

## **Explanatory Memorandum for the Intended Declaration of and Regulations for the Karoo and Sutherland Central Astronomy Advantage Areas**

### **Verduidelikende Memorandum vir die Beoogde Verklaring van en Regulasies vir die Karoo en Sutherland Sentrale Sterrekundige Voordeel Areas**

#### **1. Purpose of this Memorandum**

##### **Doel van die Memorandum**

1.1 This Explanatory Memorandum describes the purpose and nature of the intended declaration of the Karoo and Sutherland Central Astronomy Advantage Areas, including the regulatory frameworks for the protection of optical and radio astronomy within those areas. The declaration will be done and the protection will be established in terms of the Astronomy Geographical Advantage Act.

*Hierdie Verduidelikende Memorandum beskryf die doel en aard van die beoogde verklaring van die Karoo en Sutherland Sentrale Sterrekundige Voordeel Areas, insluitend die regulatoriese raamwerke vir die beskerming van optiese en radio sterrekunde binne daardie areas. Die verklaring sal gedoen word en die beskerming gevestig word in terme van die Sterrekundige Geografiese Voordeel Wet.*

1.2 The Memorandum consists of three parts:

*Die Memorandum bestaan uit drie dele:*

1.2.1 Part 1 (Sections 2 - 5), which covers information relating to both the Karoo and Sutherland Central Astronomy Advantage Areas;

*Deel 1 (Seksies 2 – 5), wat inligting met betrekking tot beide die Karoo en Sutherland Sentrale Sterrekundige Voordeel Areas insluit;*

1.2.2 Part 2 (Sections 6 - 10), which relates only to the Karoo Central Astronomy Advantage Areas; and

*Deel 2 (Seksies 6 - 10), wat slegs op die Karoo Sentrale Sterrekundige Voordeel Areas betrekking het; en*

1.2.3 Part 3 (Sections 11 - 12), which relates only to the Sutherland Central Astronomy Advantage Area.

*Deel 3 (Seksies 11 – 12), wat slegs op die Sutherland Sentrale Sterrekundige Voordeel Area betrekking het.*

1.3 The declarations and regulations as finally published in a Government Gazette by the Minister of Science and Technology will have legal effect. However, this Memorandum has no legal standing. In the event of any difference in meaning between the English version of this Memorandum and the Afrikaans version, the meaning in the English version will prevail.

*Die verklarings en regulasies wat uiteindelik in die Staatskoerant deur die Minister van Wetenskap en Tegnologie gepubliseer sal word, sal die wettige posisie bepaal. Hoe dit ook al sy, hierdie Memorandum het geen wettige posisie nie. In die geval dat daar 'n verskil in die bedoeling van die Engelse en die Afrikaanse weergawes is, sal die bedoeling in die Engelse weergawe oorheersend wees.*

#### **Part 1: Information Relating to the Karoo and Sutherland AAAs**

##### **Deel 1: Inligting rakende die Karoo en Sutherland SVAs**

#### **2. Background to Astronomy and the Northern Cape Province**

##### **Agtergrond tot Sterrekunde en die Noordkaap Provinsie**

2.1 Astronomers use telescopes to study extremely distant and faint cosmic objects. To study such faint sources, astronomers build their telescopes in the darkest, clearest and most radio-quiet places that they can find on Earth. The Northern Cape Province has some of the best sites for astronomy in the world, which have attracted, and continue to attract, major financial and technological investment into South African scientific facilities by the South African government and by various international partners.

*Sterrekundiges gebruik teleskope om baie afgeleë en dowe kosmiese voorwerpe te bestudeer. Om sulke dowe bronse te bestudeer, bou sterrekundiges hulle teleskope in die donkerste, duidelikste en die mees radio-stille plekke wat hulle op die aarde kan vind. Die Noordkaap Provinsie het sommige van die beste sterrekunde persele in die wêreld, wat groot finansiële en tegnologiese beleggings deur die*

• Suid-Afrikaanse regering en verskeie internasionale vennote na Suid-Afrikaanse wetenskaplike fasiliteite gelok het, en steeds lok.

- 2.2 The South African Astronomical Observatory (SAAO) at Sutherland hosts a variety of South African and international telescopes and scientific facilities. It also hosts the Southern African Large Telescope (SALT), which is the largest single optical telescope in the southern hemisphere, operated by an international consortium. Investments made since 1972 in Sutherland by international partners and the South African government are due to the excellent environment (dark and stable skies) for conducting optical astronomy, and has resulted in key scientific discoveries that have had a major international impact.

Die Suid-Afrikaanse Sterrewag (SAS) by Sutherland huisves 'n verskeidenheid Suid-Afrikaanse en internasionale teleskope en wetenskaplike fasiliteite. Dit huisves ook die Suid-Afrikaanse Groot Teleskoop (SAGT), wat die grootste enkele optiese teleskoop in die suidelike halfbol is en deur 'n internasionale konsortium bedryf word. Beleggings wat sedert 1972 in Sutherland deur internasionale vennote en die Suid-Afrikaanse regering gemaak is, is as gevolg van die uitstekende omgewing (donker en stabiele hemelruim) vir die uitvoering van optiese sterrekunde en het tot gevolg gehad dat belangrike wetenskaplike ontdekings, met groot internasionale impak, gemaak is.

- 2.3 The Square Kilometre Array (SKA) is a next-generation, cutting edge scientific facility that will consist of 3 000 large antennas, connected via fibre optic infrastructure. The data will be processed by some of the largest computers in the world, and distributed to research centres around the world. South Africa is currently recognised as a leader in making the SKA a reality. Investment by the international community into the SKA will be in the order of R15 billion, with running costs of R1.5 billion per annum for 50 years of operations.

Die SKA (Square Kilometre Array – Vierkant kilometer antenna oppervlakte) is 'n volgende generasie wetenskaplike fasilitet op die voorpunt van ontwikkeling, wat uit 3 000 groot antennes sal bestaan en met optiese infrastruktuur verbind sal wees. Die data sal deur sommige van die grootste rekenaars in die wêreld verwerk word en aan navorsingsentra oor die wêreld versprei word. Suid-Afrika word tans erken as 'n leier om die SKA tot stand te bring. Belegging deur die internasionale gemeenskap in die SKA sal in die orde van R15-biljoen wees, met lopende jaarlikse koste R1.5-biljoen vir 50 jaar van bedryf.

