DIGBY WELLS
ENVIRONMENTAL

Heritage Resources Management Process for the South African Radio Astronomy Observatory Square Kilometre Array Project

Background Information Document

Project Number:

NRF4874

Prepared for:

SARAO

For any project related information please contact:

Digby Wells Environmental – Stakeholder Engagement Office

Ms Nondumiso Gwala

Tel: (011) 789 9495

Fax: (011) 789 9498 / (011) 069 6801

Email: nondumiso.gwala@digbywells.com

Website: www.digbywells.com (Public Documents)

March 2018

Digby Wells and Associates (South Africa) (Pty) Ltd
Co. Reg. No. 2010/008577/07. Turnberry Office Park, 48 Grosvenor Road, Bryanston, 2191. Private Bag X10046, Randburg, 2125, South Africa
Tel: +27 11 789 9495, Fax: +27 11 069 6801, info@digbywells.com, www.digbywells.com

Directors: GE Trusler (C.E.O), GB Beringer, LF Koeslag, J Leaver (Chairman)*, NA Mehlomakulu*, MJ Morifi*, DJ Otto, RA Williams*
*Non-Executive

PURPOSE OF THIS DOCUMENT

The purpose of this document is to provide all interested and affected parties (I&APs) with information relevant to the Heritage Resources Management (HRM) process being undertaken for the Square Kilometre Array (SKA) Project.

This document aims to:

- Provide a summary description of the SKA Project;
- Present the current status of the SKA Project as relevant;
- Define the regulatory framework within which the HRM process is being undertaken; and
- Invite all I&APs to register as stakeholders, provide comment, raise issues or concerns, and provide suggestions for the enhanced benefit of the Project.

TO REGISTER AND FOR MORE INFORMATION PLEASE USE THE FOLLOWING CONTACT INFORMATION

Ms. Nondumiso Gwala

Digby Wells Environmental

PO Box 10046, Randburg, 2125

Tel: (011) 789 9495

Fax: (011) 789 9498 / (011) 069 6801

Email: nondumiso.gwala@digbywells.com

Website: www.digbywells.com

BACKGROUND INFORMATION

The South African Radio Astronomy Observatory (SARAO) is leading South Africa's local activities in terms of the SKA Radio Telescope in support of compliance to national legislation. SARAO is a National Facility managed by the National Research Foundation and incorporates radio astronomy instruments and programmes such as the MeerKAT and KAT-7 telescopes in the Karoo, the Hartebeesthoek Radio Astronomy Observatory (HartRAO) in Gauteng, the African Very Long Baseline Interferometry (AVN) programme in nine African countries as well as the associated human capital development and commercialisation endeavours (*Source: https://www.ska.ac.za/about/sarao/*).

The SKA project is an international effort to build the world's largest radio telescope, with eventually over a square kilometre (one million square metres) of collecting area. The scale of the SKA represents a huge leap forward in both engineering and research & development towards building and delivering a unique instrument, with the detailed design and preparation now well under way. As one of the largest scientific endeavours in history, the SKA will bring together a wealth of the world's finest scientists, engineers and policy makers to bring the project to fruition.

Both South Africa's Karoo region and Western Australia's Murchison Shire were chosen as co-hosting locations for many scientific and technical reasons, from the atmospherics above the desert sites, through to the radio quietness, which comes from being some of the most remote locations on Earth.

South Africa's Karoo will host the core of the high and mid frequency dishes, ultimately extending over the African continent. Australia's Murchison Shire will host the low-frequency array.

The SKA will be developed over a phased timeline. Pre-construction development started in

2012 and will be concluded in 2019 for SKA1 Phase I (SKA1_MID), which includes the detailed design, implementation, R&D work, and contract preparation needed to bring the SKA's first phase to construction readiness.

The first phase of the SKA (SKA1_MID) in South Africa will be constructed towards the end of 2019/early 2020 for a period of up to seven years. The SKA1_MID telescope will operate for 50 years.

For SKA Phase 1, Australia will host the low-frequency instrument with more than 500 stations, each containing around 250 individual antennas, whilst South Africa will host an array of some 197 dishes, incorporating the 64-dish MeerKAT precursor telescope.

