

**NOTICE 141 OF 2014****DEPARTMENT OF SCIENCE AND TECHNOLOGY****DECLARATION OF THE KAROO CENTRAL ASTRONOMY ADVANTAGE AREAS IN TERMS OF THE ASTRONOMY GEOGRAPHIC ADVANTAGE ACT, 2007**

I, Derek Hanekom, Minister of Science and Technology, hereby declare the areas indicated in the schedule hereto as the Karoo Central Astronomy Advantage Areas for the purpose of radio astronomy and related scientific endeavours in terms of section 9(1) and (2) of the Astronomy Geographic Advantage Act, 2007 (Act No. 21 of 2007) ("the Act").

As provided for in the Act the declared astronomy advantage areas are to be protected, preserved and properly maintained in respect of radio frequency interference or interference in any other way. Protection for the areas is to be established through the promulgation of the regulations in terms of the Act.

The draft regulations will be subjected to the public participation processes prescribed in the Act and the Promotion of Administrative Justice Act (Act No. 3 of 2000). Draft regulations will be sent by registered post or a chosen preferred method for comment to persons in the permanent register of interested and affected parties for the Karoo Central Astronomy Advantage Areas whose existing rights may be directly affected by such regulations before the regulations are published in the Government Gazette.

The written and oral representations made during the public consultation process for this declaration will be considered together with any new submissions to be made when the draft regulations are published for public comment in so far as they relate to aspects included in the draft regulations. A person who has already made a written and/or an oral representation may submit further representations.



**Derek Hanekom**  
**Minister: Science and Technology**

## SCHEDULE

### 1. Definitions

In this notice any word or expression to which a meaning has been ascribed in the Act shall have the meaning so ascribed and, unless the context indicates otherwise:

**“Karoo Core Astronomy Advantage Area”** means the Karoo Core Astronomy Advantage Area declared in Notice No. 723 in Government Gazette No. 33462 on 20 August 2010;

**“Polygon”** means a closed plane figure bounded by straight lines; and

**“WGS 84”** means World Geodetic System dating from 1984 and last revised in 2004.

### 2. Scope of the declaration

This declaration applies to the Karoo Central Astronomy Advantage Areas described below which will be used for the purposes of radio astronomy and related scientific endeavours.

### 3. Description of the Karoo Central Astronomy Advantage Areas

- (1) The Karoo Central Astronomy Advantage Areas (Figure 1) consist of three partly overlapping areas with common inner boundaries that coincide with the outer boundaries of the Karoo Core Astronomy Advantage Area. The three areas have different outer boundaries that depend on the applicable propagation conditions for the different frequency bands specified, and other practical considerations.
- (2) The Karoo Central Astronomy Advantage Area 1 is the area between the boundaries of the Karoo Core Astronomy Advantage Area and outer boundaries in the form of a polygon for which the geographical coordinates according to the WGS 84 datum are provided in the table below. The area is limited to the boundaries of the Northern Cape Province and does not include any area where the polygon may extend across the provincial border. This area will apply to radio astronomy observations in the frequency band from 100 to 2 170 MHz.

Point references: Karoo Central Astronomy Advantage Area 1	Latitude (degrees South)	Longitude (degrees East)
A 1	29.3500	18.8100
B 1	28.7800	20.9900
C 1	28.9100	21.6000
D 1	29.5200	22.0500
E 1	30.5900	23.4300
F 1	31.9600	22.2200

