

3

World class science is possible with MeerKAT

4

Feedback from SKA SA experts

5-15

SKA SA answers your questions

16

Let the children shine

Please note that the information contained in this newsletter has been updated at the time of going to print, because of some of the information changing since the public information sessions were held.

#3 / 2016

SKA SA extends a hand of cooperation

SKA South Africa is committed to five focus areas in the communities surrounding the SKA site on an ongoing basis: investing in the youth, supporting community upliftment programmes, developing small to medium enterprises, nurturing learners' talent; and ensuring that communication connectivity is not compromised.

In order to explain this strategy, SKA South Africa had a number of useful interactive sessions with the communities of Carnarvon, Williston, Brandvlei and Van Wyksvlei during the month of May 2016. The aim of these public sessions was for us to listen to the communities and to respond to their interventions in a mutually beneficial manner.

We made presentations on areas where concerns have been raised and invited open discussion and questions from participants. We also briefed the attendees on the state of progress on the SKA project. SKA SA reiterated to the communities that we will be sharing their part of the Karoo with them for the foreseeable future and that we need to work together to optimise the project for the benefit of all parties, namely the region, the nation and the scientists.





I would like to summarise the commitments made during these public meetings on the main issues of concern raised by community members:

- Effort will be made to ensure that all communication is in simple language and understandable to everyone.
- Some participants felt that insufficient attention was being given to their town or district. SKA SA undertakes to do everything we can to improve and develop the area to the benefit of all. However, this is going to take time.
- We will investigate any matter brought to our attention regarding damage and/or mismanagement by our contractors and their subcontractors allegedly committed by them in the execution of their contracts.
- SKA SA undertakes to establish an open conversation with the community regarding any issues that may be pertinent.

SKA SA is more than ready to play its part regarding corporate social investment in the Kareeberg region, bearing in mind that we are not funded or mandated to play the role of national or provincial government departments, such as Health, Public Works and Transport.

In this issue, your questions on issues of land, education, social development, job creation, connectivity, infrastructure and economic development are addressed by SKA SA experts. General concerns raised are also addressed.

We also give you an update on the MeerKAT project, which has now reached an important milestone,

“ SKA SA reiterated to the communities that we will be sharing their part of the Karoo with them for the foreseeable future and that we need to work together to optimise the project for the benefit of all parties, namely the region, the nation and the scientists. ”



namely Array Release 1 (AR1), which was announced by the Minister of Science and Technology, Naledi Pandor. On 16 July 2016, Minister Pandor and a delegation of 21 Deputy Ministers and members of the Presidential Infrastructure Coordinating Committee (PICC) visited the SKA site outside Carnarvon.

AR1 consists of 16 antennas configured to form a working telescope. Through AR1, MeerKAT has showed its potential to join the ranks of the world's foremost scientific instruments. The results obtained thus far show that the 16-dish AR1 is already the best radio telescope of

its kind in the Southern Hemisphere. When the full complement of 64 dishes is integrated by the end of 2017, MeerKAT will indeed be the world's most powerful radio telescope.

In this issue you can also read more about our latest science outreach activities in the Northern Cape. The public understanding of science is one of SKA SA's key areas of community activity.

SKA SA is committed to being a responsible and caring member of the Karoo community.

Dr Rob Adam
Managing Director, SKA SA

MeerKAT AR1: “World class science is possible”

The Minister of Science and Technology, Naledi Pandor, made the announcement on 16 July 2016 that the MeerKAT telescope reached an important milestone.



Naledi Pandor, Minister of Science and Technology, and Dr Rob Adam, SKA SA Managing Director, together with the delegation which includes Deputy Ministers and members of the Presidential Infrastructure Coordination Committee visiting the SKA site on 16 July 2016.

Minister Pandor visited the SKA site together with 21 Deputy Ministers and several members of the Presidential Infrastructure Coordinating Committee (PICC) to see the progress on the MeerKAT radio telescope.

It was also an opportunity to announce that the first 16 antennas of the eventual 64 which will comprise the MeerKAT radio telescope, is ready to do science research.

The first image of the Universe which was taken with MeerKAT was also announced, which shows that the telescope can now be counted among the best science instruments in the world.

“The MeerKAT project, in which we have already invested R3.5 billion, is one of 18 mega infrastructure projects. Infrastructure plays a critical role in realising our aim of job creation and stimulate economic growth,” says Minister Pandor.

“The SKA project is one of two mega projects which falls under the PICC, named ‘strategic knowledge integrated projects.’ We are also here to show the world which science is possible with MeerKAT 16,” Minister Pandor added.

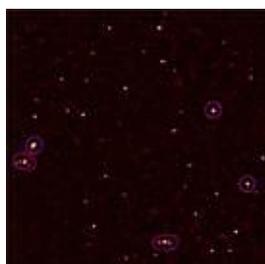
The first images which were taken by MeerKAT of the Universe show more than 1300 galaxies compared to 70 known in this location prior to MeerKAT. The images were taken in a small part of the sky comprising about 0.01% of the entire celestial sphere.

