

DEPARTMENT OF SCIENCE AND TECHNOLOGY

NO. 746

25 JULY 2018

NOTICE OF INTENTION TO MAKE REGULATIONS ON THE PROTECTION MEASURES TO BE APPLIED WITHIN THE SUTHERLAND CENTRAL ASTRONOMY ADVANTAGE AREA IN TERMS OF THE ASTRONOMY GEOGRAPHIC ADVANTAGE ACT, 2007.

I, Mmamoloko Kubayi-Ngubane, Minister of Science and Technology, in accordance with section 23 of the Astronomy Geographic Advantage Act, 2007 (Act No. 21 of 2007) (hereinafter referred to as "the Act"), and having obtained the concurrence of the Minister of Finance (to the extent that these Regulations have financial implications), hereby give notice of my intention to make Regulations as set out in the Schedules hereto and as listed hereunder:

Schedule 1 - Proposed Regulations to be applied within the Sutherland Central Astronomy Advantage Area.

Schedule 2 - Proposed Regulations on financial compensation procedures for the Sutherland Central Astronomy Advantage Area.

The draft Regulations apply to the Sutherland Central Astronomy Advantage Area declared for the purpose of optical astronomy and related scientific endeavours in terms of section 9(1) and (2) of the Act.

Interested or affected persons and members of the public are invited to submit written representations on or objections to the regulations contained in the Schedules 1 and 2 within sixty (60) days from the date of publication of this notice to:

Mr Mere Kgampe

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0184

Dept of Science and Technology
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Or

E-mail address: mere.kgampe@dst.gov.za

Telephone number: 012 843 6644

Attention is drawn to the following –

Please note that any written representations which are received after the closing date may be disregarded.

Any person submitting written representations who wishes to also make an oral representation at a public hearing must indicate this in their written representations.

Attention is drawn to Notice 649 of 2010 published in the Government Gazette No. 33328 on 2 July 2010 in which interested and affected parties in the proposed core, central and co-ordinated astronomy advantage areas as indicated in the schedule to that Notice, were invited to register their details with the Department.

Any person who may not have registered as yet, and who wishes to do so, may contact the Department to request to be registered. Contact details that may have changed for persons who have registered, should be updated.



MS M T KUBAYI-NGUBANE, MP
MINISTER OF SCIENCE AND TECHNOLOGY

SCHEDULE 1**PROTECTION REGULATIONS TO BE APPLIED WITHIN THE SUTHERLAND
CENTRAL ASTRONOMY ADVANTAGE AREA DECLARED FOR OPTICAL
ASTRONOMY PURPOSES****Arrangement of the Regulations**

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1. Definitions

For the purposes of these Schedule 1 Regulations, unless the context indicates otherwise –

"Act" means the Astronomy Geographic Advantage Act, 2007 (Act No. 21, of 2007);

"airmass" means the path length for light from an astronomical source to pass through the atmosphere, and it increases as the angle between zenith and the astronomical source increases;

"extinction" means reduction in brightness from an astronomical source as a result of scattering and/or absorption of its light as it passes through dust and gas in the atmosphere before reaching the observer;

"fully shielded lighting" means a light fixture constructed and mounted in such a manner that all light emitted by the fixture, either directly from the lamp or a diffusing element, or indirectly by reflection or refraction from any part of the fixture, is projected below the horizontal;

"general area lighting" means outdoor lighting used for, but not limited to, illumination for walkways, roadways, equipment yards, parking lots and outdoor security where general illumination for visibility, safety or security is the primary concern;

"light pollution" means any kind of artificial light emission in the wavelength range from 300 to 5 000 nanometres that could be directly or indirectly detected by the optical telescopes located within the Sutherland Core Astronomy Advantage Area;

"narrowband amber (NBA) LED" means a light emitting diode (LED) with a peak wavelength between 585 and 595 nm and a full width at 50% radiant power no greater than 15 nm;

"nm" means nanometre, which is a unit of length equal to 10^{-9} metres;

"outdoor recreational lighting" means lighting used at sport fields, exhibition areas, cultural facilities or any other public or private facility where the public may attend events and participants may use the facility for practice, rehearsal or matches;

"phosphor-converted amber (PCA) LED" means a light emitting diode (LED) in which the LED blue light is converted to the yellow (amber) light, thereby having the highest efficiency at low wavelengths (around 600 nm);

"SAAO" means the South African Astronomical Observatory being the national centre for optical and infrared astronomy in South Africa, operating as a facility of the National Research Foundation.

"Sutherland Central Astronomy Advantage Area" means the Sutherland Central Astronomy Advantage Area declared in *Government Gazette* No. 37434, under Notice No. 199, published on 12 March 2014; and

"Sutherland Core Astronomy Advantage Area" means the Sutherland Core Astronomy Advantage Area declared in *Government Gazette*, No. 33462, under Notice No. 723, published on 20 August 2010.

2. Scope of the regulations in this Schedule 1

- (1) These regulations apply to specified activities within the Sutherland Central Astronomy Advantage Area declared for optical astronomy purposes and related scientific endeavours.
- (2) The restriction of the specified activities within the Sutherland Central Astronomy Advantage Area is intended to protect the optical astronomy observations carried out within the Sutherland Core Astronomy Advantage Area from a detrimental impact.
- (3) The prohibition of any detrimental activity within the Sutherland Central Astronomy Advantage Area will be done in a declaration to be made for that purpose in terms of section 23(1) of the Act.
- (4) In case of inconsistency between the English and the Afrikaans texts of these regulations, the English text will take precedence.

3. Protection measures applied within the Sutherland Central Astronomy Advantage Area

- (1) Monitoring and measurement of sky brightness and transparency shall be conducted within the Sutherland Core Astronomy Advantage Area.

- (2) The established average moonless night sky brightness levels within the Sutherland Core Astronomy Advantage Area of $U = 22.4$, $B = 22.7$, $V = 21.9$, $R = 21.1$ and $I = 19.8$ magnitude per arcsecond squared at zenith, must not be exceeded as a result of any artificial lighting located in the Sutherland Central Astronomy Advantage Area. Information on the determination of night sky brightness levels is provided in Annexure A to these Regulations.
- (3) The established natural atmospheric extinction values within the Sutherland Core Astronomy Advantage Area of $U = 0.54$, $B = 0.27$, $V = 0.15$, $R = 0.10$ and $I = 0.07$ magnitude per airmass, as set out in Annexure A must not be exceeded as a result of any activity capable of causing air pollution conducted within the Sutherland Central Astronomy Advantage Area.
- (4) Any activity occurring within the Sutherland Central Astronomy Advantage Area that may detrimentally impact on optical astronomy and related scientific endeavours by affecting the sky brightness and/or sky transparency, as measured within the Sutherland Core Astronomy Advantage Area, shall be restricted as prescribed in Regulation 4 of these Regulations.
- (5) Any person who conducted any activity within the Sutherland Central Astronomy Advantage Area prior to the promulgation of these Regulations which may detrimentally impact on optical astronomy and related scientific endeavours within the Sutherland Core Astronomy Advantage Area, must comply with the prescribed conditions in Regulations 4, 5 and 6 of these Regulations within a period of one (1) year after these Regulations become operational.

4. Prescribed conditions for lighting activities

- (1) Unless authorised by the management authority, no person may allow any general area lighting and outdoor recreational lighting activities within the Sutherland Central Astronomy Advantage Area to cause the average night sky brightness stated in sub-regulation 3(2) to be exceeded within the Sutherland Core Astronomy Advantage Area.
- (2) Indoor lighting in buildings and dwellings are exempted from the restrictions

prescribed in sub-regulations 4(3) to 4(7) subject thereto that no person may allow any internal lighting to spill over to the outside of the building which causes the night sky brightness stated in sub-regulation 3(2) within the Sutherland Core Astronomy Advantage Area to be exceeded.

- (3) All persons who have existing light fittings and fixtures for general area lighting and outdoor recreational lighting in the Sutherland Central Astronomy Advantage Area must convert such light fitting and fixtures to fully shielded lighting in accordance with the requirements stated in sub-regulation 4(6) and (7) of these Regulations within one (1) year of these regulations becoming operational.
- (4) All persons who wish to install new outdoor light fittings and fixtures within the Sutherland Central Astronomy Advantage Area must use fully shielded lighting and comply with the requirements stated in sub-regulation 4(6) and (7) of these Regulations.
- (5) The total permissible amount of outdoor lighting for general area lighting and outdoor recreational lighting within any premises, shall be determined by the management authority on a case by case basis and the total amount so determined, shall not be exceeded.
- (6) All persons within the Sutherland Central Astronomy Advantage Area must use the following types of general area lighting:
 - (a) low pressure sodium (LPS) or narrowband amber (NBA) LEDs as the preferred option; or
 - (b) high pressure sodium (HPS) or phosphor-converted amber (PCA) LED lighting if it is not feasible to use the lighting prescribed in sub-regulation (a) above.
- (7) Light emission shall be limited to above 500 nanometres.
- (8) The management authority may require that persons within the Sutherland Central Astronomy Advantage Area use proximity switches, such as motion sensors, and time dimming or switch offs to prevent the night sky brightness, stated in sub-regulation 3(2) within the Sutherland Core Astronomy Advantage Area, to be exceeded.

5. Activities creating dust pollution

- (1) Any person who intends to conduct any activity within the Sutherland Central Astronomy Advantage Area that may involve any earth works creating dust, must submit an application on the prescribed form (Annexure B), a copy of which can be obtained from the management authority, for approval by the management authority prior to commencing such activities.
- (2) The management authority will communicate the outcome of any application(s) contemplated in this Regulation 5 within 60 (sixty) working days from date of receipt of the fully completed application.

6. Wind turbines generating electricity

- (1) No person may operate a wind turbine with an electricity output potential of more than 100 Kw which is located within 20 km of the centre of the Southern African Large Telescope dome located at latitude 32° 22' 33" S and longitude 20° 48' 38"E.
- (2) Any person utilising obstacle lighting for aviation on wind turbine towers located beyond 20 km of the centre of the Southern African Large Telescope dome but within the Sutherland Central Astronomy Advantage Area, must comply with the variation permitted by the Civil Aviation Authority of South Africa in order to avoid light pollution within the Sutherland Core Astronomy Advantage Area.
- (3) The pilot activated lighting method determined by the Civil Aviation Authority of South Africa, shall be used as the method of switching on the obstacle lighting on wind farms.
- (4) No person may cause direct visibility of obstacle lighting for aviation on wind turbine towers located beyond 20 km of the Sutherland Core Astronomy Advantage Area and within the Sutherland Central Astronomy Advantage Area.
- (5) Any general area lighting at the wind turbine sites, for operational, security or any other purpose, shall comply with the conditions prescribed in regulation 4 of these Regulations.

7. Assessment of light pollution

- (1) When the management authority becomes aware of new outdoor lighting installations or when new outdoor lighting sources are observed by the SAAO, located within the Sutherland Central Astronomy Advantage Area, the management authority may arrange that an assessment is carried out of the light pollution impact on the average moonless night sky brightness levels within the Sutherland Core Astronomy Advantage Area.
- (2) The cost for the assessment may be recovered from the owner of the lighting installation that caused the pollution, if it is determined by the management authority that these Regulations have been contravened.
- (3) Any person who intends to install a new outdoor lighting source must carry out an assessment in advance to determine that the average moonless night sky brightness levels within the Sutherland Core Astronomy Advantage Area shall not be exceeded.

8. Extension of the one-year period

The Minister may, by notice in the *Gazette*, extend the one (1) year period contemplated in sub-regulations 3(5) and 4(3) of these Regulations.

9. Financial Compensation

Any financial compensation contemplated in terms of section 23(3)(a) of the Act with respect to a restriction on activities that were lawful within the Sutherland Central Astronomy Advantage Area before the promulgation of these Regulations shall be subject to the Regulations on Financial Compensation for the Sutherland Central Astronomy Advantage Area.

10. Contraventions and penalties

- (1) Contraventions, for which a prosecution may be instituted in a Court of Law, will include the failure to comply with the conditions prescribed in any of the sub-regulations 4(1), 4(3), 4(4), 5(1), 6(1) and 6(2) of these Regulations.
- (2) The maximum fine for an intentional contravention in terms of sub-regulation

10(1) of these Regulations is R200 000 and for a negligent contravention is R100 000.

- (3) The fines referred to in sub-regulation 10(2) of these Regulations may be suspended as a whole or in part subject to a condition that the person convicted is not found guilty of the same offence within a maximum period of three years.

11. Short title and commencement

These regulations are called the Regulations for the Protection of the Sutherland Central Astronomy Advantage Area declared for optical astronomy purposes, 2017 and will come into operation on a date to be determined by the Minister by notice in the Gazette.

Annexure A to Schedule 1 Regulations

1. The purpose of the Annexure is to provide information on how the moonless night sky brightness levels and extinction values specified in sub-regulations 3(2) and 3(3) of these Regulations, as the protection levels for optical astronomy, are determined by means of measurements. Artificial outdoor lighting and dust generated within the Sutherland Central Astronomy Advantage Area may have a negative impact on the night sky brightness and atmospheric extinction at the Sutherland Core Astronomy Advantage Area. An increase in the night sky brightness levels by artificial lighting causing light pollution will decrease the ability to observe faint astronomical objects. An increase in the extinction values caused by air pollution will reduce the luminosity emitted by an astronomical object.
2. Astronomers make use of filters to control the particular range of wavelengths over which the brightness is measured. A filter is simply a (precisely manufactured) piece of coloured glass that is placed in the light beam path between the telescope and the detector. The percentages of each wavelength that are allowed to pass are carefully designed to collect particular pieces of astronomical information.
3. The Sutherland Core Astronomy Advantage Area site is a unique location for astronomy in the southern hemisphere, in terms of very low sky brightness and also low and stable atmospheric extinction.
4. The natural sky quality conditions at Sutherland have been established from astronomical observations acquired *in situ* over the past 35 years. The average values are listed in the Table below, expressed in the units traditionally used by astronomers, and also in other physical units.

Filter passband	U	B	V	R	I
Effective wavelength, λ_{eff} (nm)	365	433	550	640	790
Night Sky Brightness (magnitude/arcsec ²)	22.4	22.7	21.9	21.1	19.8
Night skybrightness (microJy/arcsec ²)	2.08	3.55	6.67	11.2	30.7
Night Sky Brightness (10 ⁻¹⁷ Watts/m ² /arcsec ²)	1.71	2.46	3.63	5.24	11.6
Extinction (magnitude/airmass)	0.54	0.27	0.15	0.10	0.07

Notes

1. λ_{eff} , the *effective wavelength*, is the central wavelength in nanometres (10⁻⁹ metres) of the pass-band, weighted by intensity as a function of wavelength.
2. U – stands for ultra-violet (in the near ultra-violet region of the electromagnetic spectrum).
3. B – stands for blue (in the visible region of the electromagnetic spectrum).
4. V – stands for visual (in the visible region of the electromagnetic spectrum).
5. R – stands for red (in the visible region of the electromagnetic spectrum).
6. I – stands for infrared (in the near-infrared region).

Annexure B to Schedule 1 Regulations



science
& technology

Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

This form is to be submitted in terms of Sub-regulation 5(1) of the Schedule 1 Regulations to seek approval for an activity involving any earth works creating dust capable of causing air pollution with a detrimental impact on optical astronomy conducted at the South African Astronomical Observatory near Sutherland, Northern Cape. The information requested in the following items is required to assess the possible detrimental impact.

Item	Requirements	Details for information required	Response to requirements (For additional space, please add an attachment)
1.	Name and details of the enterprise and representative	Name of entity Registration number Representative Phone number Email address Postal address	
2.	Location	(a) Central geographical location of the activity (longitude & latitude in degrees, minutes & seconds or in degrees with 4 decimals); (b) Elevation of the highest point at the relevant site above sea level; and (c) Distance from the Southern African Large Telescope (SALT) located at 32° 22' 33" S and 20° 48' 38" E.	

3.	Activity	Description of the scope of the operations and the methods to be employed.	
4.	Impact of wind	Direction of prevailing wind that will affect dust pollution.	
5.	Determination of possible dust pollution	<p>(a) Describe and quantify the dust pollution to be caused by the operations; and</p> <p>(b) Describe the methods that will be employed on an ongoing basis to minimise dust pollution.</p>	
6.	Comments	Provide any information that may be useful in carrying out the impact assessment for possible dust pollution.	
7.	Signature	<p>In signing this document, I declare that the information provided herein is to the best of my knowledge truthful and correct.</p> <p>Signature</p> <p>Date</p>	

SCHEDULE 2
REGULATIONS ON FINANCIAL COMPENSATION FOR THE SUTHERLAND
CENTRAL ASTRONOMY ADVANTAGE AREA

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1. Definitions

In these Regulations, unless the context indicates otherwise –

"Act" means the Astronomy Geographic Advantage Act, 2007 (Act No. 21 of 2007);

"affected person" means a person who –

- (a) lawfully conducted an activity in the Sutherland Central Astronomy Advantage Area prior to the restriction of that activity by virtue of Schedule 1 of these Regulations read with the Act; and
- (b) is required by the Minister in terms of Schedule 1 of these Regulations to cease that activity or to comply with conditions prescribed in terms of Schedule 1 of these Regulations;

"financial loss" means the proven monetary loss incurred by an affected person as a result of having to comply with a restriction or implement a requirement or a condition imposed in terms of section 23 of the Act read with Schedule 1 of these Regulations;

"GPS" means a global positioning system;

"Schedule 1 Regulations" means the regulations to prohibit and restrict certain declared activities in terms of section 23 of the Act within the Sutherland Central Astronomy Advantage Area, which is Schedule 1 of these Regulations.

2. Scope of the regulations in this Schedule 2

- (1) These Regulations apply to the Sutherland Central Astronomy Advantage Area declared for optical astronomy purposes and related scientific endeavours.
- (2) These Regulations are applicable only to person(s) who are at date of promulgation of these Regulations conducting any activities which may impact

on optical astronomy and related endeavours within the declared Sutherland Central Astronomy Advantage Areas.

- (3) Persons who commence such activities after the date of promulgation of these regulations are not eligible to apply for any financial compensation in terms of these Regulations.
- (4) In case of inconsistency between the English and the Afrikaans texts of these regulations, the English text will take precedence.

3. Procedures and criteria to apply for financial compensation

- (1) An affected person who has suffered proven financial loss solely as a direct result of that person's compliance with a requirement or a condition imposed in terms of Schedule 1 of these Regulations may apply to the Minister for compensation in terms of this regulation.
- (2) The application for compensation contemplated in sub-regulation (1) must be submitted on the prescribed form which may be obtained from the management authority, or the website of the management authority, and submitted to the management authority within two (2) years of the implementation of the relevant requirement or condition.
- (3) If an applicant applies for compensation in relation to different activities, the applicant must submit a separate application for each activity.

4. Processing of the application by the management authority

- (1) Upon receipt of the application, the management authority may request further information from the applicant in writing, and, if deemed necessary, the applicant may by way of a sworn statement provide such further information to the management authority for consideration of the application, and the applicant must respond to the request for further information within thirty (30) days from the date that the request was sent.
- (2) The management authority must, within sixty (60) days from the date that the last information required was received, refer the application, all relevant documentation and any further particulars submitted by the applicant, with a recommendation to the Minister for a decision: provided that the Minister may

extend the period of sixty (60) days on good cause shown, by the management authority, with notice to the applicant.

- (3) The management authority must, within thirty (30) days of the date of receipt of the Minister's decision inform the applicant in writing of the Minister's decision and provide the applicant with written reasons for the decision, including an offer of compensation as determined in accordance with Regulation 5 of these Regulations.

5. Determination of compensation by the Minister

If the Minister approves that the applicant should receive compensation, the Minister must determine the amount of compensation having regard to all the relevant information contained in the application and the recommendation made by the management authority, including –

- (a) the nature and extent of the activity lawfully conducted by the applicant immediately before the implementation of the relevant requirement or condition;
- (b) the extent to which the applicant ceased the relevant activity, the nature and extent to which the applicant modified its conduct of the relevant activity, solely as a direct result of compliance with the requirement or conditions imposed in terms of Schedule 1 of these Regulations;
- (c) the property or equipment which was owned or used by the applicant to conduct the relevant activity and the extent to which the use thereof had been adversely affected solely as a direct result of compliance with the requirement or conditions imposed in terms of Schedule 1 of these Regulations; and
- (d) the proven financial loss suffered by the applicant solely as a direct result of compliance with the requirement or conditions imposed in terms of Schedule 1 of these Regulations.

6. Acceptance or rejection of the offer by the applicant

- (1) Within thirty (30) days of the receipt of the offer in sub-regulation 4(3), the applicant must inform the management authority in writing of their acceptance or rejection of the offer.

- (2) If the applicant accepts the offer made in terms of sub-regulation 4(3), the management authority must pay the applicant the amount in a manner and within the period agreed upon by the applicant and the management authority, which period may not be more than sixty (60) days after receipt of notice of acceptance of the offer from the applicant.
- (3) If the applicant rejects the offer made in terms of sub regulation 4(3), then the provisions of the Promotion of Administrative Justice Act, (Act No.3 of 2000) will apply.

7. Short title and commencement

These Regulations are called the Regulations on Financial Compensation Procedures for the Sutherland Central Astronomy Advantage Area, 2017, and will come into operation on a date to be determined by the Minister by notice in the Government Gazette.

DEPARTEMENT VAN WETENSKAP EN TEGNOLOGIE

NO. 746

25 JULIE 2018

KENNISGEWING VAN DIE VOORNEME OM REGULASIES TE MAAK OOR BESKERMINGSMAATREELS OM BINNE DIE SUTHERLAND SENTRALE ASTRONOMIEVOORDEELGEBIED TOEGEPAS TE WORD KRAGTENS DIE WET OP GEOGRAFIESE ASTRONOMIEVOORDEEL, 2007

Ek, Mmamoloko Kubayai-Ngubane, Minister van Wetenskap en Tegnologie, gee hiermee kennis, kragtens artikel 23 van Wet op Geografiese Astronomievoordeel, 2007 (Wet no. 21 van 2007) (hierna hierin verwys as "die Wet"), en met die instemming van die Minister van Finansies (sover hierdie Regulasies finansiële implikasie het), van my voorneme om Regulasies uit te vaardig, soos dit in die Skedules hieraan uiteengesit is en soos hieronder gelys:

Skedule 1 - Voorgestelde Regulasies om binne die Sutherland Sentrale Astronomievoordeelgebied toegepas te word.

Skedule 2 - Voorgestelde Regulasies oor finansiële vergoedingsprosedures vir die Sutherland Sentrale Astronomievoordeelgebied.

Die konsep regulasies is van toepassing op die Sutherland Sentrale Astronomievoordeelgebied verklaar vir die doeleindes van optiese astronomie en verwante wetenskaplike ondernemings kragtens artikel 9(1) en (2) van die Wet.

Belanghebbende en geaffekteerde persone en lede van die publiek word uitgenooi om geskrewe vertoë op of besware teen die regulasies vervat in die Skedules 1 en 2 binne sestig (60) dae van die datum van hierdie kennisgewing in te dien by:

Mnr. Mere Kgampe

Dep van Wetenskap en Tegnologie	Of Dep van Wetenskap en Tegnologie
Gebou 53, WNNR kampus	Privaatsak X894
Meiring Naude-weg	Pretoria
Brummeria	0001
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0184	

Of

E-posadres mere.kgampe@dst.gov.za
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Aandag word op die volgende gevestig -

Neem asseblief kennis dat enige geskrewe voorleggings wat na die sluitingsdatum ontvang word, nie in ag geneem hoef te word nie.

Enige persoon wat 'n geskrewe voorlegging maak en ook 'n mondelinge voorlegging by 'n openbare verhoor wil maak, moet dit aandui in hulle geskrewe voorlegging.

Aandag word gevestig op Kennisgewing 649 van 2010 in Staatskoerant No 33328 op 2 Julie 2010 gepubliseer waarin belanghebbende en geaffekteerde persone in die voorgestelde kern, sentrale en gekoördineerde astronomievoordeelareas aangedui in die skedule by daardie Kennisgewing, uitgenooi is om hulle besonderhede by die Departement te registreer.

Enige persoon wat nog nie geregistreer het nie, en dit wil doen, mag die Departement kontak met 'n versoek om geregistreer te word. Kontak besonderhede van geregistreerde persone wat verander het, behoort op datum gebring te word.



MS M T KUBAYI-NGUBANE, LP
MINISTER VAN WETENSKAP EN TEGNOLOGIE

SKEDULE 1**BESKERMINGSREGULASIES OM BINNE DIE SUTHERLAND SENTRALE ASTRONOMIEVOORDEELGEBIED, VERKLAAR VIR OPTIESE ASTRONOMIE DOELEINDES, TOEGEPAS TE WORD****Indeling van die Regulasies**

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1. Woordomskrywings

In hierdie Skedule 1 Regulasies, tensy dit uit die samehang anders blyk, beteken—

“algemene-area-beligting” beligting gebruik vir, maar nie uitsluitlik nie, die beligting van paadjies, paaie, toerustingwerwe, parkeerterreine en buitelug sekuriteit waar algemene beligting vir sigbaarheid, veiligheid en sekuriteit die hoofdoel is;

“buitemuurse ontspanningsbeligting” beligting gebruik by sportvelde, uitstalareas, kultuurfasiliteite of enige ander openbare- of privaatfasiliteit waar die publiek byeenkomste kan bywoon en die deelnemers die fasiliteit kan gebruik vir oefening, inoefenings of wedstryde;

“fosfor-omgeskakelde amber (PCA) LED” 'n liggewende diode (LED) waar die LED blou lig na geel (amber) omgeskakel is, ten einde die meeste effektief te wees by lae golflengtes (rondom 600 nm);

“ligbesoedeling” enige tipe kunsmatige liguitstraling in die 300 tot 5 000 nanometer golflengtebestek wat direk of indirek deur die teleskope in die Sutherland Kern Astronomievoordeelgebied geleë, waargeneem kan word;

“lugmassa” die padlengte vir lig vanaf 'n astronomiese bron, om deur die atmosfeer te gaan, wat toeneem soos die hoek tussen die senit en die astronomiese bron toeneem;

“nouband amber (NBA) LED” 'n liggewende diode (LED) waarvan die hoogste uitsetgolflengte tussen 585 en 595 nm is en die volle wydte teen 50% uitstralingskrag nie 15 nm oorskry nie;

“nm” nanometer, wat 'n eenheid vir lengte is, gelyk aan 10^{-9} meter;

“SAAO” die “South African Astronomical Observatory”, dit is die Suid-Afrikaanse Astronomiese Sterrewag wat die nasionale sentrum is vir optiese en infrarooi astronomie in Suid-Afrika en bedryf word as 'n fasiliteit van die Nasionale Navorsingstigting;

“Sutherland Sentrale Astronomievoordeelgebied” die Sutherland Sentrale Astronomievoordeelgebied verklaar in *Staatskoerant* Nr. 37434, onder Kennisgewing Nr. 199, gepubliseer op 12 Maart 2014;

“Sutherland Kern Astronomievoordeelgebied” die Sutherland Kern Astronomievoordeelgebied verklaar in *Staatskoerant* Nr. 33462, onder Kennisgewing Nr. 723, gepubliseer op 20 Augustus 2010;

“uitdowing” die vermindering in helderheid van ’n astronomiese bron as gevolg van die verspreiding en/of absorpsie van sy lig wanneer dit deur stof en gas in die atmosfeer gaan voordat dit die waarnemer bereik;

“volafsnijbeligting” beligtingsuitrusting wat sodanig vervaardig en gemonteer is dat al die lig wat daarvan uitgestraal word, hetsy direk vanaf die ligolement of verstrooier of indirek deur middel van weerkaatsing of ligbuiging vanaf enige deel van die beligtingsuitrusting, laer as die horisontaal geprojekteer word; en

“Wet” die “Astronomy Geographic Advantage Act, 2007 (Act No. 21, van 2007)”.

2. Toepassing van die regulasies in hierdie Skedule 1

- (1) Hierdie regulasies is van toepassing op gespesifiseerde aktiwiteite binne die Sutherland Sentrale Astronomievoordeelgebied verklaar vir optiese astronomie doeleindes en verwante wetenskaplike ondernemings.
- (2) Die beperking van die gespesifiseerde aktiwiteite binne die Sutherland Sentrale Astronomievoordeelgebied is bedoel om die optiese astronomie waarnemings binne die Sutherland Kern Astronomievoordeelgebied uitgevoer, te beskerm teen nadelige effekte.
- (3) Die verbod van enige nadelige aktiwiteite binne die Sutherland Sentrale Astronomievoordeelgebied sal gedoen word deur ’n verklaring vir daardie doel te maak, kragtens artikel 23(1) van die Wet.
- (4) In die geval van teenstrydigheid tussen die Engelse en Afrikaanse weergawes van hierdie regulasies, sal die Engelse weergawe voorrang geniet.

3. Beskermingsmaatreëls toegepas binne die Sutherland Sentrale Astronomievoordeelgebied

- (1) Monitering en meting van die helderheid en deursigtigheid van die naghemel sal binne die Sutherland Kern Astronomievoordeelgebied uitgevoer word.
- (2) Die gevestigde gemiddelde maanlosenaghemelderheid binne die Sutherland Kern Astronomievoordeelgebied van $U = 22.4$, $B = 22.7$, $V = 21.9$, $R = 21.1$ en $I = 19.8$ magnitudes per boogsekonde kwadraat op die senit, mag nie oorskry word as gevolg van enige kunsmatige beligting binne die Sutherland Sentrale Astronomievoordeelgebied geleë nie. Inligting oor die bepaling van naghemelderheidsvlakke is beskikbaar in Bylae-A tot hierdie Regulasies.

- (3) Die gevestigde natuurlike atmosferiese uitdowingswaardes binne die Sutherland Kern Astronomievoordeelgebied van $U = 0.54$, $B = 0.27$, $V = 0.15$, $R = 0.10$ en $I = 0.07$ magnitude per lugmassa, soos in Bylae A uiteengesit, moet nie oorskry word nie as gevolg van enige aktiwiteit binne die Sutherland Sentrale Astronomievoordeelgebied wat in staat is om lugbesoedeling te veroorsaak nie.
- (4) Enige aktiwiteit wat binne die Sutherland Sentrale Astronomie-voordeelgebied plaasvind, en 'n nadelige impak op optiese astronomie en verwante wetenskaplike ondernemings mag hê, deur die helderheid en/of deursigtigheid van die naghemel te affekteer, soos binne die Sutherland Kern Astronomievoordeelgebied gemeet, sal beperk word soos voorgeskryf in regulasie 4 van hierdie Regulasies.
- (5) Enige persoon wat 'n aktiwiteit binne die Sutherland Sentrale Astronomievoordeelgebied voor die uitvaardiging van hierdie regulasies uitgevoer het, wat 'n nadelige impak op optiese astronomie en verwante wetenskaplike ondernemings binne die Sutherland Kern Astronomievoordeelgebied mag hê, moet voldoen aan die voorgeskrewe voorwaardes in Regulasies 4, 5 en 6 van hierdie Regulasies binne 'n tydperk van een (1) jaar nadat hierdie regulasies in werking gestel is.

4. Voorgeskrewe voorwaardes vir beligtingsaktiwiteite

- (1) Tensy dit deur die bestuursgesag goedgekeur is, mag geen persoon toelaat dat enige algemene-area-beligting en buitemurse ontspanningsbeligting aktiwiteite binne die Sutherland Sentrale Astronomievoordeelgebied veroorsaak dat die gemiddelde naghemelhoelderheid binne die Sutherland Kern Astronomievoordeelgebied, soos in sub-regulasie 3(2) bepaal, oorskry word nie.
- (2) Binnenshuise beligting in geboue en wonings is vrygestel van die beperkings in sub-regulasies 4(3) tot 4(7) voorgeskryf, onderhewig daaraan dat geen persoon sal toelaat dat enige interne beligting na buite die gebou sal oorspoel nie wat sal veroorsaak dat die naghemelhoelderheid soos in sub-regulasie 3(2) bepaal, binne die Sutherland Kern Astronomievoordeelgebied oorskry word nie.
- (3) Alle persone wat bestaande beligtingstoebehore en uitrusting vir algemene-area-beligting en buitemurse ontspanningsbeligting binne die Sutherland Sentrale Astronomievoordeelgebied het, moet sulke beligtingstoebehore en uitrusting omskakel na volafsnijbeligting volgens die vereistes gestel in subregulasies 4(6) en

- (7) van hierdie Regulasies binne een (1) jaar nadat hierdie regulasies in werking gestel is.
- (4) Alle persone wat nuwe buitenshuise beligtingstoebehore en uitrusting binne die Sutherland Sentrale Astronomievoordeelgebied wil installeer, moet volafsnrybeligting gebruik en voldoen aan die vereistes gestel in subregulasies 4(6) en (7) van hierdie Regulasies.
- (5) Die totale toegelate hoeveelheid buitenshuise beligting vir algemene-area-beligting en buitemuurse ontspanningsbeligting binne enige perseel, sal deur die bestuursgesag bepaal word vir elke geval en die totale hoeveelheid so bepaal, mag nie oorskry word nie.
- (6) Alle persone binne die Sutherland Sentrale Astronomievoordeelgebied moet van die volgende tipes algemene-area-beligting gebruik maak:
- (a) laedruk-natrium (LPS) of nouband amber (NBA) LEDs as die voorkeuropsie; of
- (b) hoëdruk-natrium (HPS) of fosfor-omgeskakelde amber (PCA) LED beligting, indien dit nie haalbaar is om die beligting voorgeskryf in subregulasie (a) hierbo, te gebruik nie.
- (7) Lig-emissie moet beperk word tot bo 500 nanometer.
- (8) Die bestuursgesag mag vereis dat persone binne die Sutherland Sentrale Astronomievoordeelgebied nabyheidskakelaars, soos bewegingsensors en tyd-dompskakeling of afskakeling gebruik, om te verhoed dat die naghemelhelderheid in sub-regulasie 3(2) bepaal, binne die Sutherland Kern Astronomievoordeelgebied oorskry word.

5. Aktiwiteite wat stof veroorsaak

- (1) Enige persoon wat van voorneme is om 'n aktiwiteit binne die Sutherland Sentrale Astronomievoordeelgebied te onderneem wat grondwerk met die veroorsaking van stof behels, moet 'n aansoek op die voorgeskrewe vorm (Bylae B) waarvan 'n afskrif by die bestuursgesag verkry kan word, vir goedkeuring indien voordat sulke aktiwiteite 'n aanvang neem.
- (2) Die bestuursgesag sal die uitslag van enige aansoek(e) kragtens hierdie Regulasie 5 beoog, binne 60 (neëntig) werksdae kommunikeer vanaf die datum van ontvangs van die ten volle voltooide aansoek.

6. Windturbines vir die opwekking van elektrisiteit

- (1) Geen persoon mag 'n windturbine met 'n potensiële elektriese kraglewering van meer as 100 kW binne 20 km vanaf die middelpunt van die koepel van die Suider-Afrikaanse Groot Teleskoop (SALT), geleë op breedtegraad 32° 22' 33" S en lengtegraad 20° 48' 38" O, bedryf nie.
- (2) Enige persoon wat hindernisbeligting gebruik vir lugvaart op windturbine torings, geleë verder as 20 km vanaf die middelpunt van die Suider-Afrikaanse Groot Teleskoop koepel, maar binne die Sutherland Sentrale Astronomievoordeelgebied, moet voldoen aan die variasie toegelaat deur die Burgerlugvaart-owerheid van Suid-Afrika ten einde ligbesoedeling binne die Sutherland Kern Astronomievoordeelgebied te verhoed.
- (3) Die metode vir die aktivering van die hindernisbeligting op windturbine torings deur die vliegtuigloods, soos bepaal deur die Burgerlugvaart-owerheid van Suid-Afrika, sal gebruik word.
- (4) Geen persoon mag direkte sigbaarheid van hindernisbeligting vir lugvaart op windturbine torings, wat verder as 20 km vanaf die Sutherland Kern Astronomievoordeelgebied, maar binne die Sutherland Sentrale Astronomievoordeelgebied geleë is, veroorsaak nie.
- (5) Enige algemene-area-beligting op die windturbine-terreine vir operasionele, sekuriteit of enige ander doel, moet voldoen aan die voorwaardes voorgeskryf in regulasie 4 van hierdie Regulasies.

7. Waardebepaling van ligbesoedeling

- (1) Wanneer die bestuursgesag bewus word van nuwe buitenshuise beligtingsinstallasies, of wanneer nuwe buitenshuise beligtingsbronne deur die SAAO waargeneem word, wat binne die Sutherland Sentrale Astronomievoordeelgebied geleë is, mag die bestuursowerheid reël dat 'n waardebepaling uitgevoer word van die ligbesoedelingsimpak op die gemiddelde maanlosenaghemelhelderheidsvlakke binne die Sutherland Kern Astronomievoordeelgebied.
- (2) Die koste vir die waardebepaling mag verhaal word van die eienaar van die beligtingsinstallasie wat die besoedeling veroorsaak het, indien dit deur die bestuursowerheid bepaal word dat daar 'n oortreding van hierdie Regulasies was.

- (3) Enige persoon wat van voorneme is om 'n nuwe buitenshuise beligtingsbron te installeer, moet vooraf 'n waardebeoordeling uitvoer om te bepaal dat die gemiddelde maanlosenaghemelhelderheidsvlakke binne die Sutherland Kern Astronomievooroordeelgebied nie oorskry sal word nie.

8. Verlenging van die een jaar tydperk

Die Minister mag, deur middel van 'n kennisgewing in die *Staatskoerant*, die een-jaar-tydperke in sub-regulasies 3(5) en 4(3) van hierdie Regulasies beoog, verleng.

9. Finansiële vergoeding

Enige finansiële vergoeding beoog kragtens artikel 23(3)(a) van die Wet in verband met 'n beperking op aktiwiteite wat wettig uitgevoer is binne die Sutherland Sentrale Astronomievooroordeelgebied voordat hierdie Regulasies uitgevaardig is, sal onderworpe wees aan die Regulasies oor Finansiële Vergoeding vir die Sutherland Sentrale Astronomievooroordeelgebied.

10. Oortredings en boetes

- (1) Oortredings waarvoor 'n vervolging in 'n Hof ingestel mag word, sluit in die versuim om te voldoen aan die voorwaardes voorgeskryf in enige van die sub-regulasies 4(1), 4(3), 4(4), 5(1), 6(1) en 6(2) van hierdie Regulasies.
- (2) Die maksimum boete vir die opsetlike oortreding in terme van subregulasie 10(1) van hierdie Regulasies is R200 000 en R100 000 vir 'n nalatige oortreding.
- (3) Die boetes waarna subregulasie 10(2) van hierdie Regulasies verwys is, mag in die geheel, of gedeeltelik, opgeskort word, onderworpe aan die voorwaarde dat die veroordeelde persoon nie skuldig bevind word aan dieselfde oortreding binne 'n maksimum periode van drie jaar nie.

11. Kort titel en aanvang

Hierdie regulasies word die Regulasies vir die Beskerming van die Sutherland Sentrale Astronomievooroordeelgebied, verklaar vir optiese astronomie doeleindes, 2017, genoem, en sal in werking tree op 'n datum om deur die Minister bepaal te word deur middel van 'n kennisgewing in die *Staatskoerant*.

Bylae A tot die Skedule 1 Regulasies

1. Die doel van hierdie Bylae is om inligting te verskaf oor hoe die maanlose-naghemelhelderheidsvlakke en uitdowingswaardes in subregulasies 3(2) en 3(3) van hierdie Regulasies gespesifiseer as die beskermingsvlakke vir optiese astronomie bepaal word deur middel van metings. Kunsmatige buitenshuise beligting en stof wat binne die Sutherland Sentrale Astronomievoordeelgebied ontstaan, mag 'n negatiewe impak op die naghemelhelderheid en atmosferiese uitdowing binne die Sutherland Kern Astronomievoordeelgebied hê. 'n Vermeerdering van die naghemelhelderheidsvlakke deur kunsmatige beligting wat ligbesoedeling veroorsaak, sal die vermoë om dowwe astronomiese voorwerpe waar te neem, verminder. 'n Toename van die uitdowingswaardes veroorsaak deur lugbesoedeling sal die ligsterkte deur 'n astronomiese voorwerp uitgestraal, verminder.
2. Sterrekundiges maak van filters gebruik om die spesifieke reeks golflengtes waaroor helderheid gemeet word, te beheer. 'n Filter is eenvoudig 'n stuk gekleurde glas (presies gemaak) wat in die ligstraalpad tussen die teleskoop en die detektor geplaas word. Die persentasies van elke golflengte wat deurgelaat word, is versigtig ontwerp om spesifieke stukke astronomiese inligting te versamel.
3. Die Sutherland Kern Astronomievoordeelgebied perseel is 'n unieke ligging vir astronomie in die suidelike halfrond, in terme van baie lae naghemelhelderheid en ook lae en stabiele atmosferiese uitdowing.
4. Die natuurlike naglug kwaliteit toestande by Sutherland is bepaal deur astronomiese waarnemings ter plaatse bekom oor die afgelope 35 jaar. Die gemiddelde waardes in die tabel hieronder gelys is uitgedruk in eenhede wat tradisioneel deur sterrekundiges gebruik is, en ook in ander fisiese eenhede.

Filter deurlaatband	U	B	V	R	I
Effektiewe golflengte, λ_{eff} (nm)	365	433	550	640	790
Naghemelhelderheid (magnitude/arcsec ²)	22.4	22.7	21.9	21.1	19.8
Naghemelhelderheid (mikroJy/arcsec ²)	2.08	3.55	6.67	11.2	30.7
Naghemelhelderheid (10 ⁻¹⁷ Wat/m ² /arcsec ²)	1.71	2.46	3.63	5.24	11.6
Uitdowing (magnitude/lugmassa)	0.54	0.27	0.15	0.10	0.07

Notas

1. λ_{eff} , die effektiewe golflengte, is die sentrale golflengte in nanometers (10⁻⁹ meters) van die deurlaat band, aangepas deur intensiteit as 'n funksie van golflengte.
2. U – beteken ultraviolet (in die nabye ultraviolet area van die elektromagnetiese spektrum).
3. B – beteken blou (in die sigbare deel van die elektromagnetiese spektrum).
4. V – beteken sigbare (in die sigbare deel van die elektromagnetiese spektrum).
5. R – beteken rooi (in die sigbare deel van die elektromagnetiese spektrum).
6. I – beteken infrarooi (in die nabye infrarooi area).

Bylae B tot Skedule 1 Regulasies

science
& technology

Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

Hierdie vorm moet ingedien word kragtens Sub-regulasie 5(1) van die Skedule 1 Regulasies om goedkeuring te verkry vir 'n aktiwiteit wat enige grondwerk behels en in staat is om lugbesoedeling te veroorsaak met 'n nadelige impak op optiese astronomie uitgevoer by die Suid-Afrikaanse Astronomiese Sterrewag naby Sutherland, Noordkaap. Die inligting versoek in die volgende items word benodig om die moontlike nadelige impak te beoordeel.

Item	Benodigdhede	Besonderhede vir inligting benodig	Reaksie tot die benodigdhede (Vir meer spasie, voeg asb. 'n bylae by)
1.	Naam en besonderhede van die onderneming en verteenwoordiger	Naam van entiteit Registrasie nommer Verteenwoordiger Telefoonnommer E-posadres Posadres	
2.	Ligging	(a) Sentrale geografiese ligging van die aktiwiteit (lengtegraad & breedtegraad in grade, minute & sekondes of in grade met 4 desimale); (b) Hoogte van die hoogste punt by die betrokke perseel bo seevlak; en (c) Afstand vanaf die Suid-Afrikaanse Groot Teleskoop (SALT) geleë by 32° 22' 33" S en 20° 48' 38" O.	

3.	Aktiwiteit	Beskrywing van die omvang van die bedrywighede en die metodes om gebruik te word.	
4.	Impak van wind	Rigting van die heersende wind wat stofbesoedeling sal affekteer.	
5.	Bepaling van moontlike stofbesoedeling	(a) Beskryf en kwantifiseer die stofbesoedeling wat deur die bedryf veroorsaak sal word; en (b) Beskryf die metodes wat op 'n aaneenlopende basis gebruik sal word om stofbesoedeling te minimaliseer.	
6.	Kommentaar	Verskaf enige inligting wat bruikbaar sal wees in die uitvoering van die impakbeoordeling vir moontlike stofbesoedeling.	
7.	Naamtekening	In die ondertekening van hierdie dokument, verklaar ek dat die inligting hierin verstrekk tot die beste van my wete waar en korrek is. Naamtekening Datum	

SKEDULE 2
REGULASIES OOR FINANSIËLE VERGOEDING VIR DIE SUTHERLAND
SENTRALE ASTRONOMIEVOORDEELGEBIED

Indeling van die Regulasies

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1. Woordomsrywings

In hierdie Skedule 2 Regulasies, tensy dit uit die samehang anders blyk, beteken—
"finansiële verlies" die bewysde geldelike verlies gemaak deur 'n geaffekteerde persoon as gevolg van die voldoening aan 'n beperking of die implementering van 'n vereiste of 'n voorwaarde kragtens artikel 23 van die Wet voorgeskryf, gelees met Skedule 1 van hierdie Regulasies;

"geaffekteerde persoon" 'n persoon wat –

- (a) wettiglik 'n aktiwiteit binne die Sutherland Sentrale Astronomievoordeelgebied uitgevoer het voor die beperking van daardie aktiwiteit ooreenkomstig Skedule 1 van hierdie Regulasies, gelees met die Wet; en
- (b) deur die Minister vereis word om kragtens Skedule 1 van hierdie Regulasies daardie aktiwiteit te staak of om aan voorwaardes te voldoen wat voorgeskryf is kragtens Skedule 1 van hierdie Regulasies;

"GPS" die "global positioning system";

"Skedule 1 Regulasies" die regulasies om sekere verklaarde aktiwiteite kragtens artikel 23 van die Wet binne die Sutherland sentrale astronomievoordeelgebied, te verbied of te beperk, wat Skedule 1 van hierdie Regulasies is; en

"Wet" die "Astronomy Geographic Advantage Act, 2007 (Act No. 21 of 2007)".

2. Toepassing van die regulasies in hierdie Skedule 2

- (1) Die regulasies is van toepassing op die Sutherland Sentrale Astronomievoordeelgebied verklaar vir optiese astronomie doeleindes en verwante wetenskaplike ondernemings.
- (2) In die geval van teenstrydigheid tussen die Engelse en Afrikaanse weergawes van hierdie regulasies, sal die Engelse weergawe voorrang geniet.

3. Prosedures en kriteria om vir finansiële vergoeding aansoek te doen

- (1) 'n Geaffekteerde persoon wat 'n bewysde finansiële verlies gely het, alleenlik as 'n direkte oorsaak van daardie persoon se voldoening aan 'n vereiste of

voorwaarde voorgeskryf kragtens Skedule 1 van hierdie Regulasies, mag by die Minister, kragtens hierdie regulasie, aansoek vir vergoeding doen.

- (2) Die aansoek om vergoeding in sub-regulasie (1) beoog, moet op 'n voorgeskrewe vorm gedoen word, by die bestuursgesag verkry, of van die webwerf van die bestuursgesag, en ingedien word by die bestuursgesag binne twee (2) jaar na die implementering van die betrokke vereiste of voorwaarde.
- (3) Indien 'n aansoeker vir vergoeding in verband met verskillende aktiwiteite aansoek doen, moet die aansoeker 'n afsonderlike aansoek met betrekking tot elke aktiwiteit indien.

4. Verwerking van die aansoek deur die bestuursgesag

- (1) Op ontvangs van die aansoek, mag die bestuursgesag skriftelik verdere besonderhede van die aansoeker versoek, en, as dit nodig geag word, mag die aansoeker deur middel van 'n beëdigde verklaring sulke verdere inligting verskaf aan die bestuursgesag vir oorweging van die aansoek en die aansoeker moet binne dertig (30) dae na die versoek gestuur is, op die versoek vir verdere inligting reageer.
- (2) Die bestuursgesag moet, binne sestig (60) dae na die datum wanneer die laaste inligting nodig, ontvang is, die aansoek en al die betrokke dokumentasie en enige verdere besonderhede deur die aansoeker ingedien, met 'n aanbeveling na die Minister verwys vir 'n besluit: onderworpe daaraan dat die Minister die tydperk van sestig (60) dae mag verleng met goeie redes deur die bestuursgesag verstrek en met kennisgewing aan die aansoeker.
- (3) Die bestuursgesag moet binne dertig (30) dae na die ontvangs van die Minister se besluit, die aansoeker skriftelik van die Minister se besluit in kennis stel en die aansoeker met geskrewe redes vir die besluit voorsien, insluitend 'n aanbod vir vergoeding bepaal volgens Regulasie 5 van hierdie Regulasies.

5. Bepaling van vergoeding deur die Minister

Indien die Minister goedkeur dat 'n aansoeker vergoeding behoort te ontvang, moet die Minister die bedrag van die vergoeding bepaal met inagneming van al die toepaslike inligting ingesluit in die aansoek en die aanbeveling deur bestuursgesag gemaak, insluitend -

- (a) die aard en omvang van die aktiwiteit wettig uitgevoer deur die aansoeker onmiddellik voor die inwerkingstelling van die betrokke vereiste of voorwaarde;
- (b) die mate waartoe die aansoeker die betrokke aktiwiteit gestaak het, die aard en omvang waartoe die aansoeker sy/haar uitvoering van die betrokke aktiwiteit verander het, alleenlik as 'n direkte resultaat van voldoening aan die vereiste of voorwaardes voorgeskryf kragtens Skedule 1 van hierdie Regulasies;
- (c) die eiendom of toerusting wat deur die aansoeker besit of gebruik was om die betrokke aktiwiteit uit te voer en die mate waartoe die gebruik daarvan nadelig geaffekteer is, alleenlik as 'n direkte resultaat van voldoening aan die vereiste of voorwaardes voorgeskryf kragtens Skedule 1 van hierdie Regulasies; en
- (d) die bewysde finansiële verlies deur die aansoeker gely, alleenlik as 'n direkte resultaat van voldoening aan die vereiste of voorwaardes voorgeskryf kragtens Skedule 1 van hierdie Regulasies.

6. Aanvaarding van die aanbod deur die aansoeker

- (1) Binne dertig (30) dae na die ontvangs van die aanbod in subregulasie 4(3), moet die aansoeker die bestuursgesag skriftelik in kennis stel of die aanbod aanvaar of verwerp word.
- (2) Indien die aansoeker die aanbod kragtens subregulasie 4(3) gemaak, aanvaar, moet die bestuursgesag die aansoeker die bedrag betaal op 'n manier en binne die tydperk waarop daar tussen die aansoeker en die bestuursgesag ooreengekom is, welke tydperk nie meer as sestig (60) dae na die ontvangs van die kennisgewing van aanvaarding van die aanbod deur die aansoeker mag wees nie.
- (3) Indien die aansoeker die aanbod kragtens subregulasie 4(3) gemaak, verwerp, dan sal die maatreëls in die Wet op die Bevordering van Administratiewe Geregtigheid, (Wet No 3 van 2000) van toepassing wees.

7. Kort titel en aanvang

Hierdie regulasies word die Regulasies oor Finansiële Vergoedingsprosedures vir die Sutherland Sentrale Astronomievoordeelgebied, 2017, genoem, en sal in werking tree op 'n datum om deur die Minister bepaal te word deur middel van 'n kennisgewing in die Staatskoerant.

EXPLANATORY MEMORANDUM ON THE PROPOSED PROTECTION REGULATIONS AND PROHIBITION OF CERTAIN MINING ACTIVITIES WITHIN THE SUTHERLAND CENTRAL ASTRONOMY ADVANTAGE AREA

VERDUIDELIKENDE MEMORANDUM OOR DIE VOORGESTELDE BESKERMING REGULASIES EN VERBOD OP SEKERE MYNBOU AKTIWITEITE BINNE DIE SUTHERLAND SENTRALE ASTRONOMIEVOORDEELGEBIED

Nothing in this document will negate anything prescribed in the Regulations.

Niks vervat in die dokument sal enige iets in die Regulasies voorgeskryf, negeer nie.

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1. Introduction - Inleiding

- 1.1. The purpose of this explanatory memorandum is to provide additional information, a description of the protection measures to be applied within the declared Sutherland Central Astronomy Advantage Area (AAA) and a summary of the proposed Regulations.

Die doel van hierdie verduidelikende memorandum is om bykomende inligting te verskaf, 'n beskrywing van die beskermingsmaatreëls om binne die verklaarde Sutherland Sentrale Astronomievoordeelgebied (AVG) toegepas te word, en 'n opsomming van die voorgestelde regulasies.

- 1.2. The Sutherland Central AAA was declared on 12 March 2014 after the conclusion of the prescribed public consultation and the consideration of all the representations made in the public consultation.

Die Sutherland Sentrale AVG is verklaar op 12 Maart 2014 na afhandeling van die voorgeskrewe openbare konsultasieproses en die oorweging van al die vertoë gemaak in die openbare raadpleging.

- 1.3. A map of the declared area is available on page 7 of this document
'n Kaart van die verklaarde gebied is beskikbaar op bladsy 7 van die dokument.

2. Optical astronomy and Sutherland – Optiese astronomie en Sutherland

- 2.1. Astronomers use telescopes to study extremely distant and faint cosmic objects. The light from some of the most distant astronomical objects observed by astronomers is so ancient that it had already completed more than half its journey towards us by the time the Earth started to form 4.5 billion years ago. To study such faint sources, astronomers build their telescopes in the darkest and clearest places that they can find on Earth.

Sterrekundiges gebruik teleskope om buitengewoon ver en dowwe kosmiese voorwerpe te bestudeer. Die lig van sekere van die verste astronomiese voorwerpe is so oud dat dit alreeds die helfte van hulle reis na ons toe voltooi het teen die tyd dat die aarde begin vorm aanneem het 4.5 miljard jare gelede. Om sulke dowwe bronne te bestudeer, bou sterrekundiges hulle teleskope in die donkerste en helderste plekke wat hulle op die Aarde kan vind.

- 2.2. South Africa has some of the best sites for astronomy in the world. This is why a number of countries have made major investments in various scientific facilities at the South African Astronomical Observatory (SAAO) at Sutherland, in the Northern Cape Province. The Southern African Large Telescope (SALT), the largest single optical telescope in the southern hemisphere, is one of those facilities at SAAO at Sutherland. It is operated by South Africa on behalf of its partner institutions from Germany, India, New Zealand, Poland, the United Kingdom and the United States. The Sutherland site also hosts a variety of smaller South African and international telescopes and several facilities for geophysical research.

Suid-Afrika het van die beste terreine vir astronomie in die wêreld. Dit is waarom verskeie lande groot beleggings gemaak het in verskeie wetenskaplike fasiliteite by die Suid-Afrikaanse Sterrewag (SAAO) in Sutherland, in die Noord-Kaap Provinsie. Die Suid-Afrikaanse Groot Teleskoop (SALT), die grootste enkele optiese teleskoop in die suidelike halfrond, is een van die fasiliteite by SAAO in Sutherland. Dit word bedryf deur Suid-Afrika namens sy vennootinstitute van Duitsland, Indië, Nieu-Seeland, Pole, die Verenigde Koninkryk and die Verenigde State van Amerika. Die Sutherland terrein huisves ook verskeie kleiner Suid-Afrikaanse en internasionale teleskope en verskeie fasiliteite vir geofisiese navorsing.

- 2.3. All these major investments in scientific infrastructure at Sutherland were made because Sutherland is an excellent location for ground-based optical and infrared astronomy. Since the observatory commenced operation in 1972, several key scientific discoveries of international impact have been made possible because of the darkness, clarity and stability of the skies over Sutherland. The level of natural seismic activity at Sutherland is also among the lowest in the world. This has attracted several geophysical facilities to the site. In 1998, free oscillations in the solid Earth, caused

by the motion of the atmosphere, were discovered based on data collected at Sutherland.

Hierdie groot beleggings in wetenskaplike-infrastruktuur te Sutherland is gemaak omdat Sutherland 'n uitstekende ligging vir terrestriële optiese- en infrarooi-astronomie is. Sedert die sterrewag met sy bedrywighede in 1972 begin het, is verskeie kern belangrike wetenskaplike ontdekkings, met internasionale impak, gemaak as gevolg van die donkerte, helderheid en stabiliteit van die lug bokant Sutherland. Die vlak van natuurlike seismiese aktiwiteit is ook van die laagste in die wêreld. Dit het verskeie geofisiese fasiliteite na Sutherland gelok. In 1998, is vrye ossillasies in die soliede aarde, wat deur die beweging van die atmosfeer veroorsaak word, ontdek, gebaseer op data verkry by Sutherland.

- 2.4. These qualities of Sutherland, and the Northern Cape Province in general, as an excellent region for astronomy and related scientific endeavours, have attracted SALT and the SKA to South Africa. Such mega-science projects result in direct investment in the Northern Cape, as well as technology and skills transfer to South Africa, placing the country firmly among the leading astronomical nations in the world.

Hierdie kwaliteite van Sutherland, en die Noordkaap Provinsie in die algemeen, as 'n uitstekende streek vir astronomie en verwante wetenskaplike ondernemings, het SALT en SKA na Suid-Afrika gelok. Sulke mega-wetenskaplike projekte, het direkte investering in die Noordkaap tot gevolg, sowel as die oordrag van tegnologie en vaardighede na Suid-Afrika, om so dié land stewig as een van die voorste astronomie nasies in die wêreld te plaas.

3. Astronomy Geographic Advantage Act and protection of astronomy - Wet op Geografiese Astronomievoordeel en die beskerming van astronomie

- 3.1. The astronomy advantage and the scientific qualities of Sutherland and the Northern Cape Province can be regarded as a limited natural resource, to be carefully used and protected for future generations. In recognition of this, the South African government has established a series of measures to safeguard this resource.

Die astronomievoordeel en die wetenskaplike kwaliteite van Sutherland en die Noordkaap Provinsie kan gesien word as 'n beperkte natuurlike hulpbron wat versigtig gebruik en bewaar moet word vir die toekomstige geslagte. In erkenning hiervan, het die Suid-Afrikaanse regering 'n reeks van maatreëls gevestig om dié hulpbron te beskerm.

- 3.2. The scientific qualities to be protected for optical astronomy and related scientific endeavours include:
- (a) the very dark night skies that may be detrimentally affected by artificial outdoor lighting;
 - (b) the low air pollution levels that may be detrimentally affected by dust or smoke; and
 - (c) the low level of seismic activity that may be detrimentally affected by tremors caused by certain mining activities, fracking or wind turbines.

Die wetenskaplike kwaliteite om vir optiese astronomie en verwante wetenskaplike ondernemings beskerm te word, sluit in:

- (a) die baie donker naglug wat nadelig deur kunsmatige buitenshuise beligting beïnvloed mag word;*
- (b) die lae lugbesoedelvlakke wat nadelig deur stof of rook beïnvloed mag word; en*
- (c) die lae seismiese aktiwiteitsvlakke wat nadelig beïnvloed mag word deur aardskuddings veroorsaak deur sekere mynaktiwiteite, kraking en wind turbines.*

- 3.3. Protection measures have been codified in the Astronomy Geographic Advantage Act, 2007 (Act No. 21 of 2007). This Act makes provision, *inter alia*, for the identification and protection of areas in which astronomical projects of national strategic importance are undertaken. These areas are defined in the Act as astronomy advantage areas. The Astronomy Geographic Advantage Act, 2007 further defines the term "astronomy advantage" to mean "features which make an area suitable for astronomy and related scientific endeavours, and includes high atmospheric transparency, low levels of light and air pollution, low population density and minimal radio frequency interference", and requires that these areas are "protected, preserved and properly maintained".

Beskerming maatreëls is vervat in die Wet op Geografiese Astronomievooroordeel, 2007 (Wet No. 21 van 2007). Die Wet maak onder andere voorsiening vir die identifikasie en bewaring van areas waarbinne astronomie projekte van nasionale strategiese belang onderneem word. Hierdie streke word in die Wet gedefinieer as astronomievooroordeelgebiede. Die Wet op Geografiese Astronomievooroordeel definieer verder die term "astronomievooroordeel" as "kenmerke wat streke geskik maak vir astronomie en verwante wetenskaplike ondernemings en sluit in hoë atmosferiese deursigtigheid, lae vlakke van lig- en stofbesoedeling, lae bevolkingsdigtheid en minimale radiofrekwensie steuring" en vereis dat dié areas "beskerm, bewaar en behoorlik onderhou word".

- 3.4. A circular area with a three-kilometre radius around the Southern African Large Telescope (SALT) has been declared as the **Sutherland Core Astronomy Advantage Area** in terms of section 7 of the Astronomy Geographic Advantage Act, 2007. Regulations to prohibit and restrict activities conducted within this area, that might detrimentally impact on the astronomy observations, were promulgated in 2013.

*'n Sirkelvormige gebied, met 'n drie kilometer straal rondom die Suid-Afrikaanse Groot Teleskoop (SALT), is verklaar as die **Sutherland Kern Astronomievooroordeelgebied** kragtens artikel 7 van die Wet op Geografiese Astronomievooroordeel. Regulasies is in 2013 uitgevaardig om aktiwiteite wat binne die area uitgevoer word en astronomie waarnemings nadelig mag beïnvloed, te verbied en te beperk.*

- 3.5. Activities outside the three-kilometre radius of the **Sutherland Core Astronomy Advantage Area**, may have a detrimental impact on the astronomy conducted within the Core Area. Therefore, the area beyond the three-kilometre radius, up to a 75-kilometre radius, within the Northern Cape Province, was declared in terms of section 9 of the Astronomy Geographic Advantage Act, 2007 as the **Sutherland Central Astronomy Advantage Area** in 2014. The draft regulations that are the subject of

this public consultation are required to prevent certain activities being or to be conducted within the Central Area from having a detrimental impact on the astronomy conducted within the Core Area.

Aktiwiteite buite die drie kilometer straal van die Sutherland Kern Astronomievoordeelgebied mag 'n nadelige invloed hê op die astronomie wat binne die Kerngebied uitgevoer word. Daarom is die gebied buite die drie kilometer straal tot op 'n 75-kilometer straal, binne die Noordkaap, kragtens artikel 9 van die Wet as die Sutherland Sentrale Astronomievoordeelgebied verklaar in 2014. Die konsepregulasies, wat die onderwerp van hierdie openbare konsultasie is, is nodig om te voorkom dat sekere aktiwiteite wat binne die Sentrale Area uitgevoer word of uitgevoer mag word, 'n nadelige impak het op die astronomie wat binne die Kernarea uitgevoer word.

4. Summary of the protection measures in the proposed Regulations and the declaration of the prohibition on certain mining activities - Opsomming van die beskermingsmaatreëls in die voorgestelde Regulasies en die verklaring van die verbod op sekere mynbou aktiwiteite

The proposed regulations for the protection measures to be applied within the Sutherland Central Astronomy Advantage Area are included in Schedule 1 of the draft Regulations and are summarised in the following sub-items.

Die voorgestelde regulasies vir die beskermingsmaatreëls om binne die Sutherland Sentrale Astronomievoordeelgebied toegepas te word, is ingesluit in Skedule 1 van die konsep Regulasies en word in die subitems hieronder opgesom.

4.1. The existing average moonless night sky brightness and the natural atmospheric extinction values, within the Sutherland Core Astronomy Advantage Area, that needs to be protected, are defined respectively in sub-regulations 3(2) and 3(3) in Schedule 1 of the draft regulations. Activities within the Central area that may detrimentally affect the existing night sky brightness and atmospheric extinction values are to be restricted. Existing activities that detrimentally affect the values must be restricted within one year of the regulations being promulgated.

Die bestaande gemiddelde maanlosenaghemelhelderheid en die natuurlike atmosferiese uitdowingswaardes, binne die Sutherland Kern Astronomievoordeelgebied, wat beskerm moet word, word onderskeidelik gedefinieer in sub-regulasies 3(2) en 3(3) in Skedule 1 van die konsep regulasies. Aktiwiteite binne die Sentrale area, wat die huidige naghemelhelderheid en atmosferiese uitdowingswaardes nadelig mag beïnvloed, moet beperk word. Bestaande aktiwiteite wat die gedefinieerde waardes nadelig beïnvloed, moet binne een jaar na die uitvaardiging van die regulasies beperk word.

4.2. Lighting activities within the Sutherland Central Astronomy Advantage Area may not adversely affect the defined brightness level in the Core Area. Indoor lighting is exempted but spillage to the outside that may affect the sky brightness within the Core Area is not allowed. All types of outdoor lighting must conform with the specifications in the regulations and existing outdoor lighting must be converted within one year after the regulations are promulgated.

Beligtingsaktiwiteite binne die Sutherland Sentrale Astronomievoordeelgebied mag nie die gedefinieerde helderheidsvlak binne die Kernarea nadelig beïnvloed nie. Binnenshuise beligting is vrygestel, maar uitstraling na buite wat die naglughelderheid binne die Kernarea affekteer, word nie toegelaat nie. Alle soorte buitenshuise beligting moet voldoen aan die spesifikasies in die regulasies en bestaande buitenshuise beligting moet binne een jaar nadat die regulasies uitgevaardig is, verander word.

- 4.3. Any activity that may involve any earth works creating dust within the Sutherland Central Astronomy Advantage Area must submit an application to the management authority prior to commencing the activity.

Enige aktiwiteit wat enige grondwerk met die veroorsaking van stof behels binne die Sutherland Sentrale Astronomievoordeelgebied, moet voordat die grondwerk n aanvang neem, 'n aansoek aan die bestuursgesag rig.

- 4.4. Wind turbines with a capacity of more than 100 kVA may not be operated within 20 km of the centre of the Core Area. Aviation lighting must comply with protection measures prescribed by the Civil Aviation Authority (CAA) to prevent light pollution within the Core Area. Pilot activated aviation lighting must be used. Any area lighting must comply with the relevant regulations in Schedule 1.

Windturbines met 'n kapasiteit van meer as 100 kVA mag nie binne 20 km vanaf die middelpunt van die Kernarea AVG bedryf word nie. Lugvaartbeligting moet voldoen aan die beskermingsmaatreëls wat deur die Burgerlugvaartowerheid (CAA) voorgeskryf is om ligbesoedeling in die Kernarea te voorkom. Lugvaartbeligting wat deur die loods geaktiveer word, moet gebruik word. Enige terreinbeligting moet aan die betrokke regulasies in Skedule 1 voldoen.

- 4.5. Assessment of light pollution may be arranged by the management authority to be carried when new lighting sources are observed. If the defined sky brightness levels are exceeded, the source must be addressed.

Beoordeling van ligbesoedeling mag deur die bestuursgesag gereël word wanneer nuwe beligtingsbronne waargeneem word. Indien die gedefinieerde helderheidsvlakke oorskry word, moet die bron aangespreek word.

5. Financial compensation – Finansiële vergoeding

Schedule 2 of the Regulations gives effect to section 23(3)(a) of the Astronomy Geographic Advantage Act, 2007, which provides for financial compensation where an activity that was lawfully conducted immediately before the promulgation of the Schedule 1 Regulations is restricted or terminated in order to comply with the regulations. The regulations prescribe:

- (a) the requirements for an application for financial compensation;
- (b) the procedures and criteria for the processing of financial compensation applications;
- (c) the criteria for decisions to be made by the Minister on financial compensation applications; and
- (d) the criteria for acceptance of offers for financial compensation.

Skedule 2 van die Regulasies gee uitvoering aan artikel 23(3)(a) van die Wet op Geografiese Astronomievoordeel, 2007, wat voorsiening maak vir finansiële vergoeding in die geval dat 'n aktiviteit wat wettig uitgevoer is, onmiddellik voordat die Skedule 1 Regulasies uitgevaardig is, beperk word of opgeskort word om aan die regulasies te voldoen. Die regulasies skryf voor:

- (a) die benodighede vir 'n aansoek om finansiële vergoeding;*
- (b) die prosedures en kriteria vir die verwerking van finansiële vergoedingsaansoeke;*
- (c) die kriteria vir besluite om deur die Minister geneem te word oor finansiële vergoedingsaansoeke; en*
- (d) die kriteria vir die aanvaarding van aanbiedinge vir finansiële vergoeding.*

6. Further information – Verdere inligting

For further information about the Astronomy Geographic Advantage Act, 2007 or the protection measures to be applied within the Sutherland Central Astronomy Advantage Area, please contact:

Vir verdere inligting rakende die Wet op Geografiese Astronomievoordeel of die beskermingsmaatreëls om binne die Sutherland Sentrale Astronomievoordeelgebied toegepas te word, kontak asseblief:

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7. Map of the Sutherland Central AAA - Kaart van Sutherland Sentrale AVG