Figure 1: Overview of MeerKAT radio telescope

Phase 2 will complete the telescope arrays at both sites, and become fully operational in the late 2020s, by which time the SKA will count with some 2000 high and mid frequency dishes and aperture arrays and a million low-frequency antennas (*Source: https://www.skatelescope.org/project/*).

PROJECT DESCRIPTION

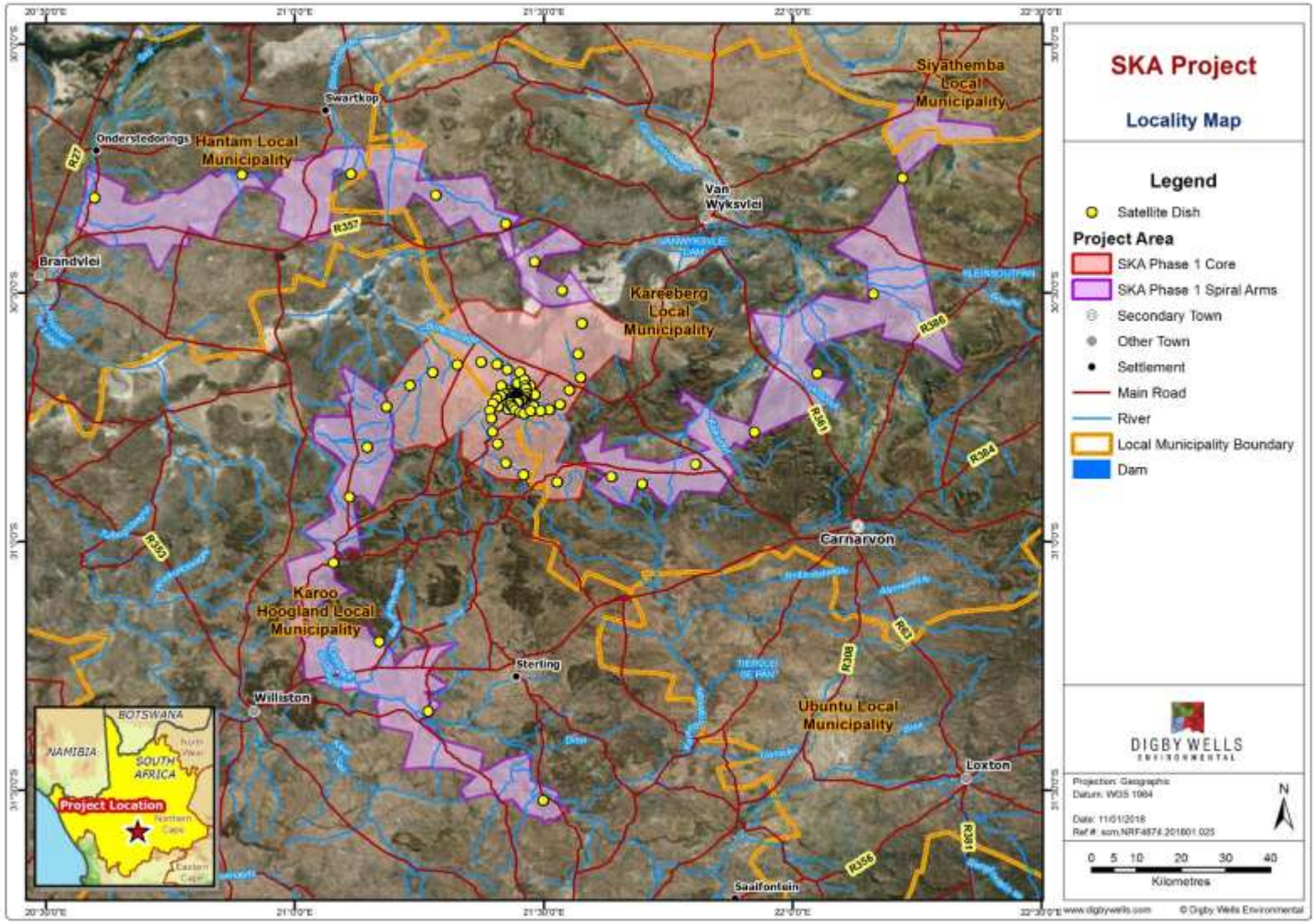
The international SKA Organisation (SKAO) proposes to establish an additional 133 antennas to the 64-dish MeerKAT radio telescope, including supporting infrastructures and power which comprises of:

- 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 five standalone PV plants on each spiral arm;
- Establishment of approximately 20 borrow pits;
- Establishment of three new stone quarries;
- Assessment of an existing stone quarry; and
- Establishment of temporary construction camps.