- 2.4 The Northern Cape Province, due to its low population density and relatively low presence of industrial activity, provides an outstanding Astronomy Advantage Area with relatively little need for improvement. The development of the MeerKAT and SKA radio telescopes is managed by the South African SKA Project Office (SASPO) located in Rosebank, Johannesburg and in Pinelands, Cape Town. The MeerKAT will be incorporated in Phase 1 of the SKA.

Die Noordkaap Provinse verskaf, as gevolg van sy lae bevolkingsdigtheid en relatiewe lae teenwoordigheid van industriële aktiwiteit, 'n uitstaande Sterrekundige Voordeel Area met relatief min behoefte aan verbetering. Die ontwikkeling van die MeerKAT en SKA radio sterrewagte word deur die Suid-Afrikaanse SKA Projekkantoor (SASP) bestuur wat in Rosebank, Johannesburg en in Pinelands, Kaapstad gevestig is. Die MeerKAT sal in Fase 1 van die SKA opgeneem word.

### 3. Protection of Declared Astronomy Advantage Areas (AAAs) Beskerming van Verklaarde Sterrekundige Voordeel Areas (SVAs)

- 3.1 To protect the scientific qualities of the Northern Cape Province for future optical and radio astronomical observations, the South African government promulgated the Astronomy Geographic Advantage (AGA) Act (Act No. 21 of 2007) on 17 June 2008, following extensive consultation with government, the telecommunications industry, the public and in the National Assembly. The AGA Act came into operation on 24 April 2009. The Act requires that areas with astronomical advantage (meaning "features which make an area suitable for astronomy and related scientific endeavours, and includes high atmospheric transparency, low levels of light pollution, low population density and minimal radio frequency interference") are protected, preserved and properly maintained.

Om die wetenskaplike kwaliteite van die Noordkaap Provinse vir toekomstige optiese en radio sterrekundige waarnemings te beskerm, het die Suid-Afrikaanse regering op 17 Junie 2008 na uitgebreide oorlegpleging met die regering, die telekommunikasie industrie, die publiek en die Nasionale Vergadering die Wet op Sterrekundige Geografiese Voordeel (SGV) Wet (Wet No. 21 van 2007) uitgevaardig. Die SGV Wet het op 24 April 2009 van krag geword. Die Wet vereis dat areas met sterrekundige voordele (bedoelende kenmerke wat 'n area gesik maak vir sterrekunde en verwante

- (b) Publish the proposed declaration in the Government Gazette and a notice thereof in two national newspapers locally available, and invite interested and affected parties to submit written representations or objections within 60 days;

*Die voorgestelde verklaring in die Staatskoerant en 'n kennisgewing daarvan in twee nasionale koerante wat plaaslik beskikbaar is, publiseer, en geïnteresseerde en geaffekteerde partye uitnooi om geskrewe vertoe of besware binne 'n periode van 60 dae in te dien;*

- (c) Compile a permanent register of interested and affected parties; and

*'n Permanente register van geïnteresseerde en geaffekteerde partye saamstel, en*

- (d) Where possible, inform in an appropriate manner any other lawful occupier of the land of the proposed declaration and of the public participation process.

*Waar moontlik, op 'n toepaslike manier enige ander wettige bewoner van die grond in kennis stel van die voorgestelde verklaring en van die openbare deelname proses.*

- 4.1.2 Before restricting or prohibiting radio frequency spectrum use or activities in Core or Central AAAs, the Minister must –

*Voordat radiofrekwensie spektrum gebruik of aktiwiteite binne Kern of Sentrale SVAs beperk of verbied word, moet die Minister –*

- (a) Notify all persons listed in the permanent register of interested and affected parties for the relevant area whose existing rights may be directly affected by the intended action. Such notification must be by registered post or by another method agreed to by the relevant persons; and

*Alle persone gelys in die permanente register van geïnteresseerde en geaffekteerde partye vir betrokke area wie se bestaande regte direk deur die bedoelde aksie geaffekteer mag word, in kennis stel. Sulle kennisgewing moet per geregistreerde pos of 'n ander metode waartoe die betrokke persone ingestem het, gedoen word; en*

- (b) Publish the intended action in the Government Gazette and a notice thereof in two national newspapers locally available, and invite interested and affected parties to submit written representations or objections within 60 days.

*Die voorgestelde aksie in die Staatskoerant en 'n kennisgewing daarvan in twee nasionale koerante wat plaaslik beskikbaar is, publiseer, en die geïnteresseerde en geaffekteerde partye uitnooi om binne 60 dae geskrewe vertoe of besware in te dien.*

## 5. Current Status of Declarations and Regulations in terms of the AGA Act *Huidige Status van Verklarings en Regulasies in terme van die SGV Wet*

- 5.1 The following table summarises the current status of declarations and regulations that have been, or are to be, published by the Minister in the near future. The initial drafting of the declarations and regulations was conducted by the Interim Regulations Advisory Committee, established by the Department of Science and Technology. The Committee included representatives from SAAO, SASPO, government and electronic communications service providers. Further work on these drafts was undertaken by SAAO, SASPO and external lawyers.

*Die tabel wat hierop volg, som die huidige status van verklarings en regulasies op, wat reeds deur die Minister gepubliseer is, of in die afsienbare toekoms gepubliseer sal word. Die aanvanklike opstelling van die verklarings en regulasies is gedoen deur die Tussentydse Regulatoriese Advieskomitee wat daargestel is deur die Departement van Wetenskap en Tegnologie. Die Komitee het verteenwoordigdes van SAS, SASPK, die regering en elektroniese kommunikasie diensverskaffers ingesluit. Verdere werk aan die konsepte is deur SAS, SASPK en eksterne prokureurs gehanteer.*