It is the first scientific milestone of MeerKAT. Upon completion, the 64-antenna array MeerKAT instrument will be integrated in the first phase of SKA where an additional 133 antennas will be constructed.

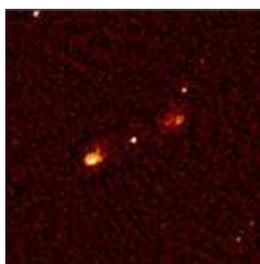
“The announcement of the first results is an important milestone for South Africa. MeerKAT plays a key role in the design and development of technology in South Africa for the SKA. The South African team of more than 200 scientists, engineers and technicians, in cooperation with industry, local and international universities and institutions, designed the technology and systems for MeerKAT,” says Dr Rob Adam, SKA SA Managing Director.



1: MeerKAT First Light image. Each white dot represents the intensity of radio waves recorded with 16 dishes of the MeerKAT telescope in the Karoo (when completed, MeerKAT will consist of 64 dishes and associated systems). More than 1300 individual objects – galaxies in the distant universe – are seen in this image.



2: View showing 10% of the full MeerKAT First Light radio image. More than 200 astronomical radio sources (white dots) are visible in this image, where prior to MeerKAT only five were known (indicated by violet circles). This image spans about the area of the Earth’s moon.



3 : Higher-resolution version of lower-right panel in IMAGE 2. This view, covering about 1% of the full MeerKAT First Light image, shows a “Faranoff-Riley Class 2” (FR2) object: a massive black hole in the distant universe (matter falling into it produces the bright dot at the centre) launching jets of powerful electrons moving at close to the speed of light that emit radio waves detected with MeerKAT’s sharp view of the radio sky (thin lines connecting the central dot to the brighter lobes of radio emission).



4: Montage of MeerKAT First Light radio image and four zoomed-in insets. The two panels to the right show distant galaxies with massive black holes at their centres. At lower left is a galaxy approximately 200 million light years away, where hydrogen gas is being used up to form stars in large numbers.

“Through MeerKAT the country plays a key role in the design and development of technology for the SKA.”

SKA SA cares for the interests of the Northern Cape communities

Between 16 and 19 May 2016, Square Kilometre Array South Africa (SKA SA), together with the Department of Science and Technology, held four public work sessions in Carnarvon, Williston, Brandvlei and Van Wyksvlei.

During the sessions, presentations were made to provide information about the latest developments regarding the SKA project, the land acquisitions programme and the strategic environmental impact assessment.

Presentations were made by Alice Pienaar-Marais, SKA SA Manager: Land and Institutional Management; Selaelo Matlhane, Manager: SKA Spectrum and telecommunications; and Dr Adrian Tiplady, SKA SA Head: Strategy and Business Processes.

Pienaar-Marais' presentation showed that the total area affected by the acquisitions by SKA, comprises 36 properties totalling 117 968 hectares. Of these, the smallest property is 264 hectares, the largest 8731 hectares and the average size is 3276 hectares. The SKA project needs in total 132 000 hectares to build the project. So far SKA SA has already acquired 46 430 hectares (which includes Meysdam and Losberg) and a further 10 360 hectares have been acquired through servitude agreements.

The servitude agreements illustrate SKA's attempts to explore all avenues for land optimisation.

Pienaar-Marais explained that the five steps involved to finalise the Land Acquisition Process are:

1. Notice given to affected land owners;
2. Commencement of property valuations and environment impact studies;
3. Making a provisional offer;
4. Negotiation process continues;
5. Final offer to property owner.

Pienaar-Marais reiterated that expropriation will only be considered in extreme cases if all other efforts to come to an agreement with the property owner have been exhausted. Matlhane's presentation was about connectivity, one of the burning issues at the public work sessions.

He emphasised that SKA SA has already provided alternative means of communication, namely the fixed VSAT services that are subsidised by SKA SA. The VSAT services cater specifically for the needs of the farmers and farm worker communities. SKA SA is now in the planning phase of rolling out mobile communication networks to replace (depending on the proximity to the SKA telescopes) or complement existing communication services providers via GSM, or to provide communication services where none currently exist. An open tender process is being followed to ensure that the best available technology is sourced, which is more 'radio astronomy friendly'.

Matlhane also emphasised that SKA SA continues to work closely with communication service providers to find, as soon as possible, a comprehensive solution which will benefit all.

Dr Tiplady expanded on the upgrading of the 80 kilometre stretch of road between the R63 (joining Carnarvon and Williston) and the SKA site and said that the project is 50% complete. NMC Civils were appointed by open tender to construct this road. SKA SA has ensured that a localisation clause is included that ensures that no less than 14% of the overall contract value should include participation from local contractors. By the time that this newsletter was published that amount was already in excess of 20%.

Several local sub-contractors have been appointed by NMC Civils to participate in the construction of the road. They have been further assisted through a unique partnership between SKA SA, NMC Civils and Absa, which was undertaken to provide low-cost financial assistance for bridging finance. The total value of the financial assistance agreement is about R34,5 million.

Training in business skills such as applying for tenders, compiling budgets and cash flow statements, were given to 24 local contractors.

To date, the estimated value of the road project amounts to R226 million. In excess of R30 million of this amount has been allocated to local contractors.

More contracts with a total value of about R9 million will be advertised in the foreseeable future for which SKA SA will invite sub-contractors to apply.

Tiplady also mentioned that at the time of publication 197 job opportunities were created through construction. The road is expected to be completed in early 2017.

“ More contracts with a total value of about R9 million will be advertised in the foreseeable future for which SKA SA will invite sub-contractors to apply. ”

Dr Adrian Tiplady, SKA SA head of strategy and business processes, presents to the community of Brandvlei in the Northern Cape.





1. JOB CREATION AND ECONOMIC DEVELOPMENT

Will the community benefit from job creation out of the project?

Government tenders require that provision be made for local development and job creation. As a mega project undertaken by the South African government, SKA SA is no exception. 197 job opportunities have been created for members of the local communities through construction. The estimated total contract value of the road project is R226 million and in excess of R30 million has been sub-contracted to local businesses. The agreement that SKA SA has managed to establish with Absa to support local contractors with bridging finance, further demonstrates SKA SA's commitment to local economic development.

How many locals will continue working for SKA SA when the telescope is fully operational?

We are currently working on a maintenance and administration plan, as well as a land management plan. Currently there are about 150 local residents employed by SKA SA solely working on maintenance, and we estimate this number to increase to 300 people by 2030. Land management which is intended to serve as mitigation to possible job losses as a result of the land acquisition process, will also allow for local employment opportunities.

Why are only people from Carnarvon appointed as project managers and not better qualified people from Van Wyksvlei? Van Wyksvlei lies within the SKA SA area, Carnarvon not.

All appointments in SKA SA follow human resource policies and procedures as prescribed by the National Research Foundation, an equal opportunities employer. All available posts are advertised. Shortlistings and evaluations are done on the basis of ensuring that the appropriate qualifications and skills are acquired for the relevant positions.

Employment equity committees are in place that ensure transparency, and that demographic quotas are met. All candidates who submitted an application in response to an advertised position are welcome to request information on the appointment

process and can make representation if irregularities can be demonstrated. Van Wyksvlei, Carnarvon, Williston and Brandvlei are included in the declared Karoo Central Astronomy Advantage Area (AAA), as published in the Government Gazette of 12 March 2014.

The community was not consulted during the planning phase. How will the community and businesses benefit from the project if productive/profitable farms do not exist in the area?

The SKA is the largest science infrastructure project in the world. For this reason the SKA SA Managing Director acknowledged that the SKA project will most likely impact the local area and the local economy. However, every effort is being made to ensure economic growth for the region through SKA and that the affected land is optimised. To this effect, SKA SA is partnering with the South African Earth Observation Network (SAEON) to conduct studies that would inform the management of the affected land. It is however not true that SKA will be making use of all the existing productive / profitable land in the area?

SKA SA appointed a stakeholder manager in 2010 and through this position, community forums were established in each of the surrounding towns and with special interest groups in order to maintain an open consultative approach.

The SKA SA Managing Director acknowledged that the character of the community will most likely be influenced by the SKA, however, every effort is being made to ensure economic growth in the region through the SKA. Not all productive and commercially viable agriland in the Karoo is being acquired by SKA.

How do we know that the tenders are for the maintenance contractors? Members of the local communities would like to offer their services for this.

There will be a lot of construction work taking place during the next phases of construction to put infrastructure in place for SKA.

The SKA programme supporting learners is yielding results. The number of matriculants passing with mathematics and science is increasing.



Skills development projects are also yielding positive results.

There is no proof that any Williston residents have been contracted or sub-contracted. Can you tell us who the Williston residents are involved with this project?

We do not have exact numbers of the total participants per town. SKA SA commits to reviewing the information and sharing this at the next information session.

Is it in the public interest to expropriate farms and is it necessary to harm the communities economically?

All possible options are being explored to find a common agreement about the land acquisition. It is not in the interest of SKA to expropriate land, and to date no farms have been expropriated. The project will be active for at least 50 years or longer. More than R34 million has already been spent on involving local construction companies on only one project, which is the upgrade of the road to the SKA site. There will be a lot of construction work taking place during the next phases. In addition, the number of local matriculants passing with mathematics and science is increasing.

The agreement between SKA SA and Absa to provide bridging finance to local contractors will make it easier for local businesses to participate and benefit from the construction of SKA.

There are continuous skills development projects in place from which local communities can benefit. The SKA SA project has already attracted huge investments from international organisations. It also aims to boost the attempts to build a South African knowledge economy.



2. FARMS, FARMING AND FARM WORKERS

What is the plan for local farmworkers who will lose their jobs as soon as the land is sold to SKA SA?

Farmworkers currently in the employ of landowners owning the 36 properties will be provided with the option of being employed by SKA SA if their current employers no longer require their services. Farmworkers employed by SKA SA will be included on the land management programme.

There is a limited amount of land available in the area. What is the plan to meet farm owners halfway who also want to relocate?