Current planning estimates that construction activities associated with SKA Phase 1 will commence in the latter part of 2019, continuing to 2027. To this effect, SARAO is assisting the international SKAO to undertake the necessary studies to comply with the South African national legislative framework.

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, KAT-7 radio telescope, MeerKAT, HERA and HIRAX instruments.


SKA Project
Locality Map
Legend
Satellite Dish
Project Area
SKA Phase 1 Core
SKA Phase 1 Spiral Arms
Secondary Town
Other Town
Settlement
Main Road
River
Local Municipality Boundary
Dam
Hantam Local Municipality
Siyathemba Local Municipality
Kareeberg Local Municipality
Karoo Hoogland Local Municipality
Ubuntu Local Municipality
Swartkop
Onderstedorings
Brandvlei
Van Wyksvlei
Carnarvon
Sterling
Williston
Loxton
Saalfontein
BOTSWANA
NAMIBIA
SOUTH AFRICA
Project Location
Kilometres

ENVIRONMENTAL AUTHORISATIONS

In support of obtaining exemption from Environmental Authorisation (EA) 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 through the Integrated Environmental Management Plan (IEMP) is interpreted as the first step in the development of management principles into environmental decision making processes.

The 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 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: 10314) digital portal 27 October 2016 . 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.

HERITAGE RESOURCE MANAGEMENT (HRM) PROCESS

SARAO appointed Digby Wells Environmental to undertake an HRM process as required in support of the requirements stipulated by SAHRA in terms of Section 38 of the NHRA. The HRM process comprises two primary components:

- A Heritage Impact Assessment (HIA); and
- Conservation Management Plan (CMP).

These two components will be supported by the following palaeontological, archaeological, historic built environment and visual specialist assessments, as well as Stakeholder Engagement and GIS support functions.

The HRM process will be undertaken firstly, in accordance with the South African national legislative framework, and secondly, international best practice standards.

The fieldwork strategy will comprise:

1. A critical review of various databases to determine the distribution of known heritage resources;
2. A review of high resolution aerial imagery to identify topographical areas where heritage resources are known to occur;
3. Eliminate areas that do not require a detailed pedestrian survey from the planned in-field survey;
4. Define priority areas that require in-field verification surveys; and
5. Complete a pedestrian survey to record a representative sample of heritage resources that may be impacted upon and require mitigation and/or management..

PUBLIC PARTICIPATION

Comments raised by stakeholders will assist in informed decision-making for authorities and provides information to be considered by the project team and specialists conducting studies.

Stakeholders affected by or who are interested in the proposed project are invited to register as an I&AP to become involved in the Stakeholder Engagement Process (SEP). Notification will be done by means of letters, newspaper advertisements, site notices and telephonic communication. The various upcoming SEP activities are envisaged to take place as indicated:

Appendix A: Registration and Comment Form

REGISTRATION AND COMMENT FORM

Please complete this form and return it to the contact person provided, to ensure that you are registered as an Interested and Affected Party. The form also gives you the opportunity to make comments regarding the project. Additional pages may be attached, should this be required.

Personal Information			
Title (Mr/Mrs/Dr/Prof):			
First Name and Surname:			
Please indicate whether you are registering as an Individual / Organisation / Farm / or Business and provide the name:			
Physical address			
Postal Address:		Telephone:	
		Cell:	
		E-mail:	
		Fax:	
General interest in the Project			
Do you have any specific comments regarding the HRM process for the proposed project?			
If you know of anyone who should be informed about the project please provide their contact details.			
First Name and Surname:			
Village / Organisation / Farm:			
Physical address:			
Postal Address:		Telephone:	
		Cell:	
		E-mail:	
Method of Communication			
What is your preferred method of correspondence? Please tick the appropriate box:		Fax:	E-mail:
		Post:	SMS: