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The South African Radio Astronomy Observatory Square Kilometre Array Heritage Impact Assessment and Conservation Management Plan Project

Notification of Intent to Develop

Project Number:

NRF4874

Prepared for:

SARAO

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Project Name:	The South African Radio Astronomy Observatory Square Kilometre Array Heritage Impact Assessment and Conservation Management Plan Project
Project Code:	NRF4874

Name	Responsibility	Signature	Date
Justin du Piesanie Manager: HRM ASAPA Member 270	Compilation		March 2018

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1 Introduction

1.1 Project Background

The Square Kilometre Array (SKA) Project (“the Project”) is located in the Northern Cape Province of South Africa, some 900 km, 650 km and 90 km from Johannesburg, Cape Town and Carnarvon respectively. The Project comprises two primary components, namely the ‘core’ (36 land parcels) and three ‘spirals’ (73 land parcels) covering an approximate areal extent of 211 000 hectare (ha). This land makes provision for the SKA Radio Telescope, KAT-7 radio telescope, MeerKAT, HERA and HIRAX instruments.

In support of obtaining environmental exclusion in terms of Section 24(2)(e) for the Project, the Department of Environmental Affairs (DEA) commissioned the Council for Scientific and Industrial Research (CSIR) to complete a Strategic Environmental Assessment (SEA) (CSIR, 2016) in accordance with the principles of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). The SEA is interpreted as Phase 1, the first step in the development of management principles into environmental decision making processes.

The Phase 1 study area was investigated by various specialists through desktop geographic information system (GIS) analysis and site visits from November 2015 to May 2016. The SEA included a strategic level assessment of the heritage resources within the area under consideration to determine potential impacts (Almond, 2016; Bluff, et al., 2016). The results of this assessment included the identification of 105 heritage resources. These were categorised according to the recommended grading as outlined in Section 7 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA), as well the heritage resource type as defined by Sections 27, 28, 31, 34, 35, 36 and 37. This, however, was not exhaustive.

The identified heritage resources are summarised in the following table:

Table 1: Heritage resources reported in the SEA

NHRA Grading	NHRA Section	Description
7(1)(b) - 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 region	Section 27	Corbelled buildings declared Provincial Heritage Sites on the farms Grootfontein, Arbeidsfontein and Stuurmansfontein
	Section 31	Culturally significant areas, namely Hartogskloof, Groot Pardekloof and Abiquaputs.



NHRA Grading	NHRA Section		Description
7(1)(c) – Grade III: Other heritage resources worthy of conservation, and which prescribes heritage resources assessment criteria, consistent with the criteria set out in Section 3(3), which must be used by a heritage resources authority or local authority to assess the intrinsic, comparative and contextual significance of a heritage resource and the relative benefits and costs of its protection, so that the appropriate level of grading of the resource and consequent responsibility for its management may be allocated in terms of Section 8.	IIIa – High local significance	Section 27	Monuments
		Section 34	Historical buildings
		Section 35	Stone Age artefacts and Rock Art
		Section 36	Burial Grounds and Graves
	IIIb – Moderate local significance	Section 35	Archaeological sites and Rock Art
	IIIc – Low local significance	None Provided	No descriptions

The strategic level assessment of the heritage resources was submitted to the South African Heritage Resources Agency (SAHRA) via the South African Heritage Resources Information System (SAHRIS) (Case ID: 10314¹) digital portal 27 October 2016². The assessment was submitted to SAHRA and the provincial heritage resources agency, *Ngwao Boswa jwa Kapa Bokone* (NKBK), to comply in part with the requirements encapsulated in Section 38 of the NHRA and Section 24 of the NEMA.