	<b>Already Completed</b>	<b>Reeds Voltooï</b>
(a)	<p>The Minister invited interested and affected parties in the proposed Karoo and Sutherland Core, Central and Coordinated AAAs on 5 February 2010, and again on 2 July 2010, by means of notices in the Government Gazette, to register and provide the required information. The invitation to register will close on 28 February 2013 to enable the Minister to compile the permanent register that will be used as the basis for further public consultation on future Central AAA regulations to be proposed in 2013. The closure of the invitation is only for the purpose of this particular consultation process and does not mean that additional entries or amendments could not be made to the register in the future.</p> <p><i>Die Minister het geïnteresseerde en geaffekteerde partye in die voorgestelde Karoo en Sutherland Kern, Sentrale en Gekoördineerde SVAs op 5 Februarie 2010, en weer op 2 Julie 2010, deur middel van kennisgewings in die Staatskoerant uitgenooi om te registreer en die verlangde inligting te verskaf. Die uitnodiging om te registreer sal op 28 Februarie 2013 sluit om die Minister in staat te stel om die permanente register saam te stel wat as basis vir verdere openbare raadpleging sal dien met betrekking tot toekomstige Sentrale SVA-regulasies wat in 2013 voorgestel sal word. Die sluiting van die uitnodiging is slegs vir die doel van hierdie spesifieke raadplegingsproses en beteken nie dat addisionele inskrywings of aanpassings tot die register nie in die toekoms gemaak sal kan word nie.</i></p>	
(b)	<p>The Minister declared the Northern Cape Province as an AAA on 19 February 2010.</p> <p><i>Die Minister het die Noordkaap Provincie as 'n SVA op 19 Februarie 2010 verklaar.</i></p>	
(c)	<p>The Minister declared the Karoo and Sutherland Core AAAs on 20 August 2010 after the public consultation process had been completed.</p> <p><i>Die Minister het die Karoo en Sutherland Kern SVAs op 20 Augustus 2010 verklaar nadat die openbare raadplegingsproses voltooï is.</i></p>	
(d)	<p>The Minister declared the operation of the SALT optical telescope and the establishment and operation of the MeerKAT and SKA radio telescopes to be astronomy and related scientific endeavours on 15 October 2010.</p> <p><i>Die Minister het die bedryf van die SAGT optiese teleskoop en die vestiging van die MeerKAT en SKA radioteleskope op 15 Oktober 2010 verklaar as sterrekundige en verwante wetenskaplike pogings.</i></p>	
(e)	<p>The Minister assigned the management of the Core AAAs containing MeerKAT, SALT and the core of the SKA telescope to the Department of Science and Technology on 3 December 2010.</p> <p><i>Die Minister het die bestuur van die Kern SVAs wat die MeerKAT, SAGT en die kern van die SKA teleskoop insluit, op 3 Desember 2010 aan die Departement van Wetenskap en Tegnologie toegeken.</i></p>	
(f)	<p>The Minister made regulations to determine the Standards for the Protection Levels for the South African Radio Astronomy Service (SARAS) on 10 February 2012, after the concurrence of ICASA (Independent Communications Authority of South Africa) had been obtained and the public consultation process had been completed.</p> <p><i>Die Minister het op 10 Februarie 2012 regulasies uitgevaardig wat die Standaarde vir die Beskermingsvlakke van die Suid-Afrikaanse Radio Sterrekundedienis (SARSD) bepaal nadat die instemming van OKOSA (Onafhanklike Kommunikasie Owerheid van Suid-Afrika) verkry is en die openbare raadplegingsproses voltooï is.</i></p>	
(g)	<p>The Minister made Regulations for the protection of all Core AAAs declared for the purposes of radio astronomy and related scientific endeavours on 22 June 2012, after the concurrence of ICASA had been obtained and the public consultation process had been completed.</p> <p><i>Die Minister het Regulasies vir die beskerming van alle Kern SVAs wat vir doel van radio sterrekunde en verwante wetenskaplike pogings verklaar is, op 22 Junie 2012 uitgevaardig, nadat die instemming van OKOSA verkry is en die openbare raadplegingsproses voltooï is.</i></p>	



**To be Completed in the Near Future      Om in die Nabye Toekoms Voltooi te word**

(h)	Declaration of the Karoo and Sutherland Central AAAs. <i>Verklaring van die Karoo en Sutherland Sentrale SVAs.</i>
(i)	Making of regulations for the protection of the Sutherland Core AAA. <i>Uitvaardiging van regulasies vir die beskerming van die Sutherland Kern SVA.</i>
(j)	Making of regulations for the protection of the Karoo Central AAAs: <i>Uitvaardiging van regulasies vir die beskerming van die Karoo Sentrale SVAs:</i> <ul style="list-style-type: none"> <li>• Restricting the use of radio frequency spectrum and certain activities causing radio frequency interference. <i>Beperkings op die gebruik van die radiofrekwensie spektrum en op sekere aktiwiteite wat radiofrekwensie steuring veroorsaak.</i></li> <li>• Restricting electromagnetic interference related to the generation, distribution and transmission of electricity. <i>Beperking van radiofrekwensie steuring wat verband hou met die opwekking, verspreiding en transmissie van elektrisiteit.</i></li> </ul>
(k)	Making of regulations for restricting or controlling certain activities in the Sutherland Central AAA. <i>Uitvaardiging van regulasies om sekere aktiwiteite in die Sutherland Sentrale SVA te beperk en te beheer.</i>
(l)	Making of regulations to govern administrative procedures in applying protection measures for the Central AAAs declared for radio astronomy purposes. <i>Uitvaardiging van regulasies om administratiewe prosedures, rakende die toepassing van beskermingsmaatreëls in Sentrale SVAs, wat verklaar is vir doeleindes van radio sterrekunde, te beheer.</i>
(m)	Making of regulations to govern administrative procedures in applying protection measures relating to the Sutherland Core and Central AAAs. <i>Uitvaardiging van regulasies om administratiewe prosedures, rakende die toepassing van beskermingsmaatreëls in die Sutherland Kern en Sentrale SVAs, te beheer.</i>

**Part 2 - Information Relating Only to the Karoo Central AAAs  
Deel 2 – Inligting slegs van toepassing op die Karoo Sentrale SVAs**

**6. Karoo Central AAAs intended to be declared for Radio Astronomy Purposes  
Karoo Sentrale SVAs bedoel om verklaar te word vir Radio Sterrekunde Doeleindes**

6.1 Approximately 50% of the SKA antennae will be located within the Karoo Core AAA (14 000 hectares in size). A further 30% will be located within the Karoo Central AAAs along five spiral arms. The remaining 20% of the antenna will be located in remote areas across South Africa and eight other African SKA partner countries.