The land acquisition process considers quantifiable losses as part of the negotiation process. These losses are assessed on an individual basis and are incorporated into the overall offer.

What is the situation regarding access to family cemeteries on expropriated land?

SKA SA commits itself to maintain all family cemeteries that exist on the land that is being purchased.

How will the relocation and re-employment of farmworkers be handled?

SKA SA is currently working on a land management strategy which will include the affected farmworkers.

SKA SA has indicated that the conditions will not allow for farming. Could the situation not be explained to farmworkers so that they can decide for themselves whether they would like to go ahead with farming under these conditions? Maybe this could be a starting point for negotiations?

These opportunities have been made available to existing farm owners. Of the 11 properties already purchased, four of the owners of the properties have concluded alternate agreements in the form of servitudes. Each farm is assessed on an individual basis in order to establish if an alternative arrangement can be entered into with the landowner.

Once SKA SA has purchased the land, a land optimisation process will be instituted to consider possibilities for even further alternate arrangements with potential farmers to utilise the land. SKA SA will however need to maintain control of the land in order to ensure that the radio frequency interference is properly managed so that the radio telescopes are not disturbed in their function.

SKA SA purchased land, specifically sheep farms, in the Beaufort West area for the establishment of national parks. Why did those farmers sell so quickly and willingly? Is it because they could no longer

control the influx of predators in the area which hold a threat for their cattle?

SKA SA did not buy any property in the Beaufort West area. The land needed for the SKA amounts to approximately 132 000 hectares. SKA SA is partnering with the South African Earth Observation Network (SAEON) to conduct studies that would inform the management of the land. As an international flagship science project it is a key requirement that SKA demonstrates informed and responsible management of the terrestrial infrastructure on which SKA is being built.

SAEON is tasked to provide long-term ecological observation to inform climate and land use change science in South Africa. Results from these studies will assist SKA SA to manage the SKA site according to best-practice environmental principles and make decisions on ecological changes or problems at the site as they occur.

Potential issues include alien plant control, herbivore and predator management and associated changes in veld conditions. These problems will require baseline data to establish a status quo against which changes and the results of management actions can be measured.

It is being alleged that a “right of admission” document will have to be signed by landowners, which will grant SKA SA access to the servitudes. Does this give lifelong access to anyone at SKA SA? How will SKA SA manage the right of admission issue without compromising the safety of the landowner in terms of gates, etc.?

Each person who will have access to the servitudes will need to provide identification and explain the purpose of their accessing the servitude area.

Is the project limited to two phases or will there be more? In other words, which limitations are there on expansion in the area?

The SKA project will be made up of only two phases. The current land acquisition process will cater for the core area on which the entire SKA will be built.

Were sufficient studies conducted to determine if stargazing and farming can co-exist? Is it in the public interest to continue with the project?

Four of the 11 properties which have entered into contracts with SKA SA have agreed upon alternative options. The results of radio frequency testing on these four properties allowed for servitude agreements to be entered with these land owners.

SKA SA is committed to developing these communities and providing business knowledge economy of South Africa through the stimulation of the high tech sector of the economy. The socio-economic circumstances of the communities living close to the site are a key concern of the SKA SA management team.

We are committed to developing these communities and providing business opportunities to small businesses in the area where such activities are aligned with our business. This is demonstrated by the collaboration, initiated by SKA SA, between Absa, our civil construction contractor NMC and SKA SA, which provides companies from the local towns surrounding the SKA site with access to bridging finance to assist their participation in the construction of the road to site. The long-term strategic intention is to assist local companies to be ready for participation in the construction of the first phase of the SKA.

However, SKA SA has focussed on developing skills and opportunities for

young people from Carnarvon and the surrounding towns, as part of the SKA SA Human Capital Development programme. Some of the results are as follows:

Since 2011 SKA SA has awarded 105 student bursaries for learners from surrounding towns to attend Carnarvon High School. Carnarvon High School is the only high school in the area offering mathematics and science. SKA SA has provided qualified teachers in these subjects. Five of these students achieved matric exemptions in mathematics and science in 2015, a first for Carnarvon High School, and have been sponsored by SKA SA to study physics and computer science at university.

SKA SA has awarded 56 bursaries for artisans and many bursaries for technician training for young people from the Karoo. Seven of these young people has completed or are completing their training at the Losberg site, 90 kilometres outside Carnarvon, and will work as electricians, diesel mechanics, fitters and turners, and in instrumentation and control at SKA SA.

SKA SA has employed many local people in the Carnarvon area, including four young interns after they received training in optical fibre technology.

So far, SKA SA has spent more than R2.5 million on laptops, training and connectivity, with 366 new computers with state-of-the-art software being donated to schools and the library in Carnarvon.

Big Data is seen as the area with the largest potential for wider benefit from SA's involvement in the MeerKAT and SKA. The Inter-University Centre for Data Intensive Astrophysics (IDIA) has been established at the University of Cape Town, the University of the Western Cape and North-West University; and Sol Plaatje University has been invited to become an associate member. This is to focus on enabling South African scientists to be globally competitive in this new era of data intensive research. An initial area of focus will be on providing support for the MeerKAT large survey projects.

