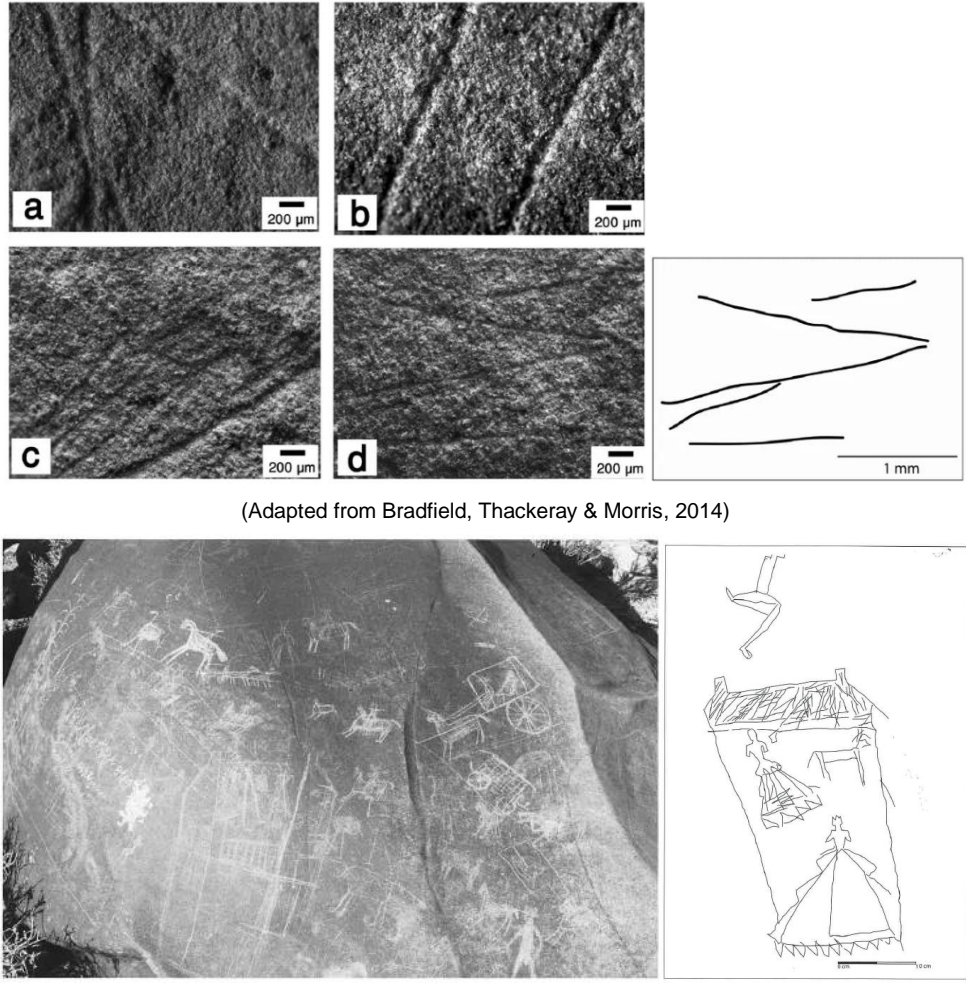
Heritage Type	Image / Figure	Description
Trace Fossils		
Invertebrate Tracks		These fossils consist of fossilised evidence of the movement of invertebrates. Each of these blocks are about 12 cm wide. From the Cape Supergroup. Photographs taken by Marion Bamford.
Zoophycus (also called Spirophyton)		Fossilised spiral burrows and connecting structures. This fossil was made by an unknown organism. From the Cape Supergroup. Photographs taken by Marion Bamford.

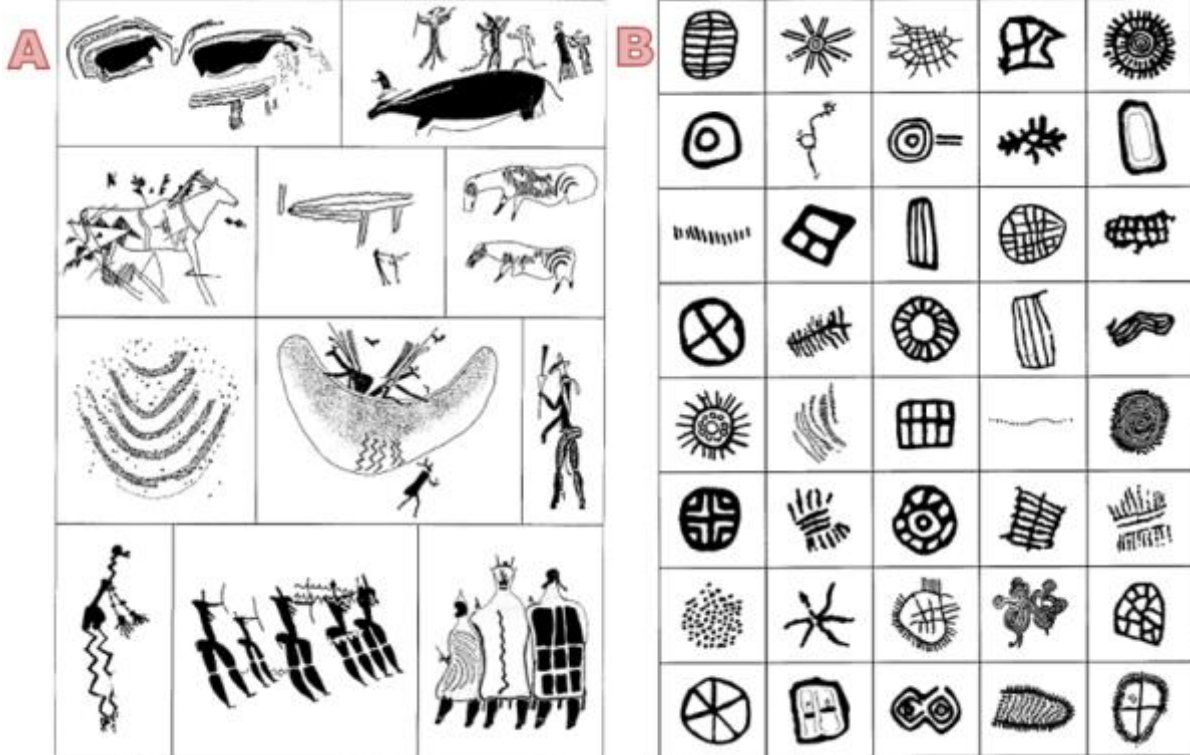
Heritage Type	Image / Figure	Description
Archaeological Record		
<p>Stone Tool Identifying Features</p>	 <p style="text-align: center;">(Adapted from Nel, 2014)</p>	<p>Almost all stone tools have a striking platform on the proximal end, i.e. the small surface area where the flake is struck from the core / "parent material". Immediately below the striking platform is the bulb of percussion, i.e. the result of the striking force. The percussion bulb is always positive on the stone flake, with the consequent negative bowl on the core.</p>