SAHRA issued final comment on Case ID: 10314 in terms of Section 38(4) of the NHRA on 16 March 2017, endorsing the prescribed specialist recommendations and Project in principle. The endorsement from SAHRA was predicated on the following:

- A Heritage Impact Assessment (HIA), compiled in accordance with Section 38(3) of the NHRA, will be required for components of the Project that trigger a NEMA Listed Activity;
- An HIA, compiled in accordance with Section 38(3) of the NHRA, will be required for components of the Project that trigger an activity defined in Section 38(1) of the NHRA, but not defined in the NEMA Listed Activities;

¹ Available at: <http://www.sahra.org.za/sahris/cases/csir-ska-phase-1>

² Submission of the various specialist reports were subsequent to a Special Advisory Committee meeting on 05 August 2016 and 13 September 2016 respectively. Additional comments were issued by SAHRA on 10 March 2017 during a Special Advisory Committee meeting.

- The compiled HIA must be submitted to SAHRA for adjudication as required by Section 38 of the NHRA;
- Comments provided on 10 March 2017 must be addressed in future HIAs. Those of particular relevance to this HRM process include:
 - The HIA must assess all heritage resources as defined in Section 2 of the NHRA;
 - A final footprint verification survey by a palaeontologist must be completed and submitted to SAHRA;
 - An assessment of consolidated alluvial deposits along major water courses must be submitted to SAHRA;
 - A report recording and recommending grading of historical farmsteads, cemeteries and corbelled buildings must be submitted to NKBK and SAHRA;
 - Identified heritage resources as per Dreyer (2008)³, including Provincial Heritage Site 9/2/019/0011 be investigated immediately by the present Environmental Control Officer (ECO) and considered in the HIA;
 - The National Inventory must be considered as a data source;
 - All newly identified sites must be inventorized and submitted to SAHRA for inclusion into the National Inventory;
 - A Heritage Management Plan (HMP) must be compiled to comply with the NHRA and National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (NEM: PAA), and implemented as part of the Integrated Environmental Management Plan (IEMP);
 - An independent specialist must identify, record, assess and provide recommendations for the long term conservation of heritage resources within the Project area;
 - All heritage monitoring must be recorded, reported and submitted to SAHRA and NKBK;
 - A Chance Finds Procedure (CFP) must be developed and implemented as part of the HMP;
 - All developed management plans (*i.e. traffic, land, storm and waste water, alien invasive and fauna & flora*), must consider heritage resources as applicable and possible permitting requirements in terms of Section 27, 33, 34, 35 and 36 of the NHRA;
 - Any amendment to impact management actions pertaining to heritage resources must be forwarded to SAHRA and NKBK for comment and / or permitting; and

³ Available at: http://sahra.org.za/sahris/sites/default/files/heritagereports/9-2-019-0001-20080520-PAHS_0.pdf

- Any amendment to IEMP must be forwarded to SAHRA and NKBK for comment and / or permitting.

1.2 Project Description

The international SKA Organisation (SKAO) propose to establish an additional 133 antennas to the 64-dish MeerKAT radio telescope, including supporting infrastructure and power which comprises of

- Access gravel roads to a width of between 4 – 6 m;
- Upgrading up to 340 km of existing roads;
- Establishment of approximately 110 km new roads;
- Develop electrical infrastructure including:
 - Overhead and underground power cables within a 22-30 m wide servitude;
 - Substations and electrical kiosks;
 - Up to 5 standalone PV plants on each spiral arm
- Establishment of approximately 20 borrow pits;
- Establishment of three new stone quarries;
- Assessment of an existing quarry; and
- Establishment of temporary construction camps.

Current planning estimates that construction activities associated with Phase 1 will commence in the latter part 2019, continuing through to the year 2027. The lifespan of SKA Phase 1 is expected to be 50 years from the completion of construction. To this effect, SARAO are required to undertake the necessary studies to comply with the requirements presented in Chapter 1.1 above.

2 Project location

The SKA Project is located in the Northern Cape Province of South Africa, some 900 km, 650 km and 90 km from Johannesburg, Cape Town and Carnarvon respectively.