If a map was published in October 2015, then where can it be accessed?

A map was published in October 2015 which showed the farms and owners in the affected areas. The map is available at www.ska.ac.za/about/location. The number of affected farms has been decreased from 150 to 70 following a process conducted to reduce potential impact as far as possible. The owners were contacted in order for all the information to be available to the individuals, including the manner in which they are affected. All options are being considered. The information



will also be available at the AFGRI offices.

How does the project affect workers in related industries, for example sheep slaughtering?

There are currently studies being conducted to work together with businesses and find a solution for this particular issue.

Can farm workers claim compensation if a farm is being sold?

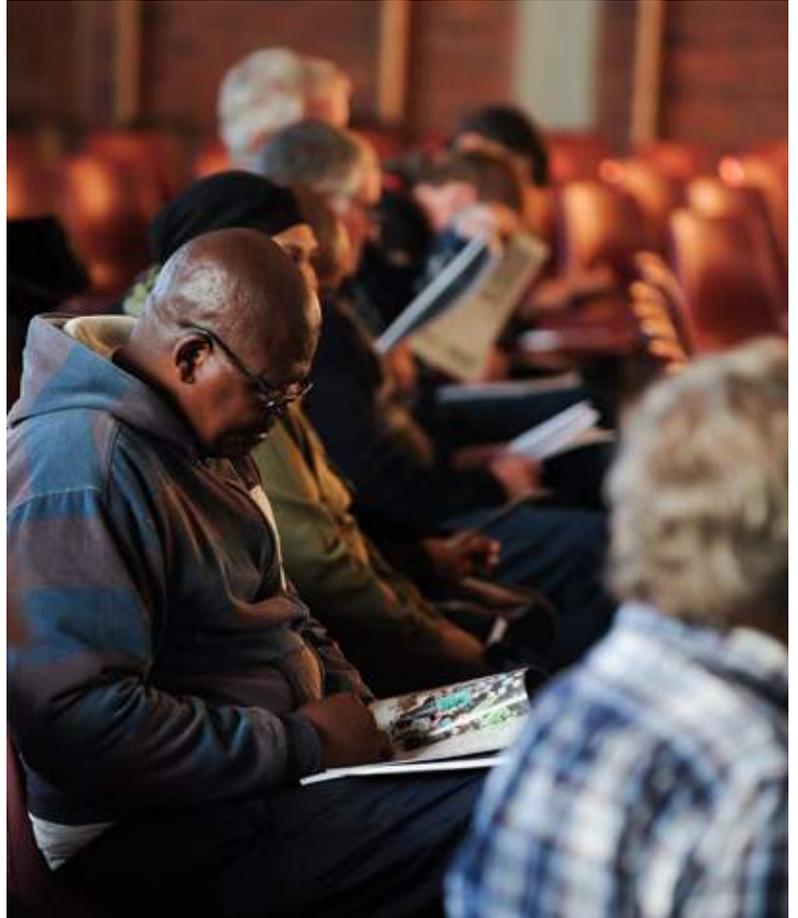
Every case will be assessed on merit and there are plans to include the farm workers in the compensation packages. The decision will lie with the farm workers on whether they would like to stay with their current employer or want to relocate.

What is being done to protect the wild animals in the area?

We are currently conducting a strategic environmental assessment in cooperation with the Council for Scientific and Industrial Research (CSIR). Very little information is available and it is thus a good opportunity for expanding research in this area. There are plans underway to study, manage and develop the area.



3. INFRASTRUCTURE



Can all the information about the spiral arms now be made public?

The amount of spiral arms have been decreased from five to three because of advanced technology and to save costs. It has also improved the performance of the telescope. SKA SA will ensure that more information on the spiral arms be made available as soon as we have access to such information.

What is phase 2?

The final detailed designs are not available yet, only a concept document is available. SKA SA will ensure that more information about the spiral arms is made available as soon as we have it.

Will more antennas be erected later, where there are now only a few planned?

The design of the spiral arms could

possibly increase the number of antennas, but it will not be excessive and a significant majority will be located within the land already purchased.

Very little information has been made public about the servitudes in the Vosburg area. The information will be made public.

How long will the temporary offices be used for?

The antennas will be in use from June 2017, but the plan is to move the electronic equipment which could interfere with the signals, from March 2017.

A road and an airfield is being built and farmhouses are being converted into offices. Question is: with this happening, will the farm owners who continue as normal have an impact on the SKA signals?

The airfield is being used during the construction phase. As soon as the project is up and running, the airfield will only be used as an emergency facility. The houses that were converted into offices is a temporary measure and will be evacuated as soon as the project is up and running. The road provides access to the SKA site, therefore there will not be a lot of traffic on the road and poses a minimal risk to the signal.

Please explain why it is necessary to remove existing infrastructure in certain areas?

Where there is electrical or similar installations close to or in the core of the site, it poses a high risk of damage to the antennas and receivers. For this reason it has to be removed. If a structure does not pose a risk it will be preserved, but if it does it will be removed. If there is interference close to any installation,

the farmowner will be consulted in the process.