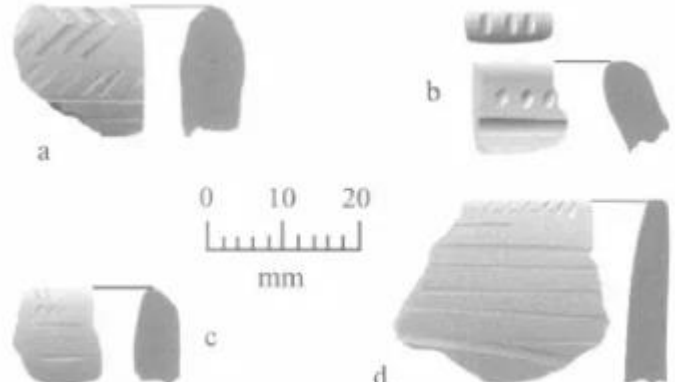

Heritage Type	Image / Figure	Description
<p>Earlier Stone Age (ESA)</p>	 <p>(Adapted from Gibbon, Granger, Kuman & Partridge, 2009)</p>	<p>Age: ~200 kya – >2 Mya</p> <p>Description: Oldowan Industry flakes struck from cobbles, and later Acheulean core tools characterised by straighter and sharper edges. May include long blades, cores and low incidence of formal tools such as handaxes and cleavers.</p>

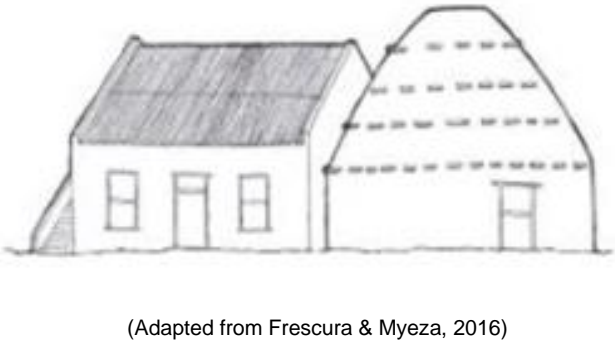
Heritage Type	Image / Figure	Description
<p>Middle Stone Age (MSA)</p>	 <p>(Adapted from Volman, 1980)</p>	<p>Age: 20 – 300 kya</p> <p>Description: High proportions of minimally modified blades, represented by the Levallois technique characterise the early MSA. Broadly defined by blades and points produced from good quality raw material.</p>

Heritage Type	Image / Figure	Description
<p>Later Stone Age (LSA)</p>	 <p>(Adapted from Parsons, 2006)</p>	<p>Age: 1840 - ~40 kya</p> <p>Description: Lithics associated with the LSA are specialised: specific tools being created for specific purposes, and the inclusion of bone tools into the assemblages. Characterised by many blades / bladelets and backed blades.</p>

Heritage Type	Image / Figure	Description
<p>Rock Art Engravings</p>	 <p>(Adapted from Bradfield, Thackeray & Morris, 2014)</p> <p>(Adapted from Lupuwana & Hall, 2019)</p>	<p>Produced by incising, chipping or pecking of the rock surface to remove the outer surface of the rock. These are commonly situated in the open, on boulders or exposed glaciated pavements within the central plateau of the interior.</p>

Heritage Type	Image / Figure	Description
Rock Art Paintings	 <p>(Adapted from Smith & Ouzman, 2004)</p>	<p>Paintings are produced using fine brushes, quills, sticks or fingers predominantly done in red, white and black, and more rarely bichrome and polychrome.</p> <p>The art of the San depict imagery of realistic and proportionally correct.</p> <p>Geometric art is commonly accepted to be affiliated with the Khoekhoe.</p>

Heritage Type	Image / Figure	Description
Khoekhoe Pottery		
Historical Period		
Farmsteads	 <p style="text-align: center;">(Adapted from Frescura & Myeza, 2016)</p>	<p>Typical, 1880's Karoo dwelling, rectangular in shape with concave corrugated sheeting roof.</p>

Heritage Type	Image / Figure	Description
Vernacular Architecture	 <p>(Adapted from Frescura & Myeza, 2016)</p>	Buildings are constructed from stone and are circular, with few square or rectangular exceptions. The walls curve inwards to an apex, reaching heights between 2 – 5 m, giving it a beehive shape

5 Lesson 4: The SKA1_MID Project Impacts and Problems

The Project is in a culturally sensitive landscape. There are several heritage resource types known to occur that may be at risk of damage or destruction from Project related activities, primarily during construction and operation.