Ongeveer 50% van die SKA antennas sal binne die Karoo Kern SVA (14 000 hektaar groot) geplaas word. 'n Verdere 30% van die antennas sal binne die Karoo Sentrale SVAs langs vyf spiraal arms geplaas word. Die oorblywende 20% van die antenna sal in afgeleë areas in Suid-Afrika en agt ander Afrika SKA vennoot-lande geplaas word.

6.2 The three Karoo Central AAAs to be declared are illustrated in Figure 1 below. The regulations to be prescribed will only pertain to transmissions or activities that produce interference in the frequency band related to each area. These frequency bands and some of the radio communication services they involve are as follows:

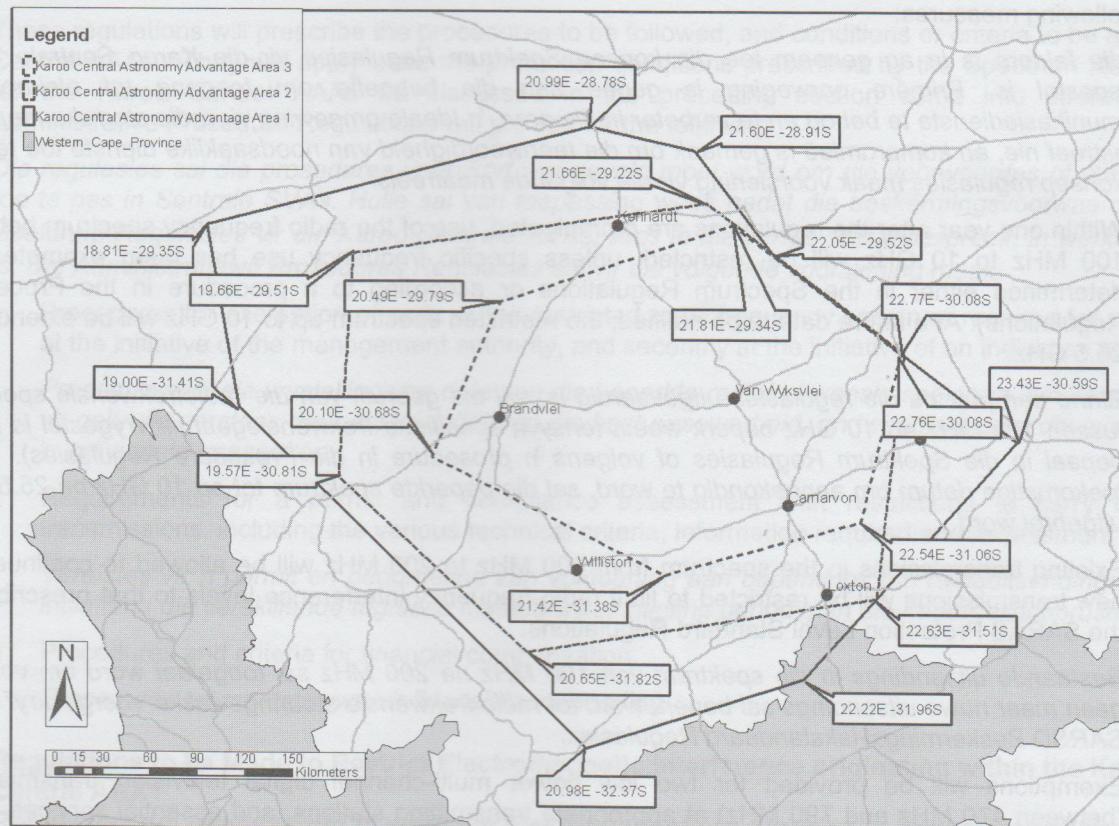
- (a) Karoo Central AAA 1 (100 MHz to 2170 MHz) – including television, FM-radio and GSM cell phones;
- (b) Karoo Central AAA 2 (2170 MHz to 6000 MHz) – including broadband wireless connectivity; and
- (c) Karoo Central AAA 3 (6000 MHz to 25 500 MHz) – including point-to-point radio links.

Die drie te verklaarde Karoo Sentrale SVAs is in Figuur 1 hieronder geïllustreer. Die beoogde regulasies sal net betrekking hê op transmissies of aktiwiteite wat steuring veroorsaak in die frekvensieband wat met elk van die areas verband hou. Die frekvensiebande en sommige van die radiokommunikasiedienste wat betrokke is, is soos volg:

- (a) Karoo Sentrale SVA 1 (100 MHz tot 2170 MHz) – sluit in televisie, FM-radio en GSM selfone;
- (b) Karoo Sentrale SGV 2 (2170 MHz tot 6000 MHz) – sluit in breë band radioverbindinge; en
- (c) Karoo Sentrale SVA 3 (6000 MHz tot 25 500 MHz) – sluit in punt-tot-punt radioverbindinge (mikrogolf).

6.3 The shape and size of the three areas take into account surrounding hills, which offer protection to the radio astronomy facilities, and where possible exclude the dense distribution of GSM communications.

Die vorm en grootte van die drie areas neem die omliggende heuwels in ag, wat beskerming bied vir radio sterrekundige fasilitete, en waar moontlik sluit dit digte GSM selfoon kommunikasie uit.



**Figure 1: Map of intended Karoo Central AAAs. Figuur 1: Kaart van beoogde Karoo Sentrale SVAs.**

## 7. Regulations to be Made to Restrict Radio Frequency Spectrum Use and Interference Originating within the Karoo Central AAAs

*Regulasies om opgetrek te word om Beperkings op die Gebruik van die Radiofrekvensie Spektrum en op Steuring wat sy Oorsprong binne die Karoo Sentrale SVA's het, te plaas*

7.1 Restrictions on the use of the radio frequency spectrum, and on conducting harmful activities, are required to enable radio astronomy observations by MeerKAT, the SKA and other observatories located within these areas. Radio transmissions, such as those for broadcasting, GSM cell phones, two-way

radio, etc. have the potential to cause radio frequency interference to radio astronomy observations. The higher the power level of transmissions and the elevation of transmitting antennas, the greater the chance of interference. The primary purpose of the protection regulations for the Karoo Central AAAs is to protect the Karoo Core AAA, which accommodates the MeerKAT and the most sensitive part of the SKA, from excessive radio frequency interference and also to provide a measure of protection to SKA radio astronomy stations to be located within the Karoo Central AAAs.