The Project comprises two primary components, namely the 'SKA core', which includes 36 land portions recently acquired by SARAO and the existing 2 farms owned by the NRF totalling 128,000 hectares and three 'spirals arms' (73 land portions) covering approximately 1400 hectares (ha). This land makes provision for the SKA Radio Telescope, KAT-7 radio telescope, MeerKAT, HERA and HIRAX instruments.

SKA Project

Locality Map

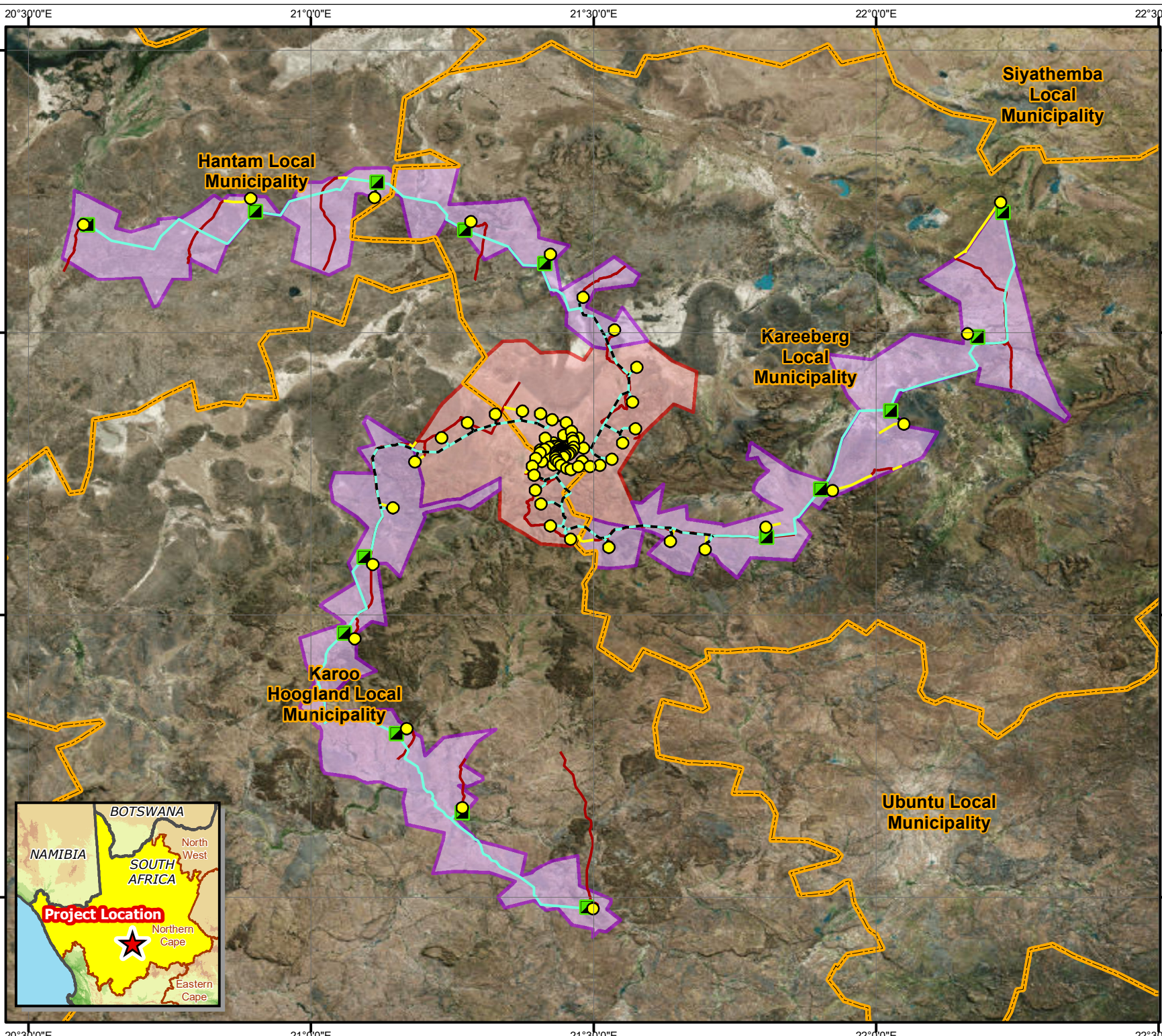
Legend

Project Area

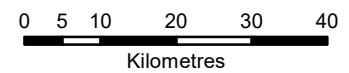
- SKA Phase 1 Core
- SKA Phase 1 Spiral Arms
- Local Municipality Boundary