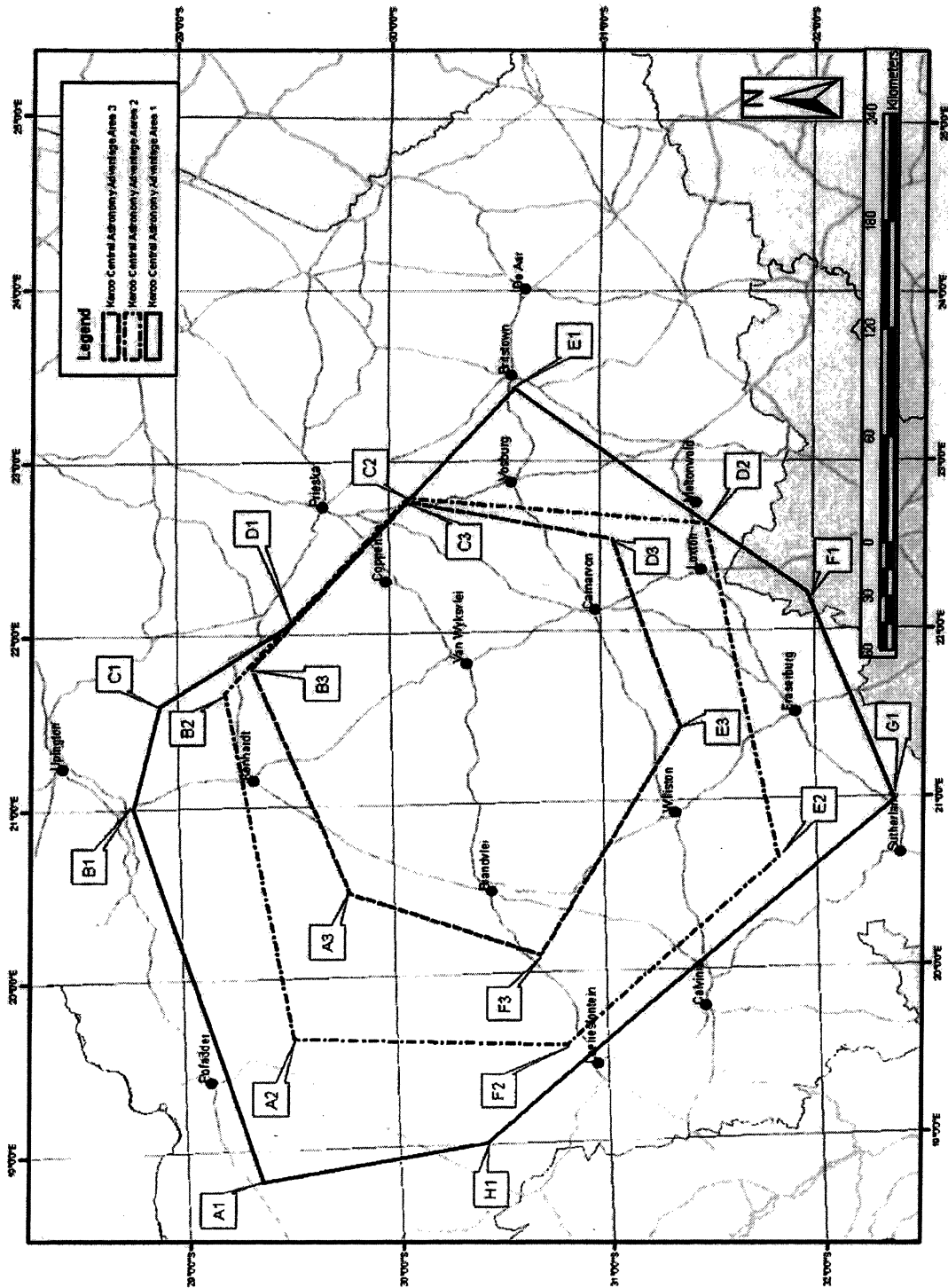
G 1	32.3700	20.9800
H 1	30.4100	19.0000

- (3) The Karoo Central Astronomy Advantage Area 2 is the area between the boundaries of the Karoo Core Astronomy Advantage Area and outer boundaries in the form of a polygon for which the geographical coordinates according to the WGS 84 datum are provided in the table below. This area will apply to radio astronomy observations in the frequency band from 2 170 to 6 000 MHz.

Point references: Karoo Central Astronomy Advantage Area 2	Latitude (degrees South)	Longitude (degrees East)
A 2	29.5100	19.6600
B 2	29.2200	21.6600
C 2	30.0800	22.7700
D 2	31.5100	22.6300
E 2	31.8200	20.6500
F 2	30.8100	19.5700

- (4) The Karoo Central Astronomy Advantage Area 3 is the area between the boundaries of the Karoo Core Astronomy Advantage Area and outer boundaries in the form of a polygon for which the geographical coordinates according to the WGS 84 datum are provided in the table below. This area will apply to radio astronomy observations in the frequency band from 6 000 to 25 500 MHz.

Point references: Karoo Central Astronomy Advantage Area 3	Latitude (degrees South)	Longitude (degrees East)
A 3	29.7900	20.4900
B 3	29.3400	21.8100
C 3	30.0800	22.7600
D 3	31.0600	22.5400
E 3	31.3800	21.4200
F 3	30.6800	20.1000



**Declaration of Central Astronomy  
Advantage Areas**

**Astronomy Geographic Advantage Act 2007**

**SUMMARY OF REPORT BY PROF JCW VAN ROOYEN SC**

**AS ACCEPTED BY**

**THE MINISTER OF SCIENCE AND TECHNOLOGY**

**THE HONOURABLE DEREK HANEKOM MP**

**2014**

## SUMMARY OF THE ADVICE TO THE MINISTER

[1] The undersigned was appointed by the Minister of Science and Technology in terms of the Astronomy Geographic Advantage Act 21 of 2007 (“AGA Act”) to conduct public hearings at Carnarvon and Sutherland so as to establish what the opinions of stakeholders are in regard to the proposed declaration of Central Astronomy Advantage Areas (“Central AAA’s”) and to provide him with advice as to the justifiability for the declarations.