5.1 Identified Impacts

Impacts to heritage resources are generally placed into three categories:

- Direct Impact – affects the physical integrity of the heritage resource;
- Indirect Impacts – can occur later in time or a different place from the causal activity;
- Cumulative Impacts – in-combination effect of a host of insignificant processes that collectively have a significant effect.

Table 5-1: Identified Potential Impacts

Impact	Pre-Mitigation	Post-Mitigations
	Significance	Significance
Direct impacts to palaeontological resources through the development of new roads or existing road upgrades	Negligible - negative	Negligible - positive
Direct impact to identified fossil heritage on the Farm Son Tuin (Die Tuin)	Minor - negative	Negligible - positive
Potential direct impacts to palaeontological resources - good integrity	Minor - negative	Minor - positive
Potential direct impacts to palaeontological resources - poor integrity	Minor - negative	Minor - positive
Direct impacts to multi-layered archaeological sites with medium CS	Negligible - negative	Negligible - positive
Direct impacts to Stone Age scatters and isolated findspots with low CS	Minor - negative	Negligible - positive
Direct impacts to Stone Age sites with high CS (SA-016)	Moderate - negative	Negligible - positive
Indirect impacts to burial grounds and graves with very-high CS	Negligible - negative	Negligible - negative

Impact	Pre-Mitigation	Post-Mitigations
	Significance	Significance
Indirect impacts to Rock Art with medium to medium-high CS	Minor - negative	Negligible - negative
Potential direct impacts to unidentified archaeological resources with good integrity	Minor - negative	Minor - positive
Potential direct impacts to unidentified archaeological resources with poor integrity	Minor - negative	Minor - positive
Demolition of historic built environment resources older than 60 years	Moderate - negative	Moderate - positive
Indirect impacts on Corbelled House structures within the site-specific area resulting in damage or destruction (BHS-1 & BHS-7)	Minor - negative	Minor - positive
Indirect impacts on the Groot Paardekloof Farmstead (BHS-5) and School (BHS-6)	Minor - negative	Minor - positive
Indirect Impacts on graded heritage resources (BHS-2, BHS-3; BHS-4 and BHS-8)	Minor - negative	Minor - positive

5.2 Required Management and Mitigations

To rectify pre-mitigation scenarios, the outcomes of the assessment included recommended management and mitigation measures to avoid, minimise, rectify, reduce or offset the potential impacts and risks.

Table 5-2: Primary Recommendations to Mitigate Identified Potential Impacts

Recommendation	Description
Develop a Conservation Management Plan (CMP) and Chance Find Protocol (CFP) for implementation	<p>A project specific CMP including CFPs must be developed and implemented as part of this Project that considers the project related activities in relation to the specified infrastructures. The CMP and CFPs must consider the sensitivity of the landscape in terms of palaeontology and archaeology.</p> <p>This has been completed and approved. Refer to Lessons 5 and 6.</p>
Declaration of Built Heritage resources	<p>Built Heritage resources with a recommended field rating of Grade II be formally declared or Grade III included in the national inventory.</p>
Establish buffers around Built Heritage resources within the site-specific study area as per Section 6.4 of the specialist Built Environment Assessment	<p>The significance of these resources will inform the size of the recommended buffer to be implemented around the structures intended for retention. Grade II resources will require a 1 km buffer, retained Grade III A resources will require a 150 m buffer zone and retained Grade III B and III C resources require a 50 m buffer. These buffer zones must be implemented during construction and operation phases.</p> <p>This has been completed and implemented.</p>
Structures older than 60 years are subject to permitting requirements	<p>Structures older than 60 years are afforded general protection and subject to permitting requirements stipulated under Sections 27 & 34 of the NHRA and regulated by Chapter IV of GN R 548. Individual permit applications must therefore be submitted for each protected building proposed for demolition. The affected structures must be recorded in detail prior to their alteration or destruction. This will include <i>inter alia</i> photographs and measured drawings.</p> <p>This has been completed for select structures and planned for select medium-term use structures.</p>
Rehabilitate after construction	<p>The development footprint must be rehabilitated as far as possible to reduce the intensity of the visual disturbance. This may include the following activities:</p> <ul style="list-style-type: none"> • Limiting heights of any topsoil spoils that may be created; • Trenched areas must be re-contoured; • Borrow pits and quarries must be profiled to a natural topography; and • Disturbed areas must be revegetated with indigenous species in accordance with the requirements contained within the Ecological Assessment.

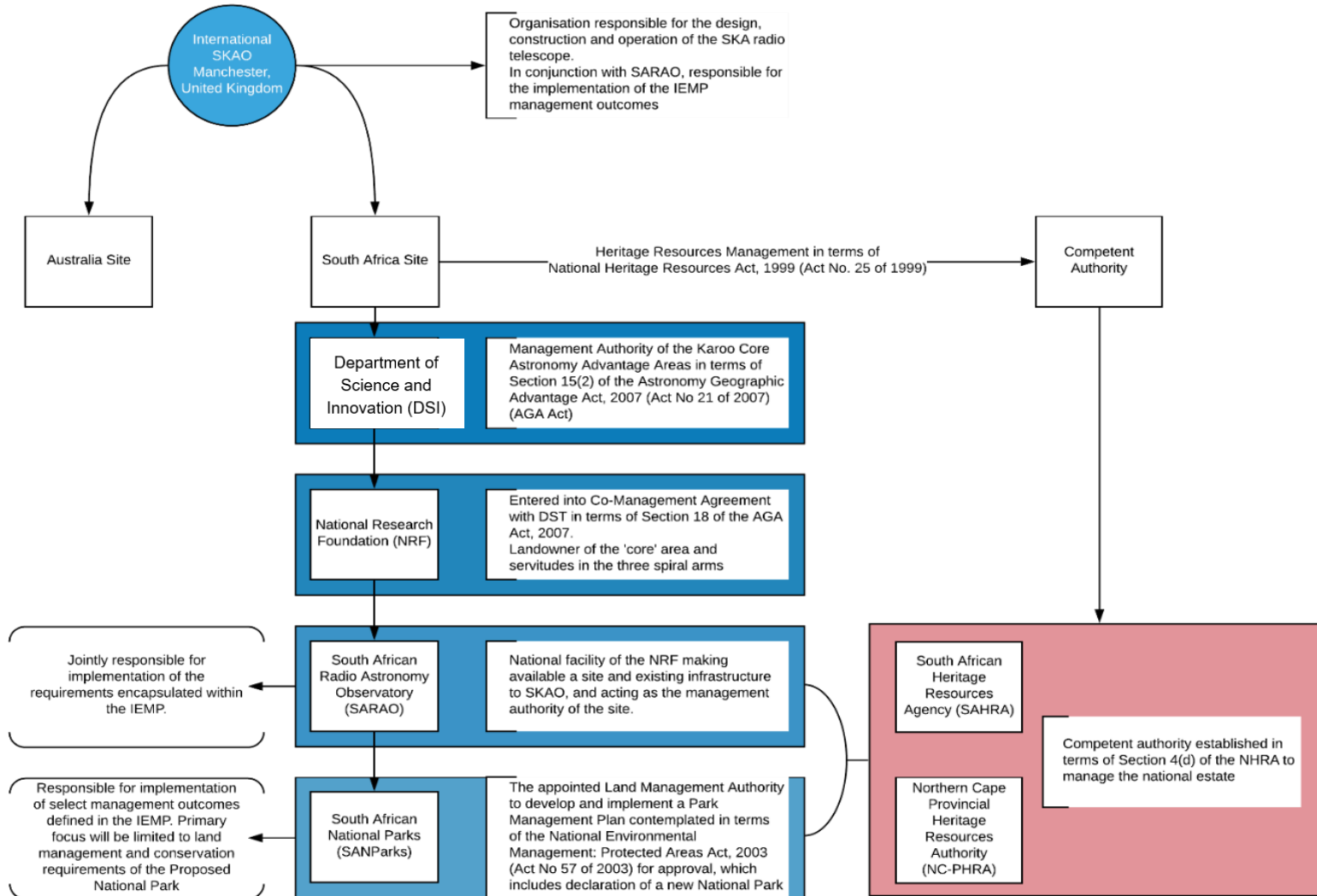
Recommendation	Description
Reduce visual disturbance during construction	Dust suppression techniques should be employed as far as possible to limit dust pollution during construction activities.
	Construction during the night must be avoided as far as possible. Where unavoidable, areas where these activities are taking place should be lit and the number of lights and brightness must not exceed the minimum requirements for safety and security. Down lighting and low-pressure lighting mediums such as sodium light sources must be implemented to minimise light pollution. Lights should be directed inwards towards the Project area and not outwards from the Project area.

6 Lesson 5: The SKA1_MID Project Conservation Management Plan

6.1 The SKA1_MID Project Entity Organogram

The SKA1_MID Project is managed by 5 operating entities, which include:

- The International SKAO;
- The Department of Science and Innovation (DSI);
- The NRF;
- SARAO; and
- South African National Parks (SANParks).



6.2 Roles and Responsibilities

It is every person's responsibility to complete training and implement the Project CMP and CFP. Table 6-1 details the specific roles of the various individual positions involved in the implementation of the Project.

Table 6-1: Primary Positions and Responsibilities

Position	Responsibility
Archaeologist	<p>On-site monitoring of earth moving activities during construction and/or operational phases in areas with high to very high archaeological sensitivity. The SKAO / contractors must provide a detailed programme for construction works to plan the physical presence of the contractor-appointed archaeologist.</p> <p>Outcomes of monitoring must be collated into a Watching Brief Report for submission to SAHRA and NC-PHRA via SAHRIS.</p> <p>Ensure all newly identified archaeological resources are to be recorded in the Recording Document</p>
Palaeontologist	<p>On-site monitoring of earth moving activities during construction and/or operational phases in areas with very high palaeontological sensitivity. The SKAO / contractors must provide a detailed programme for construction works to plan the physical presence of the contractor-appointed palaeontologist.</p> <p>Cursory monitoring of earth moving activities during construction and/or operational phases in areas with moderate palaeontological sensitivity.</p> <p>Outcomes of monitoring must be collated into a Watching Brief Report for submission to SAHRA and NC-PHRA via SAHRIS.</p> <p>Ensure all newly identified palaeontological resources are to be recorded in the Recording Document.</p>
South African Construction Site Director	<p>Accountable for all aspects of the SKA1_MID Project and its associated activities, including ensuring that the construction and operational activities comply with all relevant legislation, regulations, minimum requirements, constitution and international conventions / protocols and other requirements to which the SKAO and SARAO subscribes.</p>
SKAO Site Manager or SKA Construction and SARAO Site Manager	<p>Responsible for ensuring the CFP is implemented.</p> <p>Bring to the attention of the Environmental Control Officer (ECO) the requirements encapsulated within the CMP and the CFP. Work directly with the ECO to ensure the necessary assessment and requirements are implemented.</p> <p>Ensure all relevant staff receive the necessary training to implement the CFP and other requirements encapsulated within the CMP.</p>

Position	Responsibility
<p>SKAO & SARAO Environmental Control Officer/s</p>	<p>Responsible for ensuring all activities and the potential risks to cultural heritage are considered by thorough implementation of the CMP and CFP. This includes the allocation of appropriate resources to undertake such assessments. These can include, but are not limited to:</p> <ul style="list-style-type: none"> • External specialist consultants; and • Internal specialists. <p>On-site inspection of earth moving activities during construction and/or operational phases in areas with very low to moderate archaeological sensitivity, and low palaeontological sensitivity.</p> <p>Ensure all newly identified heritage resources are to be recorded in the Recording Document.</p>
<p>SANParks Park Manager</p>	<p>Accountable for all aspects of the Proposed National Park and its associated activities, including ensuring that all activities comply with all relevant legislation, regulations, minimum requirements, constitution and international conventions / protocols and other requirements to which SANParks subscribes.</p>
<p>SANParks Senior Ranger</p>	<p>Responsible for bringing to the attention of the Ecological and Cultural Conservation Officers the requirements encapsulated within the CMP and CFP.</p> <p>Ensure all relevant staff receive the necessary training to implement the CFP and other requirements encapsulated within the CMP.</p> <p>Ensure all newly identified heritage resources are to be recorded in the Recording Document.</p>
<p>SANParks Conservation / Outreach Officer</p>	<p>Responsible for ensuring all activities and the potential risks to cultural heritage are considered by thorough implementation of CMP and CFP. This includes the allocation of appropriate resources to undertake such assessments. These can include, but are not limited to:</p> <ul style="list-style-type: none"> • External specialist consultants; and • Internal specialists. <p>Ensure all newly identified heritage resources are to be recorded in the Recording Document.</p>
<p>Contractors</p>	<p>Responsible for ensuring the CFP is implemented.</p> <p>Responsible for ensuring all activities and the potential risks to cultural heritage are considered by thorough implementation of the CMP.</p> <p>Ensure all newly identified heritage resources are to be recorded in the Recording Document.</p>

6.3 Management Requirements

Management requirements are based on the principles of avoid, minimise, rectify, reduce or offset. These include:

- Project-related mitigation measures, i.e. Project design amendments to avoid or minimise risk to heritage resources; **COMPLETED BY SARAO**
- Heritage-related mitigation measures, i.e. Mitigation measures authorised in terms of Section 34 or 35 Permits to reduce the intensity of identified impacts to heritage resources; and **UNDERTAKEN BY SPECIALISTS**
- Preventative protection measures, i.e. Implementation of protocols, including establishing buffers, monitoring by specialists in areas of high-sensitivity, and implementation of specific CFPs. **TO BE IMPLEMENTED DURING CONSTRUCTION AND OPERATION**

6.3.1 Construction Monitoring Requirements

Construction activities pose the greatest threat to physical heritage resources within the cultural landscape. To manage the identified risk during construction, monitoring is required.

Table 6-2 and Table 6-3 detail the applicable palaeontological and archaeological monitoring requirements respectively.

Table 6-2: Palaeontological Monitoring Requirements during Construction of the SKA1_MID Project

Activity	Sensitivity ¹	Responsible	Requirements
Construction activities in relation paleontological sensitivities	Very high	Palaeontologist	<ul style="list-style-type: none"> On-site inspection²; Guide construction to avoid possible impacts to chance finds Record and assess identified chance finds Implement requirements of NHRA and NHRA Regulations Compile Watching Brief Report for submission to SAHRA
	High	SARAO Site Supervisor	Implement CFP (See Lesson 6)
	Moderate		
	Low	N/A	No requirements
Negligible			

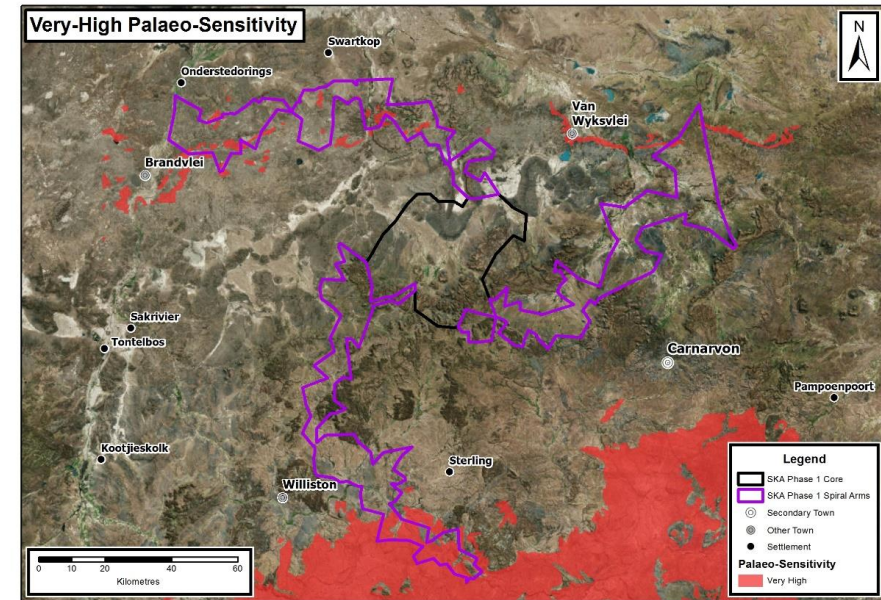


Figure 6-1: High – Very High Palaeo-Sensitivity Areas to be Monitored by Palaeontologist

¹ Refer to interactive map for detailed delineations of palaeontological/archaeological sensitivities within the Proposed National Park

² Infield inspection of development footprint prior to commencement of earth moving activities. Monitoring of earth moving activities.

Table 6-3: Archaeological Monitoring Requirements during Construction of the SKA1_MID Project

Activity	Sensitivity ^{12F3}	Responsible	Requirements
Construction activities in relation to defined archaeological sensitivities	Very high	Archaeologist	<ul style="list-style-type: none"> On-site inspection; Guide construction to avoid possible impacts to chance finds Record and assess identified chance finds Implement requirements of NHRA and NHRA Regulations Compile Watching Brief Report for submission to SAHRA
	High		
	Moderate	SARAO Site Supervisor	Implement CFP (See Lesson 6)
	Low		
	Very low		
Negligible			

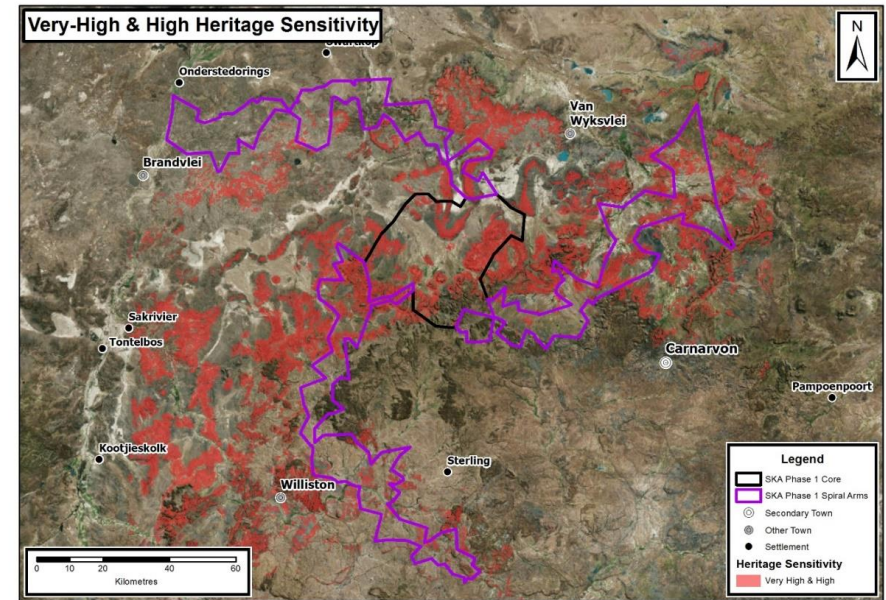


Figure 6-2: High – Very High Archaeological Sensitivity Areas to be Monitored by Archaeologist

³ Refer to interactive map for detailed delineations of palaeontological/archaeological sensitivities within the Proposed National Park

6.3.2 Operational Monitoring Requirements

Known heritage resources within the boundaries of the 'core' Project area must be monitored against the baseline, i.e. the first records of integrity of the heritage resource, to measure changes through time or in response to specific events.

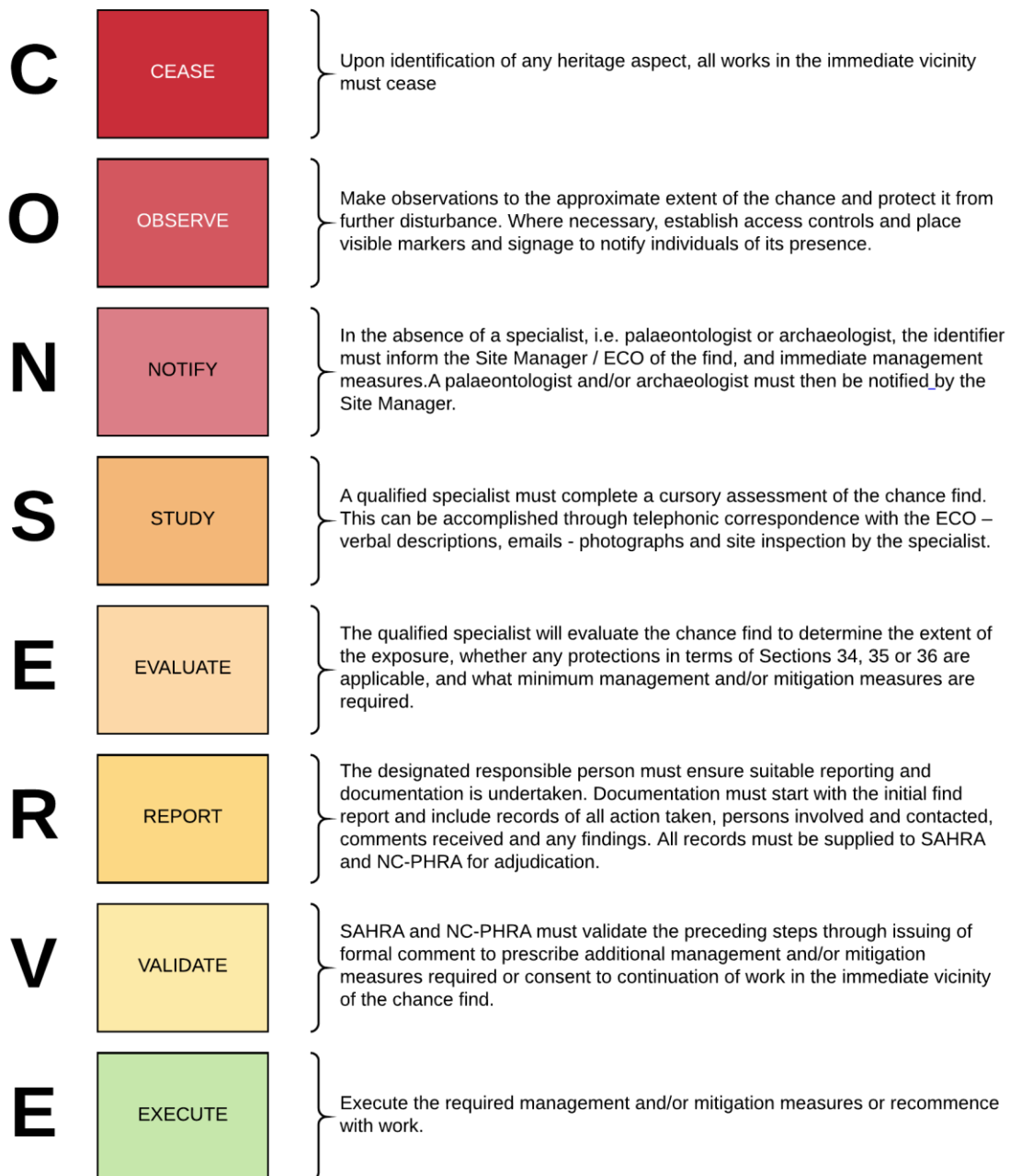
These monitoring requirements are specifically for built structures protected in terms of Section 34 of the NHRA.


Table 6-4: Monitoring Requirements during Operation of the Proposed National Park


Responsible	Frequency	Pro / Reactive	Method
SANParks Cultural Conservation Officer	Quarterly	Proactive	<ul style="list-style-type: none"> Record status quo through photographs; Maintain records; Report on monitoring results as required
Conservation Architect	Annually	Proactive	<ul style="list-style-type: none"> Visually assess the status quo; Review monitoring results against baseline conditions; Review and update management measures

7 Lesson 6: The CONSERVE Protocol


SARAO developed a procedure to reduce the intensity of potential impacts to unidentified palaeontological and archaeological resources. This procedure is applicable throughout construction and operation of the Project.







Archaeology:
 Can be considered both a social science and a branch of the humanities.

	Scenario 1	Scenario 2	Scenario 3
 Complete the training			
 30 days before construction, look in the area for archaeology			
 Select the Scenario	Accidentally discover something during your work	A discovery is made before you start working, but you can't avoid it	A discovery is made before you start working, but you can avoid it
 C Cease Stop	Stop all work and follow the CONSERVE Protocol		Amend the infrastructure to avoid
 O Observe Look	Look at how big the area is where you made the find, and work outside of this area		
 N Notify Tell	Immediately tell the ECO and Archaeologist about the find. Send photographs and the location information.		Tell the ECO about the find. Write down your find on the recording form
 S Study Assess	The ECO and Archaeologist will complete an assessment.		
 E Evaluate Judge	The ECO and Archeologist will say if the find is protected and how to continue		
 R Report Write	The find must be reported to the Heritage Authority known as SAHRA by the ECO and Archaeologist		
 V Validate Submit	The Heritage Authority will determine and tell you if work can continue or if you will need to do more steps before working again		
 E Execute Do	Complete the steps that the Heritage Authority gave you to do. Continue with the work.	Continue with the work.	





Complete the training



30 days before construction, look in the area for palaeontology

Palaeontology :
 The branch of science concerned with fossil animals and plants.



Select the Scenario

	Scenario 1	Scenario 2	Scenario 3
	Accidentally discover something during your work	A discovery is made before you start working, but you can't avoid it	A discovery is made before you start working, but you can avoid it
C Cease Stop	Stop all work and follow the CONSERVE Protocol		Amend the infrastructure to avoid
O Observe Look	Look at how big the area is where you made the find, and work outside of this area		
N Notify Tell	Immediately tell the ECO and Palaeontologist about the find. Send photographs and the location information.		Tell the ECO about the find. Write down your find on the recording form
S Study Assess	The ECO and Palaeontologist will complete an assessment.		
E Evaluate Judge	The ECO and Palaeontologist will say if the find is protected and how to continue		
R Report Write	The find must be reported to the Heritage Authority known as SAHRA by the ECO and Palaeontologist		
V Validate Submit	The Heritage Authority will determine and tell you if work can continue or if you will need to do more steps before working again		
E Execute Do	Complete the steps that the Heritage Authority gave you to do. Continue with the work.		Continue with the work.



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SARAO
 South African Radio
 Astronomy Observatory





Appendix A: Recording Document

SITE RECORDING AND PRELIMINARY CONDITIONAL ASSESSMENT FORM



DIGBY WELLS
ENVIRONMENTAL

Recorder:		Date:	
Classification:	Immovable	Movable	Intangible
Location:	Photograph Numbers:		
Ref No: <small>Site name/number or other reference</small>	Co-ordinates <small>Decimal degrees using the WGS84 datum</small>		
1. Immovable Heritage Resources			
SAHRIS ID Reference: <small>where applicable</small>			
Type of resource:	<small>See footer</small>	Age / Industry / Period:	<small>Cultural period / style / associated persons / history</small>
Resource Description Summary:	<small>See footer</small>		
Functional Type:		Current Function:	<small>Original / changed from past / current function</small>
<i>Please proceed to Section 4</i>			
2. Movable Heritage Resources			
SAHRIS ID Reference:			
Type of resource:	<small>Artefacts, artworks, books, documents machines, clothing</small>	Age / Industry / Period:	
Resource Description Summary:			
Quantity recorded:			
<i>Please proceed to Section 4</i>			
3. Intangible Heritage Resources			
SAHRIS ID Reference:			
Type of resource:		To whom is the resource significant?	
Describe the resource or summarise provided information:			
Informant / source of information:			Wishes to remain anonymous
<i>Please proceed to Section 4</i>			

Type of Resource: Archaeological: Artefacts, Rock Art, Deposit, Shell Midden, Ruin > 100 years, Stone walling, Settlement; Living heritage / sacred site; Battlefield; Burial Grounds and Graves; Conservation Area; Cultural Landscape; Geological; Meteorites; Monuments & Memorials; Natural, Palaeontological; Place; Structure: bridge, building, transport infrastructure; Underwater: Shipwreck, Submerged (intertidal, partially submerged, fully submerged).