Infrastructure

- Satellite Dish
- PV Site
- Fibre Optic Cable
- Powerline
- Existing Road to be Upgraded
- New Road



Projection: Geographic
Datum: WGS 1984
Date: 11/01/2018
Ref #: scm.NRF4874.201801.025



3 Assessment processes

The following impact assessment processes are currently being conducted for the proposed project.

Table 2: Current assessment processes

Legislation (e.g. NEMA, MPRDA, etc.)	Current phase of assessment process (e.g. Scoping, EIA, etc.)	Authorities who has / will receive information	Capacity of Authorities
MPRDA	Pre-application for exemption	Department of Mineral Resources (DMR)	Competent Authority
NEMA	Exemption	Department of Environmental Affairs	Competent Authority
NHRA	NID	SAHRA	Commenting
	NID	<i>Ngwao Boswa jwa Kapa Bokone (NKBK)</i>	Commenting

These assessments are required in terms of legislated and / or regulated activities outlined in Sections 3.1 to 3.3 below.

3.1 EIA Regulations listed activities

SARAO submitted the Integrated Environmental Management Plan (IEMP) to the Minister of Environmental Affairs for consideration for adoption as an environmental management instruments in terms of Section 24(2)(e) of the NEMA.

The intention of the adoption of this instrument (IEMP) will allow for the development of the identified activities associated with the development of the SKA within the geographical scope indicated in this document, without environmental authorisation, but in line with the environmental management principals and measures of this plan. These principles and management measures have been proposed based on the assessment of possible environmental sensitivities and impacts and their mitigation and management measures undertaken through a strategic environmental assessment process.

The application for exemption in terms of Section 24(2)(e) of the NEMA has been granted in principle and is awaiting gazetting. Therefore, no listed activities are considered in this application.

3.2 NHRA Section 38(1) activities

The proposed development will include the following activities listed in Section 38(1) of the NHRA, which generally require heritage assessments to be undertaken.

Table 3: NHRA Section 38 triggers

		NHRA Section 38 (1) Activities / Triggers		Summary description (e.g. 500 m conveyor belt, open cast pit, etc.)
<input checked="" type="checkbox"/>	a	Any linear development or barrier >300 m		Establishment and upgrade of roads. Electrical and fibre optic cable infrastructure
<input type="checkbox"/>	b	Any bridge or similar structure >50 m		-
<input checked="" type="checkbox"/>	c	Any development or activity that will change the character of a site:		-
<input checked="" type="checkbox"/>	i	$\geq 5\ 000\text{m}^2$ in extent		Development of 133 antennas Development of sub-stations / electrical kiosks Establishment of 20 borrow pits Establishment of three stone quarries
<input type="checkbox"/>	ii	Involving ≥ 3 existing erven/ subdivisions		-
<input type="checkbox"/>	iii	Involving ≥ 3 or more erven/ divisions consolidated within past 5 years.		-
<input type="checkbox"/>	d	Rezoning of a site $\geq 10\ 000\text{m}^2$ in extent.		Consolidation of the 'core' site into a National Park
<input checked="" type="checkbox"/>	e	Other triggers, e.g.: in terms of other legislation, (i.e.: National Environment Management Act, etc.)		MPRDA; NEMA; and NEM: PAA

3.3 Identified / known heritage resources and potential impacts

Certain categories of heritage resources, if identified / existing, generally require heritage assessments to be conducted before any development may take place. These categories may also be formally or generally protected in terms of the NHRA. Table 4 presents heritage identified in the region surrounding the SKA Project.