The full report is available at the Director: Astronomy Management Authority, Department of Science and Technology, Pretoria.

The Report was accepted by the Minister who decided to act in the light thereof.

[2] A *Central Astronomy Advantage Area* (Central AAA) is an area declared by the Minister so that activities, which may affect astronomy and related scientific endeavours, or astronomy advantage, such as light pollution or radio frequency interference, may be restricted or prohibited in the Central AAA to ensure or facilitate the protection of a *Core Astronomy Advantage Area* (Core AAA) from such activities. Two *Core AAA’s* have already been declared by the Minister.

[3] I will, further on in this Summary, deal with the extent to which the rights of owners and other inhabitants in the Central AAA’s would have to be balanced against the preservation, inter alia, of high atmospheric transparency, low levels of light pollution and minimal radio frequency interference. Some limitations will give rise to obligations for redress in so far as the State has Constitutional obligations in this regard. However, before that stage is reached, alternative solutions should be sought in terms of the AGA Act. Rationality and absence of arbitrarily imposed limitations should lie at the heart of the balancing process.

[4] It was contended that the declaration should not take place, since an environmental study had not been undertaken. And that even if, strictly speaking, the National Environment Management Act 1998 (“NEMA”) was not applicable to the declaration of the Central AAA’s, an environmental inquiry would have increased the Minister’s knowledge concerning electronic communications and electricity generation problems that are likely to be experienced by owners and other lawful occupiers of the areas.

[5] The solution concerning the use of the airwaves does not lie in a NEMA investigation. The airwaves, including the electromagnetic field involved in

radio communications, within the context of modern technology, is primarily a field for technological inquiry and development.

- [6] No one has argued that the *Core AAA's*, which have already been declared, do not fit into the categories as prescribed for these areas. When weighing the right to scientific research in section 16 of the Constitution of the Republic against relevant limitations, the scientific value of the SKA and the SAAO projects wins the day. Especially when it is considered that most, if not all, problems in the airwaves field involved in electronic communications, as well as most other limitations, are likely to be addressed technologically, and, if not immediately then within the reasonably foreseeable future.
- [7] Even if, for purposes hereof, ownership of the space above one's property is accepted, as argued, there is no doubt that the space above one's property may be regulated by the State. The same argument applies to the earth under one's property, as recently confirmed by the Constitutional Court. Of course, interventions are not permitted to be arbitrary, as would appear from recent Supreme Court of Appeal authority. In so far as expropriation is concerned, the mere fact of *deprivation* by the State does not necessarily amount to *expropriation* according to the Constitutional Court.
- [8] It was argued that the AGA Act does not make sufficient provision for consultation with the public in the affected areas. Special reference was made to the accent placed on consultation by the Constitutional Court in a matter which related to the Mineral and Petroleum Resources Development Act, 2002. Whilst this authority is instructive, and clearly demonstrates the value of consultation, the AGA Act provides for its own particular form of consultation. Sufficient steps, which are well documented, were taken to consult with the public. Once the draft regulations concerning certain limitations are published, an opportunity for public participation will, once again, be arranged.
- [9] Generally it was, however, clear that uncertainty existed as to what the future held in for interested parties in the light of the protection which the Act provides to the *Core AAA's* against interference, amongst others, within the field of airwaves, the use of planes, mining, and electromagnetic interference generation in the *Central AAA's*. Concerns were also raised as to whether mechanical, industrial and agricultural development would not be stifled by the limitations.
- [10] Uncertainty and even discontent of residents about the impact of the future Regulations is understandable. The current step of declaring areas

as *Central AAA's* does not automatically involve the imposition of restrictions. A further, far more scientifically orientated public participation process will be carried out after draft regulatory restrictions are published. It should be borne in mind, once again, that restrictions are not permitted to be arbitrary. They must, in law, be constitutionally rational. Furthermore, there is a strong likelihood that alternative means of electronic communications and techniques to deal with electro-magnetic interference will be developed, which will not adversely affect the operation of the SKA and SAAO, and which are likely to improve the quality of the life and business of farmers and other inhabitants of the Central AAA's. In fact, the SKA has been identified as one of eighteen Special Infrastructure Projects by the Presidential Infrastructure Coordination Commission.