Was the decision taken not to erect fences around the SKA site because of a real problem or to save costs? Will the required size remain at 130 000 hectares or will it eventually expand? Is this the reason why electric fencing has not been erected?

The project will comprise of 132 000 hectares of land to accommodate the entire core area but there will be additional servitudes to cater for the spiral arms. Electric fencing produces radio frequency interference. Boundary fencing around the astronomy reserve will be in place.

We understand that there will be flight restrictions over and around the area. How will these restrictions affect Carnarvon, Van Wyksvlei and other centres around the area?

All Safety-of-Life services, of which aviation communication is one, will not be affected by the SKA. We are engaging with the aviation sector to develop a protection plan that is appropriate for both aviation and the SKA.

Will airspace be closed and will it be regulated when aircraft need to land and take off in the area?

There are currently no regulations that are intended to affect aviation, and consultations are continuing with all relevant parties to find solutions to all the problems. Commercial flights at high altitudes will not be affected at all.

Why was the world told that the area is radio silent, not economically significant and that it is a desert in the initial bid?

SKA is not seeking radio silence since this terminology would imply the complete disconnection of all cellphone signals and other signals occupying the bandwidth. Through the Astronomy Geographic Advantage Act, SKA is seeking radio protection which would imply aspects of the bandwidth being made available in an optimised manner for radio astronomy whilst ensuring accommodation of other service requirements in the region.

The term 'radio quiet' is a well understood term within the radio astronomy community, and at the International Telecommunications Union.

It is meant to describe an area that is protected for the purposes of radio astronomy observations.

What made the Karoo more favourable than Australia?

A number of technical studies and assessments were made prior to determining the most favourable area to host the SKA. Both Australia and South Africa have been appointed as co-location sites for the hosting of the SKA. Radio frequency interference, the scientific qualities of the respective sites, and the technical solutions and construction costs were among the main considerations for the decision.

Are the residents of Fraserburg also affected and will it expand to Sutherland?

Information is available on the SKA SA website at www.ska.ac.za/about/location listing the areas affected by the land acquisition process. Information is also available on the structure of the spiral arms and the areas affected by it.

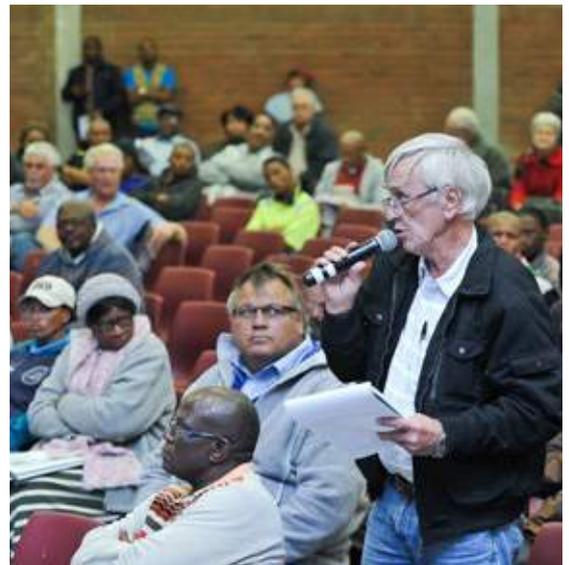
What happens with the main roads between Carnarvon and Williston; and Carnarvon and Brandvlei?

The routes will not be closed, however, the parts of the road that are located on SKA property will be monitored using access control.





4. LAND ACQUISITION PROCESS



The information that was originally shared stated that only between two and four farms will need to be acquired and that the rest of the land required will be done so on a servitude basis. However, current information is pointing towards forced removals. Is this correct and will SKA be transparent about the expropriation process?

The SKA SA project manager shared information to the best of his knowledge in 2011. It has emerged, as the project progressed, that the 132 000 hectares that is currently being mentioned, is the only land that will be needed. Any additional land will be acquired on a servitude basis. SKA needs land in Botswana, Namibia and

other African countries for phase two, but will not need more land than the additional servitudes in the Karoo.

Can the buyout of farms not be converted to servitudes rather?

Because of the density of the stations in the core of the site as determined by extensive research on the optimal configuration of the stations, it has been determined that any farming activity close to the core will be detrimental to the performance of the telescope. As one moves away from the core, the stations are situated farther apart and therefore the risk is less than at the high density core. In these cases, servitudes are sufficient.

When will predator control come into effect?

A date will be determined to which SKA will comply.

Who will be responsible for tax involved in sale of land, equipment and livestock?

An information session was held for affected farmers which was attended by 20 people. VAT is included in the value that is offered. The same applies for duties not covered by VAT and other tax. Removal cost is also included.

Are you sure that the forced sale of land will be proven in the Constitutional Court since it is an international endeavour that may not be in the public interest of the local population?

SKA has had legal counsel on the matter and was ensured that it will.