Table 4: Identified heritage resources in terms of Section 3 of the NHRA

	Section	Description
<input checked="" type="checkbox"/>	3(2)(a)	Places, buildings, structures and equipment of cultural significance
		Description of resource: Built environment structures generally protected in terms of Section 34 of the NHRA are known to occur within the site-specific study area. These include corbelled



	Section	Description
		buildings declared Provincial Heritage Sites
		Potential impact: Damage to and/or destruction
<input checked="" type="checkbox"/>	3(2)(b)	<p>Places to which oral traditions are attached or which are associated with living</p> <p>Description of resource: The site-specific study area is intrinsically associated with the !Xam people.</p> <p>Potential impact: Degradation of indigenous knowledge systems, intrinsic cultural significance and alteration to the sense-of-place.</p>
<input type="checkbox"/>	3(2)(c)	<p>Historical settlements and townscapes</p> <p>Description of resource: The site-specific study area is surrounded by small Karroo townscapes, such as Carnarvon.</p> <p>Potential impact: Alteration to the townscape and sense-of-place.</p>
<input checked="" type="checkbox"/>	3(2)(d)	<p>Landscapes and natural features of cultural significance</p> <p>Description of resource: The site-specific study area is intrinsically associated with the !Xam people, the landscape and natural features woven into the folklore of this group and worldview.</p> <p>Potential impact: Degradation of indigenous knowledge systems, intrinsic cultural significance and alteration to the sense-of-place.</p>
<input checked="" type="checkbox"/>	3(2)(e)	<p>Geological resources of scientific or cultural importance</p> <p>Description of resource: Sections of the site-specific study area are underlain by lithostratigraphic units associated with the Lower Beaufort Geological Group.</p> <p>Potential impact: Damage to and/or destruction of fossiliferous material</p>
<input checked="" type="checkbox"/>	3(2)(f)	<p>Archaeology and/or palaeontology (Including archaeological sites and material, fossils, rock art, battlefields & wrecks)</p> <p>Description of resource: Heritage resources generally protected in terms of Section 35 of the NHRA are known to occur within the site-specific study area.</p> <p>Potential impact: Damage to and/or destruction</p>
<input checked="" type="checkbox"/>	3(2)(g)	<p>Graves and burial grounds (e.g. ancestral graves, graves of victims of conflict, historical graves & cemeteries)</p>

	Section	Description
		Description of resource: Burial grounds and graves generally protected in terms of Section 36 of the NHRA are known to occur within the site-specific study area
		Potential impact: Damage to and/or destruction
<input type="checkbox"/>	3(2)(h)	Other human remains
		Description of resource: None identified
		Potential impact: None
<input type="checkbox"/>	3(2)(i)	Sites of significance relating to the history of slavery in South Africa
		Description of resource: None identified
		Potential impact: None
<input type="checkbox"/>	3(2)(j)	Movable objects
		Description of resource: None identified
		Potential impact: None

4 Recommendation

A summary and motivation of the specialist recommendations is provided in Table 5:

Table 5: Specialist heritage recommendations

Is a Heritage Impact Assessment required?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
If NO, provide motivation: -		

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If YES, provide suggested components that may be required or undertaken during HIA.

<input checked="" type="checkbox"/>	Archaeology	<input checked="" type="checkbox"/>	Architecture
<input checked="" type="checkbox"/>	Built Environment	<input checked="" type="checkbox"/>	Burial Grounds and Graves
<input checked="" type="checkbox"/>	Palaeontology	<input checked="" type="checkbox"/>	Public Participation
<input type="checkbox"/>	Townscapes	<input checked="" type="checkbox"/>	Visual Impact
<input checked="" type="checkbox"/>	Other: Integrated Conservation Management Plan		

Recommendation made by:

Name: Justin du Piesanie

Capacity: Manager: HRM