*Beperkings op die gebruik van die radiofrekwensie spektrum, en op die uitvoering van skadelike aktiwiteite, is nodig om sterrekundige waarnemings deur die MeerKAT, die SKA en ander sterrewagte binne die areas, moontlik te maak. Radio transmissies, soos die vir uitsaai, GSM selfone, twee-rigting radio, ens. het die potensiaal om radiofrekwensie steuring op sterrekundige waarnemings te veroorsaak. Hoe hoër die kragvlak van transmissies en die hoogte van die sendantenne is, hoe groter is die moontlikheid vir steuring. Die primêre doel van die beskermingsregulasies vir die Karoo Sentrale SVAs, is om die Karoo Kern SVA, wat die MeerKAT en die mees sensitiewe deel van die SKA sal huisves, te beskerm teen oormatige radiofrekwensie steuring, en om ook 'n mate van beskerming aan die SKA radio sterrekunde stasies binne die Karoo Sentrale SVAs te bied.*

7.2 These factors were taken into account when the draft Spectrum Regulations for the Karoo Central AAAs was compiled. Primary consideration was given to the need to maintain and improve access to electronic communications services in the area. An ideal environment for radio astronomy was not pursued, and compromises were made to allow for the presence of essential services. The draft regulations provide for the following measures:

*Hierdie faktore is in ag geneem toe die konsep Spektrum Regulasies vir die Karoo Sentrale SVAs saamgestel is. Primêre oorweging is gegee aan die behoefte om toegang tot elektroniese kommunikasiedienste te behou en te verbeter in die area. 'n Ideale omgewing vir radio sterrekunde is nie nagestreef nie, en kompromieë is gemaak om die teenwoordigheid van noodsaaklike dienste toe te laat. Die konsep regulasies maak voorsiening vir die volgende maatreëls:*

7.2.1 Within one year after the regulations are promulgated, use of the radio frequency spectrum between 100 MHz to 10 GHz will be restricted, unless specific frequency use has been exempted (as determined either in the Spectrum Regulations or according to a procedure in the Procedural Regulations). At a future date to be notified, the restricted spectrum up to 10 GHz will be extended to 25.5 GHz.

*Binne een jaar na die regulasies uitgevaardig is, sal die gebruik van die radiofrekwensie spektrum tussen 100 MHz en 10 GHz beperk wees, tensy 'n spesifieke frekwensiegebruik vrygestel is (soos bepaal in die Spektrum Regulasies of volgens 'n prosedure in die Prosedure Regulasies). Op 'n toekomstige datum om aangekondig te word, sal die beperkte spektrum tot op 10 GHz na 25.5 GHz uitgebrei word.*

7.2.2 Existing transmissions in the spectrum from 100 MHz to 200 MHz will be allowed to continue, but new transmissions will be restricted to limit radio frequency interference levels to that prescribed in the SARAS Protection Level Standard Regulations.

*Bestaande uitsendings in die spektrum van 100 MHz na 200 MHz sal toegelaat word om voort te gaan maar nuwe uitsendings sal beperk word tot radio frekwensie steuringsvlakke voorgeskryf in die SARSD Beskermingsvlakstandaard Regulasies.*

7.2.3 Exemptions will be provided for two low power multi-channel digital television transmissions (between 470 MHz and 790 MHz) at appropriate transmitting stations, and essential services (such as cellular communications, mobile communications for safety and security, aeronautical services etc.). Such exemptions are required to comply with protective measures to ensure that no damage is caused to radio astronomy receivers. A service is not essential if a functionally alternative and economically feasible technology exists which will result in a lower detrimental impact on radio astronomy observations.

*Vrystellings sal gemaak word vir twee lae krag multikanaal digitale televisieuitsendings (tussen 470 MHz en 790 MHz) by toepaslike sendstasies en vir noodsaaklike dienste (soos sellulêre kommunikasie, mobiele kommunikasie vir veiligheid en sekuriteit, lugvaartkundige dienste, ens.). Sulke vrystellings moet aan beskermingsmaatreëls voldoen om te verseker dat geen skade aan radio sterrekundige ontvangers aangerig word nie. 'n Diens is nie noodsaaklik nie as 'n funksionale alternatief en ekonomiese gangbare tegnologie bestaan wat 'n laer nadelige impak op radio sterrekundige waarnemings sal hê.*

- 7.2.4 Migration from analogue television to digital television must comply with the national programme for the migration to digital terrestrial television according to the Digital Migration Regulations published by ICASA.

*Migrasie van analoë televisie na digitale televisie moet aan die nasionale program vir die migrasie na digitale aardse televisie voldoen volgens die Digitale Migrasie Regulasies deur OKOSA gepubliseer.*

- 7.2.5 A permit will be required to construct, upgrade, expand or operate any fixed sources of radio frequency interference, or to conduct activities capable of causing interference, within the radio frequency spectrum specified to be restricted. A permit will not be granted if transmissions in the area exceed the protection levels prescribed by the SARAS Regulations, as measured at a specified point within the Karoo Core AAA (unless these transmissions have been exempted).

*'n Permit sal nodig wees vir die bou, verbetering, uitbreiding of bedryf van enige vaste bronre van radiofrekwensie steuring, of om aktiwiteite uit te voer binne die spektrum wat gespesifiseer is om beperk te word en wat steuring kan veroorsaak. 'n Permit sal nie toegestaan word nie as uitsendings binne die area die beskermingsvlakte in die SARSD Regulasies voorgeskryf, oorskry, soos gemeet by die gespesifieerde punt binne die Karoo Kern SVA (tensy die uitsendings vrygestel is).*

## **8. Procedural Regulations for Central AAAs declared for Radio Astronomy Purposes** **Regulasies oor Administratiewe Prosedures in Sentrale SVAs vir Radio Sterrekunde doeleinades verklaar**

- 8.1 These regulations will prescribe the procedures to be followed, and conditions or criteria to be applied, in Central AAAs. They will apply once the protection conditions prescribed by the Spectrum Regulations for the Karoo Central AAAs as discussed in the preceding section come into operation. The Administrative Procedure Regulations will provide for the following:

*Die regulasies sal die prosedures voorskryf wat gevvolg moet word om die voorwaarde of maatstawwe toe te pas in Sentrale SVAs. Hulle sal van toepassing wees nadat die beskermingsvoorraarde in die Spektrum Regulasies vir die Karoo Sentrale SVAs, soos in die vorige seksie bespreek, in werking gestel is. Die Administratiewe Prosedures Regulasies sal vir die volgende voorsiening maak:*

- 8.1.1 Procedures for exemption of parts of the restricted radio frequency spectrum required for use, firstly at the initiative of the management authority, and secondly at the initiative of an individual applicant.