“ SKA is a strategic process in order to grow a knowledge economy in South Africa. This is critical for the economic growth of South Africa, as there is a need to move away from a resources based economy, for example gold, diamonds and platinum, which will run out. The SKA will also attract significant foreign direct investment, and enhance South Africa's reputation as a destination for investment in high technology industry and enterprise. ”



What is the implication where there is a historical land claim on farms that are being acquired by SKA? Will any claimants also benefit financially or will they miss out as a result of the project?

Provision is made for land claims where compensation will be paid to successful claimants. SKA considered all historical land claims that were lodged in selecting the original site.

Who is expropriating the land - SKA or the government?

The government will own the land but SKA will use and maintain the land.

Please explain the reason for expropriation in terms of the constitutional reasons namely: strategic, economic or land claims?

It is strategic. SKA is a strategic process in order to grow and develop a knowledge economy in South Africa. This is critical for economic growth of South Africa, as there is a need to move away from a resource based economy, for example gold, diamonds and platinum, which will run out. The SKA will also attract significant foreign direct investment, and enhance South Africa's reputation as a destination for investment in high technology industry and enterprise.





5. CONNECTIVITY

Promises have been made that the community will get access to fibre internet and also telephones. Is this still to be implemented?

As part of our ongoing plans SKA SA is continuously investigating technology solutions that would enhance and facilitate communication. We are also in the process of finding mobile solutions that will work outside the critical frequencies in which the telescope will operate. We hope to have that network installed and operational within the next two years.

Why are you not using the existing cellphone towers?

New towers need to be erected outside of the range where they will interfere with the telescope. Research is still being conducted regarding the best way to do this.

Will those cellphones be able to offer WhatsApp and access to the internet?

The requirements we asked for was for voice and data solutions. Infrastructure will be available before the end of the year.

How long are the regulations going to be in place?

Depending on the assessments, regulations can be amended at any time.

Will we need a normal cellphone as well as the phones you provide?

SKA SA will offer fully subsidised phones to the community.

Will we keep up with updated technology or will we still sit with the same phones in 20 years' time?

We will ensure that the network keeps up with updated technology.

Will our existing cellphone access be cut off first before we are provided with the SKA phones or will we receive the new phones before the existing coverage is cut off?

Definitely the second option. No one will be left without communication at any time.

Will we have cheap call rates?

The requirements in the tender specifications demand affordable rates for everyone. Part of the subsidisation made available by the SKA was to ensure that operational costs are affordable to everyone.

Please ensure that the mobile signal is not jeopardised in the Vosburg area. Will there also be a communication network set up at Vosburg?

We are currently consulting with service providers about the loss of signal. It is not as a result of SKA activities in the area. The six stations that are planned should also cover Vosburg.

When applying for the access box, proof of income was required, why is that?

The digital television migration process is a national programme, run by the Department of Communications. As part of the national programme, millions of the poorest households in South Africa are provided with subsidised set top boxes. Proof of income is required to obtain the subsidy. However, within the SKA areas, the SKA has agreed with the Department of Communications that these set top boxes will be fully subsidised for all households.

Why will the box phones only be installed when the farm owners have paid for them? Why can they not be installed directly to the farm workers' houses?

Anyone can apply for a connection. The installation of the phones is subject to any agreements reached with the person applying for the connection.

There is a problem with the installed alternative telephones where the workers only have access to one phone which is situated at a position close to the farm residence. They cannot receive calls because the instrument is situated far from their homes.

We have noticed the issue and there is a second tender process happening that will provide the community with mobile devices so that community members have options.

Because one will have to incur double costs for the local phone access and a normal cellphone to use outside of the critical area, will there be any subsidies offered?

The only cost should be when you are calling out or receiving calls through the normal cellphone infrastructure. Calls made within the proposed mobile communication network will be highly cost competitive, and it will be advantageous for users to use the network.

Is it true that a new cellphone service will be installed in the area?

SKA SA will provide alternative services where the current services will be affected by the project.

Not all farmworkers have telephone lines at the moment, what is going to be done about that?

A mobile solution will be in place to accommodate those who do not have access to fixed line phones.

Will the two-way radio solution then operate outside of the critical frequency?

The radio solution will operate within the



100 - 200 MHz band, and permissions will be obtained to do so.

Will the cellphone solution be rolled out to areas 100 kilometres from here?

It is intended that the radio solution be extendable, as and when there is a need from the users. In its first phases, it is intended that the coverage will extend at least a couple hundred kilometers.

What alternative is available for the community who is not provided with the alternatives, yet their signals or access is also affected?

Anyone in Karoo Central can apply for the alternative services. If the satellite is within range, you qualify

for the alternative offerings. No services can be disabled without an alternative in place.

The box phones that are currently installed are operating inadequately.

There are limitations on frequency for these phones which hampers the performance and availability of phone access. There are processes in place to improve on the current systems.

Will we be able to purchase additional radios for use on our farms?

Yes, you will be able to buy more units. The cost must be determined beforehand. SKA SA will purchase additional units that can be made available to the community.

Will the mobile radio systems be connected to the existing cellphone services?

The requirement specifies that a system must be installed that is connected to all the current communication systems. The alternative solution must give you all the access you currently have.