- [11] Although interested parties must not be overly optimistic, compensation for losses, where permitted by the Constitution, will follow. As stated earlier, deprivation does not, in itself, amount to expropriation. Cost increases will, in the ordinary course, therefore, not automatically be subsidised. Even without the AGA Act limitations, cost increases for individuals would have been inevitable in order to address existing communication problems.
- [12] In so far as aviation is concerned, section 21 of the AGA Act provides that the Minister may, with the concurrence of the Civil Aviation Authority by notice in the *Gazette*, prohibit or restrict the over-flight by any aircraft of any Core or Central AAA, or impose conditions on any such over-flight. Such restrictions may be made in regard to airspace up to 18,500 metres above the highest point in the area, or any greater height that the Minister may declare. Further reasonable restrictions may be prescribed. The above authority to limit aircraft may only be made with the concurrence of the Ministers responsible for Transport and Defence. A public participation process must be conducted.
- [13] In so far as limitation on electricity generation is concerned, the potential restriction of 2,000 Watt mentioned earlier in an Explanatory Memorandum has been raised to 10,000 Watt. Above that, permits will be required, however this intended limitation is still subject to a public participation process.
- [14] Submissions from Sutherland farmers state that their objectives are to develop their properties to maximum profitability for owners and workers by making use of modern technologies, including state-of-the-art telecommunications, electricity generation through solar and wind, and the



use of electrical equipment for farming activities. It is argued that it seems that the declarations and the ensuing implications may jeopardise their objectives. None of the stated objectives on the intended use of technologies would have an adverse impact on *optical* astronomy that would be protected in the Sutherland Central AAA.

- [15] It was contended that the declaration of the Sutherland Central AAA for optical astronomy purposes will affect wind farm development. This is a matter which should be left over for evidence and discussion at the public participation regarding the draft regulations, which are due to be published in 2014. Nevertheless, the priority should be to accommodate, if necessary with reasonable restrictions, these economically vibrant activities.
- [16] A representative from the Alkantpan Weapons testing range informed me that Alkantpan belongs to Armscor. The size of the area is about 86 000 hectare and it is about 80km (as the crow flies) from the declared Karoo Core AAA. Their main business is the testing of ballistic weapon systems. The testing range is not prohibitive of the declaration since it is a matter permitted by section 23 of the AGA Act to be addressed *after* the declaration of the Karoo Central AAA's.

### CONCLUSION

1. That since the required procedures were complied with and no legal ground could be found not to declare the Central AAA's as defined: that the Minister declare the Karoo Central AAA's 1 to 3 for radio astronomy and related scientific endeavours and the Sutherland Central AAA for optical astronomy and related scientific endeavours in the *Government Gazette*.
2. That an investigation in terms of the NEMA is not, in law, a requirement for these declarations. The airwaves involved in radio communications and the electromagnetic field relating to electrical activities, within the context of modern technology, is primarily a field for technological inquiry and development.
3. That the Minister is legally entitled to impose restrictions on the use of the airwaves and the electro-magnetic emissions as well as other relevant restrictions, subject to those restrictions having been subjected to a public participation process and the restrictions are rational and not imposed arbitrarily.
4. That when weighing the right to scientific research as guaranteed in section 16 of the Constitution against rational limitations in electronic communications and the electro-magnetic field as well as other relevant

fields, the scientific research potential of the SKA and the SAAO wins the day.

5. That it is important that draft regulations be published as soon as possible after the declaration of the Central AAA's, so that the interested parties may study them. This will address the concern of some members of the areas involved that they are in the dark as to the future. I am informed by the Director that the regulations have been drafted for the Karoo Central AAA's and are, subject to obtaining concurrence from ICASA, ready to be published for comment and, ultimately, be subjected to public participation in terms of section 42 of the AGA Act. The draft regulations are:

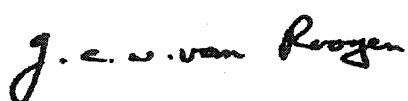
- (a) Regulations to prohibit and restrict the use of certain radio spectrum and certain radio transmission activities in the Karoo Central AAA's declared for radio astronomy purposes;
- (b) Regulations restricting electromagnetic interference in the Karoo Central AAA1; and
- (c) Regulations on procedural and related matters for Central AAA's declared for radio astronomy purposes.

6. That it will, with respect, be important for the Minister to not approach matters from a prohibitive angle, but rather to impose reasonable restrictions which are absolutely necessary and, accordingly, would ultimately serve the public interest by avoiding economic stagnation and keeping enterprises in the areas vibrant, in the interest of economic growth. Obviously, when there is no other choice, prohibitive measures will have to be included.

7. That the situation at *Alkantpan* be investigated by the Astronomy Management Authority with a report to the Minister as soon as possible.

8. That there is no reason why the declaration of the Karoo Central AAA's must be postponed until the matter of *Alkantpan* is resolved.

9. That presently there are not sufficient grounds to initiate an inquiry in terms of section 23 into the mining and prospecting operations referred to in the submissions. If, in time, the Minister on good cause decides to do so, the review set out in the relevant section 23(2) would have to be undertaken. Radio communications and electromagnetic emissions would, of course, be subject to compliance with the regulations to be published after public participation in terms of section 42 of the AGA Act.



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JCW VAN ROOYEN SC

18 December 2013