*Prosedures vir die vrystelling van dele van die beperkte radiofrekwensie spektrum wat benodig word vir gebruik, eerstens deur die inisiatief van die bestuursowerheid, en tweedens deur die inisiatief van 'n individuele aansoeker.*

- 8.1.2 Requirements for a permit and compliance assessment with restrictions to carry out radio transmissions, including the various technical criteria, information required and assessment process.

*Vereistes vir 'n permit en beoordeling van voldoening aan beperkings om radiouitsendings te doen, insluitend die verskillende tegniese maatstawwe, inligting benodig en die beoordelingsproses.*

- 8.1.3 Procedures and criteria for financial compensation.

*Prosedures en maatstawwe vir finansiële vergoeding.*

## **9. Regulations to be Made to Restrict Electromagnetic Interference originating within the Karoo Central AAA1**

*Regulasies om uitgevaardig te word om Elektromagnetiese Steuring te beperk wat sy oorsprong binne die Karoo Sentrale SVA 1 het*

- 9.1 Another type of radio frequency interference is referred to as electromagnetic interference (EMI), which occurs from certain electrical activities. The distance over which this interference occurs is generally short (of the order 5km-10km) when compared to interference from radio transmissions. Due to the broadband nature of the interference, it affects very large parts of the radio frequency spectrum. These regulations will apply to the Karoo Central AAA 1, and will only apply to new activities related to the generation, distribution and transmission of electricity. The regulations exclude electricity generating facilities up to a maximum capacity of 2000 Watts, so as to allow for small fuel driven generators, wind chargers and solar cells, usually found in domestic applications. The reason why only new infrastructure is addressed is because the SKA configuration has already taken into account existing infrastructure and towns. The provisions in the draft regulations include the following:

'n Ander soort radiofrekwensie steuring word na verwys as elektromagnetiese steuring (EMS), wat as gevolg van sekere elektriese aktiwiteit ontstaan. Die afstand waaroer die steurings voorkom is oor die algemeen kort (in die orde van 5km – 10km) in vergelyking met steurings vanaf radiouitsendings. As gevolg van die breë band aard van die steuring, affekteer dit baie groot dele van die radiofrekwensie spektrum. Die regulasies sal op die Karoo Sentrale SVA 1 van toepassing wees, en net op nuwe aktiwiteit verbonde aan elektrisiteit opwekking, verspreiding en transmissie. Elektrisiteitsopwekking tot op 'n maksimale vermoë van 2000 Watt is van die regulasies uitgesluit om toe te laat vir klein brandstof aangedrewe opwekkers, windlaaiers en sonselle, soos gewoonlik in huishoudelike toepassings gevind word. Die rede waarom slegs nuwe infrastruktuur aangespreek word, is omdat die SKA uitleg reeds die bestaande infrastruktuur en dorpe in ag geneem het. Die voorskrifte in die konseptregulasies sluit die volgende in:

- 9.1.1 All new installations are prohibited, unless a permit has been granted in advance according to the procedures and criteria prescribed in the regulations. This permit will require infrastructure to be separated from any radio astronomy station by a distance determined in the assessment process.

*Alle nuwe installasies is verbied tensy 'n permit vooraf toegestaan is volgens die prosedures en maatstawwe in die regulasies voorgeskryf. Die permit sal vereis dat infrastruktuur vanaf enige sterrekunde stasie geskei sal wees met 'n afstand bepaal deur die beoordelingsproses.*

- 9.1.2 EMI may not exceed the protection levels as prescribed in the SARAS Protection Levels Regulations.

*EMS mag nie die beskermingsvlakte soos in die SARSD Beskermingsvlak Regulasies voorgeskryf, oorskry nie.*

- 9.1.3 The tip of a turbine blade on a large wind-driven electrical turbine generator at its highest point may not be within line of sight of the top edge of a radio telescope (15m above ground), unless alternative criteria are determined during the assessment process.

*Die punt van 'n turbinelem van 'n groot windaangedrewe elektriese kragopwekker (windturbine) op sy hoogste punt mag nie binne die siglyn van die hoogste punt van 'n radio sterrewag (15m bo grondvlak) wees nie, tensy alternatiewe maatstawwe bepaal is gedurende die beoordelingsproses.*

## **10. Access to Radio Communications Services within the Karoo Central AAAs Toegang tot Radiokommunikasiedienste binne die Karoo Sentrale SVAs**

- 10.1 The protection measures described in the preceding sections are necessary to create the required protected radio environment for the MeerKAT and SKA radio telescopes. The low level of radio frequency interference in the Northern Cape Province, including some improvement to be brought about by the application of the protective measures, provides a good operating environment for radio astronomy operations. At the same time, the maximum possible continued use of radio communication services by all the parties involved has been pursued.

*Die beskermingsmaatreëls soos in die vorige seksies beskryf, is nodig om die benodigde beskermde radio-omgewing vir die MeerKAT en die SKA sterrewagte te skep. Die lae vlak van radiofrekwensie steuring in die Noordkaap Provinsie, insluitend 'n mate van verbetering wat aangebring sal word deur die toepassing van beskermingsmaatreëls, verskaf 'n goeie bedryfsomgewing vir radio sterrekunde. Terselfdertyd is die maksimum moontlike voortgesette gebruik van radiokommunikasiedienste deur al die betrokke partye nagestreef.*

- 10.2 A summary of the available options for access to radio communications is described below:

*'n Opsomming van die beskikbare opsies vir toegang tot radiokommunikasie word hieronder beskryf:*

- 10.2.1 Existing digital satellite broadcasting services (DStv, SABC/Sentech-Vivid and TopTV) will not be affected by the protection measures, and will continue to be receivable in the Northern Cape Province.

*Die bestaande digitale satellietuitsaaidienste (DStv, SABC/Sentech Vivid en TopTV) sal nie deur die beskermingsmaatreëls geraak word nie en sal steeds ontvangbaar in die Noordkaap Provinsie wees.*

- 10.2.2 Coverage of available FM radio services will not be affected.

*Die dekking van die beskikbare FM-radiodienste sal nie geaffekteer word nie.*

- 10.2.3 Multiple low powered digital television transmitters may be used at towns where economically feasible as determined by the broadcasting service providers to replace the existing high powered analogue television transmissions that will be closed down as a part of the national digital television migration process. These transmitters will provide better population coverage, and a wider selection of free-to-air television services. Reception from satellite will in any case be available where the new transmitters cannot reach.

*Veelvuldige laekrag digitale televisiesenders mag by dorpe gebruik word waar dit ekonomies gangbaar is soos bepaal deur die uitsaaidienste verskaffers om die bestaande hoë krag analog televisiesenders te vervang wat gesluit sal word as 'n deel van die nasionale digitale televisie migrasie proses. Die senders sal 'n beter bevolkingsdekking en 'n groter keuse van vry-op-lug televisiedienste verskaf.*

- 10.2.4 Access to cellular phone services in and around towns will not be affected. However areas near the Karoo Core AAA will be affected. Where cellular connections at some farms may be lost, most can be restored by certain measures on advice by MTN and Vodacom. Remaining farms can be serviced by the use of VSAT facilities.

*Toegang tot selfoondienste in en om dorpe sal nie geaffekteer word nie. Areas naby die Karoo Kern SVA sal egter geaffekteer word. Waar sellulêre verbindings by sommige plase verloor mag word, kan meeste herstel word deur sekere maatreëls op advies van MTN en Vodacom toe te pas. Oorblywende plase kan deur die gebruik van satellietverbindings (VSAT) bedien word.*

- 10.2.5 A mobile radio communications system is being deployed at frequencies below the operating range of the SKA (similar to the frequency band used by Marnet).

*'n Mobiele radiokommunikasiestelsel word ontplooi op frekwensies onder die bereik van die SKA (soortgelyk aan die frekwensieband gebruik vir Marnet).*

- 10.2.6 It is expected that the growth of fibre optic infrastructure in the area, and carefully engineered radio links, will facilitate the availability and access to high capacity and good quality data and voice electronic communication services in due course.

*Daar word verwag dat die groei van optiese vesel infrastruktur in die area en versigtige ingenieursbeplanning vir radioskakels, die beskikbaarheid van en toegang tot hoë kapasiteit en goeie kwaliteit data en stem elektroniese kommunikasie met verloop van tyd sal faciliteer.*

### **Part 3 - Information Relating Only to the Sutherland Central AAA**

#### **Deel 3 - Inligting slegs van toepassing op die Sutherland Sentrale SVA**

#### **11. Sutherland Central AAA intended to be declared for Optical Astronomy Purposes**

##### **Sutherland Sentrale SVA bedoel om verklaar te word vir Optiese Sterrekunde Doeleindes**

- 11.1 The Sutherland Central AAA intended to be declared is the land within an annulus with an inner radius of 3 km and an outer radius of 75 km, centred on the SALT dome and within the Northern Cape Province. The Sutherland Core AAA is the area enclosed within a circle of 3 km radius centred on the SALT dome that was declared on 20 August 2010. The Sutherland Central AAA is illustrated in Figure 2 on page 12.

*Die Sutherland Sentrale SVA bedoel om verklaar te word, behels die grond binne 'n annulus met 'n binnestraal van 3 km en 'n buitestraal van 75 km, is op die SAGT koepel gesentreer en binne die Noordkaap Provinse geleë. Die Sutherland Kern SVA is die area ingesluit binne 'n straal van 3 km op die SAGT koepel gesentreer wat op 20 Augustus 2010 verklaar is. Die Sutherland Sentrale SVA is in Figuur 2 op bladsy 12 geïllustreer.*

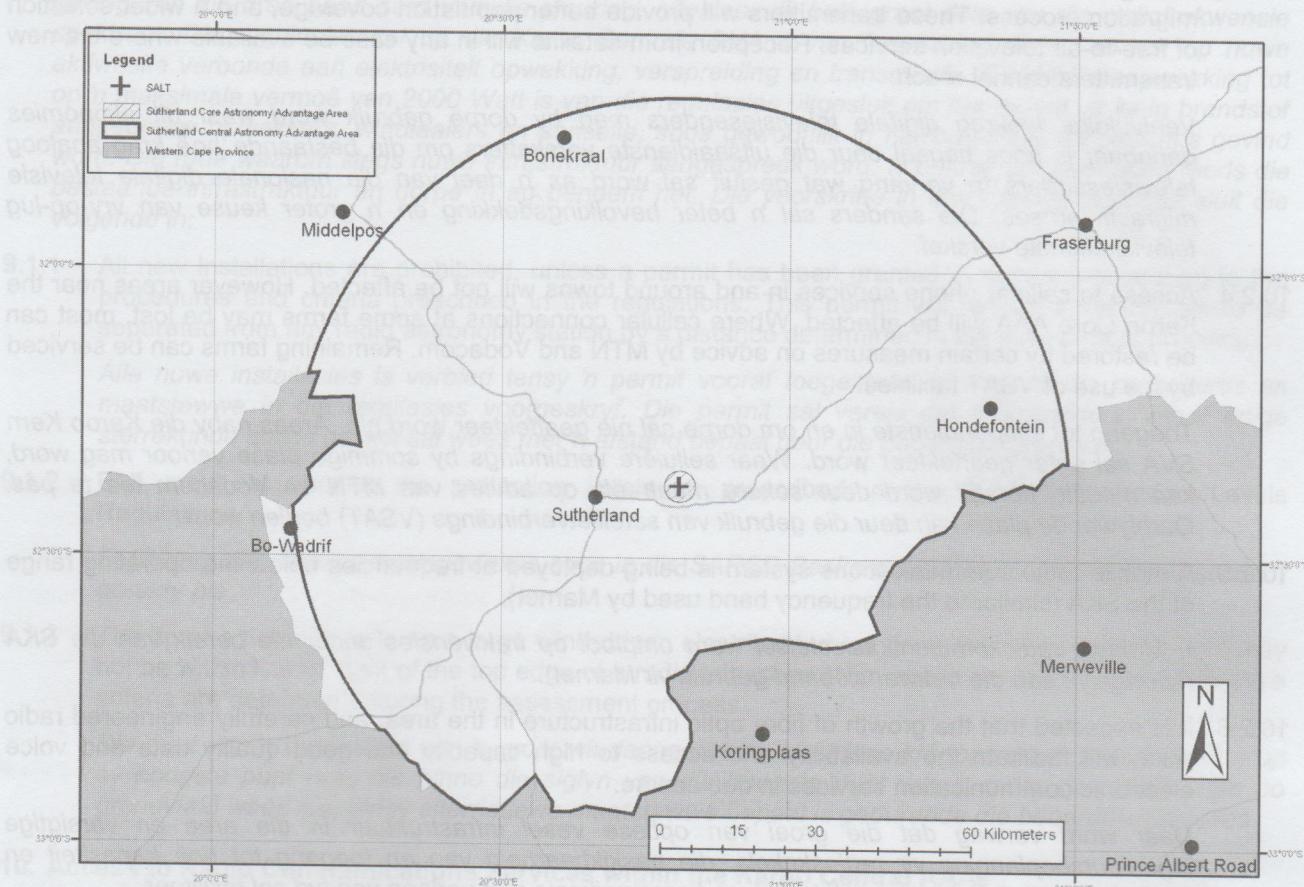
#### **12. Protective Regulations for the Sutherland Central AAA**

##### **Beskermende Regulasies vir die Sutherland Sentrale SVA**

- 12.1 Restrictions on outdoor lighting, smoke and dust production, and other activities that have detrimental effects on night sky quality, or the ability of the instruments at Sutherland to make the most precise measurements possible, are necessary to preserve the Sutherland Core AAA as one of the best locations in the world for ground-based optical astronomy.

*Beperkings op buitemuurse beligting, rook en stof produksie, en ander aktiwiteite wat 'n nadelige effek op naghemel kwaliteit het, of op die vermoë van die instrumente by Sutherland om die mees akkurate*

metings moontlik te maak, is nodig om die Sutherland Kern SVA as een van die beste plekke in die wêreld vir aardgebaseerde optiese sterrekunde te bewaar.



**Figure 2: Sutherland Central (intended) AAA. Figuur 2: Sutherland Sentrale (beoogde) SVA.**

12.2 The AGA Act empowers the Minister of Science and Technology to prohibit certain “declared activities” in a Core or Central AAA, or to declare that those activities may be conducted only under certain conditions prescribed by the Minister. The declared activities envisaged with specific relevance to the Sutherland Central AAA for optical astronomy are –

*Die SGV Wet bemagtig die Minister van Wetenskap en Tegnologie om sekere verklaarde aktiwiteite binne 'n Kern of Sentrale SVA te verbied of om voor te skryf dat daardie aktiwiteite net onder sekere voorwaardes wat deur die Minister voorgeskryf is, uitgevoer mag word. Die verklaarde aktiwiteite wat in die vooruitsig gestel word met spesifieke toepaslikheid in die Sutherland Sentrale SVA vir optiese sterrekunde is –*

- 12.2.1 prospecting or mining activities;  
*prospektering en mynbou aktiwiteite;*
- 12.2.2 harmful industrial processes;  
*skadelike industriële prosesse;*
- 12.2.3 the construction and development of new business or residential areas or recreational facilities;  
*die konstruksie en ontwikkeling van nuwe besigheid of residensiële areas of ontspannings fasiliteite;*
- 12.2.4 the construction or expansion of road or rail transport networks or parts thereof;  
*die konstruksie of uitbreiding van pad- of spoorvervoernetwerke of dele daarvan;*

- 12.2.5 the construction or expansion of any airfield or airport; *REGISTER AS AN INTERESTED AND die konstruksie of uitbreiding van enige vliegveld of lughawe;*
- 12.2.6 the operation, construction or expansion of facilities for the generation, transmission or distribution of electricity; *die bedryf, konstruksie of uitbreiding van fasilitete vir die opwekking, transmissie of verspreiding van elektrisiteit;*
- 12.2.7 activities capable of causing light pollution, including the installation or operation of street lighting, outdoor security lights, laser promotional lights or self-lit billboards; *aktiwiteite wat in staat is om ligbesoedeling te veroorsaak, insluitend die installasie van straatbeligting, buitemuurse sekuriteitsbeligting, laser promosie ligte of selfverligte advertensieborde;*
- 12.2.8 activities capable of causing air pollution; and *aktiwiteite in staat om lugbesoedeling te veroorsaak; en*
- 12.2.9 any other activity which may detrimentally impact on astronomy and related scientific endeavours, or the astronomy advantage of any Core or Central AAA. *enige ander aktiwiteit wat 'n nadelige impak op sterrekunde en verwante wetenskaplike pogings, of op die sterrekundige voordeel van enige Kern of Sentrale SVA, mag veroorsaak.*

12.3 These regulations will be developed with reference to internationally accepted best practices and standards, and based on reliable data obtained at the locations of the Core and Central AAAs, respectively.

*Die regulasies sal ontwikkel word met verwysing na internasionaal aanvaarde beste praktyke en standaarde, en sal gebaseer word op betroubare data verkry by die plekke waar die Kern en Sentrale SVAs respektief, geleë is.*

12.4 Procedural regulations for the Central AAA will prescribe procedures to be followed, and conditions or criteria to be applied, when protective measures are implemented in terms of the AGA Act. These are likely to include, for example, procedures for exemption, as well as requirements where a permit is sought.

*Administratiewe regulasies vir die Sentrale SVA sal voorskryf watter prosedures gevvolg moet word, en voorwaarde of maatstawwe om toegepas te word, wanneer beskermende maatreëls in terme van die SGV Wet toegepas word. Dit sal waarskynlik, byvoorbeeld, die prosedures vir vrystelling insluit, sowel as vereistes waar 'n permit verlang word.*

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South Africa

Department of Science and Technology  
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Or  
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Enquiries can be made at telephone number 012 843 6483

#### PERMANENT REGISTER

The Act requires the Minister to compile a permanent register of interested and affected parties for the central AAAs (for greater detail see s3(3)(a) of the Act). The permanent registers will contain details concerning interested and affected parties. Parties listed in a permanent register must be consulted by the relevant management authority or notified by the Minister of certain intended actions to be taken in terms of the Act.

#### 3. DESCRIPTION OF THE KAROO AND SUTHERLAND CENTRAL AAAs

The descriptions of the areas to be declared are included in the notices for the intention to declare these areas.