Summary Description: Artefact: isolated surface, Artefact: Low density surface scatter, <10:1 sq m, Artefact: medium density surface scatter, <20:1 sq m, Artefact: high density surface scatter, >20:1 sq m, Artefact: embedded in rock matrix, Burial ground: Undetermined, Single grave, ≤10 graves, ≤20 graves, ≤50 graves, >100 graves; Deposit: ash, ≤1 cm, ~5 cm, ~10 cm, ~20 cm, >20 cm; Deposit: charcoal; Deposit: Faunal; Deposit: Kraal; Fossil, hominin: embedded in rock matrix; Fossil, hominin: isolated surface; Fossil, hominin: tracks; Fossil, invertebrate: embedded in rock matrix; Fossil, invertebrate: isolated surface; Fossil, invertebrate: tracks; Fossil, plant: embedded in rock matrix; Fossil, plant: isolated surface; Fossil, vertebrate: embedded in rock matrix; Fossil, vertebrate: tracks; Fossil: breccia with visible remains; Fossil: breccia without visible remains; Rock art: combination; Rock art: engraving; Rock art: painting; Shelter: including artefact/s;

Shelter: including artefact/s + deposit; Shelter: rock art + artefacts / deposit / structures; Shelter: rock art + artefacts / deposit / structures; Shelter: rock art combination; Shelter: rock art engraving; Shelter: rock art painting; Site: high complexity, multiple components >2500 sq m / 50 x 50 m; Site: low complexity, multiple components <25 sq m / 5 x 5 m; Site: medium complexity, multiple components >25 sq m / 5 x 5 m to <2500 sq m / 50 x 50 m; Structural: complex, e.g. weir; Structural: functional, e.g. fences, wind pumps, troughs; Structural: industrial, e.g. warehouse, headgear; Structural: remains, e.g. daga, hut floor, foundations, bricks; Structural: stonewall; Other

SITE RECORDING AND PRELIMINARY CONDITIONAL ASSESSMENT FORM



DIGBY WELLS
ENVIRONMENTAL

4. Description and Notes						
Restrictions/sensitivities: <i>Please note any restrictions with regard to this heritage resource and/or information obtained by an informant</i>	None	No photographs	Do not publish			
	Other:					
	Reason for Restrictions:	<i>E.g. Conservation, economic, spiritual, immovable heritage, other (please describe)</i>				
Please provide a brief description of the resource:						
Condition of the resource:	Damaged	Poor	Fair	Good		
Quality of the resource: (Scales of damage)	Poor	Fair	Good	Excellent		
Please describe: <i>(including scale of damage or neglect and factors influencing the integrity of the resource)</i>						
Statement of Significance: <i>(please provide a brief assessment of the significance of the resource, in your opinion)</i>	Negligible	Low	Medium	Med-Hi	High	V. High
	<i>Consider aesthetic, historic, scientific and social criteria</i>					
Are there any observable / apparent threats / impacts to the resource?						
Can this impact be avoided?						
			YES		NO	
Describe why.						
Please include any additional notes here: <i>(e.g. any notable features, additional information from an informant, damage)</i> <i>Should this be a Chance Find, please include details surrounding the find (e.g. personnel involved, activities being undertaken, decisions made and steps taken after find, date and time of find)</i>						

Type of Resource: Archaeological: Artefacts, Rock Art, Deposit, Shell Midden, Ruin > 100 years, Stone walling, Settlement; Living heritage / sacred site; Battlefield; Burial Grounds and Graves; Conservation Area; Cultural Landscape; Geological; Meteorites; Monuments & Memorials; Natural, Palaeontological; Place; Structure: bridge, building, transport infrastructure; Underwater: Shipwreck, Submerged (intertidal, partially submerged, fully submerged).
Summary Description: Artefact: Isolated surface, Artefact: Low density surface scatter, <10.1 sq m, Artefact: medium density surface scatter, <20.1 sq m, Artefact: high density surface scatter, >20.1 sq m, Artefact: embedded in rock matrix, Burial ground: Undetermined, Single grave, ≤10 graves, ≤20 graves, ≤50 graves, >100 graves; Deposit: ash, ≤1 cm, ~5 cm, ~10 cm, >20 cm; Deposit: charcoal; Deposit: Faunal; Deposit: Kraal; Fossil, hominin: embedded in rock matrix; Fossil, hominin: tracks; Fossil, invertebrate: embedded in rock matrix; Fossil, invertebrate: isolated surface; Fossil, invertebrate: tracks; Fossil, plant: embedded in rock matrix; Fossil, vertebrate: embedded in rock matrix; Fossil, vertebrate: isolated surface; Fossil, vertebrate: tracks; Fossil: breccia with visible remains; Fossil: breccia without visible remains; Rock art: combination; Rock art: engraving; Rock art: painting; Shelter: including artefact/s; Shelter: including artefact/s + deposit; Shelter: including artefact/s + deposit + structures; Shelter: rock art + artefacts / deposit / structures; Shelter: rock art combination; Shelter: rock art engraving; Shelter: rock art painting; Site: high complexity, multiple components >2500 sq m / 50 x 50 m; Site: low complexity, multiple components <25 sq m / 5 x 5 m; Site: medium complexity, multiple components >25 sq m / 5 x 5 m to <2500 sq m / 50 x 50 m; Structural: complex, e.g. werf; Structural: functional, e.g. fences, wind pumps, troughs; Structural: industrial, e.g. warehouse, headgear; Structural: remains, e.g. daga, hut floor, foundations, bricks; Structural: stonewall; Other



Appendix B: Site Specific Examples



Glossopteris Leaf



Petrified Wood



MSA Artefact



Rock Paintings



Mixed
Archaeological
Assemblage



Calamites Culm



Shelly Coquina



LSA Artefacts



Historical Artefacts



Rippled Sandstone
with invertebrate
burrows



Lower Grinding Stone



Farmstead



Corbelled Huts