6. SCHOOLS, EDUCATION, SOCIAL UPLIFTMENT AND DEVELOPMENT

Promises were made to improve schooling in the area, but nothing has been done yet. When will this be implemented?

We are aware that there are still issues that need to be improved with the schooling in the area, but we are looking at ways to improve the outcomes from schools in this area, specifically with results in science and mathematics. Ways to improve the schooling are continuously being considered. Five learners have already benefited from grants, and programmes are in place for onsite training for learners. We are open to any suggestions of more improvements that can be made.

Why can a FET college not be built in the area?

This is certainly something that may be considered.

What social upliftment programmes are in place by the large companies involved in the project?

As part of our contracting there is provision for social and corporate investment to be made in the area. Social responsibility processes are ongoing.

Are the development opportunities limited to Carnarvon and Williston as indicated in the brochure or will Brandvlei also be included?

All the surrounding communities are included in the endeavour and can benefit from development, not only for this project, but for the future as well.



7. TRANSPARENCY AND GENERAL COMMENTS

Will the SKA be open and transparent about all aspects of the project towards the community?

SKA will be as open and honest with you in order to maintain a good relationship with the community – not only the farmers, but the community as a whole.

General comments

It is felt the learners who benefit from the programmes are the children of teachers and important members of the community and does not include the broad spectrum of community members.

The SKA SA Human Capital Development programme runs its granting system on an open call basis. This means that all grants are published to which all can respond. Evaluations of these submissions are done on academic merit. If there are any irregularities in this regard, then you are free to make a representation so that the irregularities can be addressed.

Not all communities have been informed, for example Vosburg, about the project and they are not always aware of the meetings held in neighbouring towns.

As far as possible, SKA SA tries to ensure that information reaches all communities, especially those living close to the SKA site. Public engagement events are being increased and a number of interventions are being planned to inform the communities of the scientific endeavour of the project and to keep the communities updated on the developments of the project. The SKA project will be operating in the area in excess of 50 years and it is essential for the project and the communities that a strong relationship is maintained.

The farm workers and indigenous people should be included in the process as they will not be able to survive anywhere else than in this area.

As part of the land acquisition process, SKA SA presents the option for farm workers who are left unemployed as a result of the process, to be absorbed into the land management programme. This decision was based on exactly the reason that their skills would be harnessed in managing that land with which they are so familiar.

There are concerns that the lack of school facilities in Brandvlei and the fact that most children go to Carnarvon and other towns to secondary schools, will hamper their opportunities to benefit from the programmes that SKA propose. Because of this, subsidies are offered to Carnarvon High School, but learners from all communities are encouraged to participate.

SKA SA is working very closely with the Department of Basic Education in ensuring that the state of education in the neighbouring towns are improved. SKA SA have started their school support programme by sponsoring learners from the area to attend Carnarvon High School and this is expanded by offering support programmes to all schools in the area. SKA SA will continue to work with the Department of Basic Education to ensure that there is continuous identifying and nurturing of talent.

We don't understand the science behind the telescope.

Science engagement programmes have been developed to ensure that communities are exposed to information sessions that would assist in understanding the science of the project.

We live in a drought prone country and suffer from food shortages and will now further compound the problem by reducing meat production by the loss of farms to the project.

- Through the Human Capital Development programme, the youth from the area can benefit from the SKA;
- In partnership with leading academic institutions, community development programmes are instituted that are evidence based to ensure a consistent addressing of the socio-economic challenges that persist in the area;
- SKA supports economic development in the area particularly for the growth of small businesses;
- Connectivity is not compromised and alternative communication solutions are provided;
- Students who show promise are provided with the opportunity to study further - the identifying and nurturing of talent.

We were promised that the project will put us on the map in the eyes of the world. For us to benefit, build us a tarred road - Van Wyksvlei

SKA SA will engage with the Department of Public Works on this request.

There is a concern that jobs will be lost over the next decades with only the scientists remaining - Williston

The construction of SKA Phase I and II will provide many business and employment opportunities. The economic development approach that SKA SA is pursuing is to ensure that long term development through skills transfer is put in place so that businesses are left empowered through the process.

SKA SA outreach activities in the Northern Cape

SKA SA recently participated in and initiated several outreach activities in the Northern Cape. This includes the Knowledge Olympiad in Carnarvon, the Sutherland Career Expo, the Eskom Expo for Young Scientists Regional Expo in Kimberley, the World Robotics Olympiad in Cape Town and Pretoria; and National Science Week which took place around the country.



Teams from schools in Carnarvon, Williston and Van Wyksvlei participated in the World Robotics Olympiad in Cape Town.

Eskom Expo for Young Scientists Regional Expo - Kimberley

The Eskom Expo for Young Scientists Regional Expo was held in Kimberley in July 2016. SKA SA sponsored learners from Carnarvon High School to attend, after the first internal Science Expo was held at the school in April 2016.

Twelve projects were entered by learners from Carnarvon High School on a range of subjects: physics, computer programming, chemistry, gender studies, pricing policy, life sciences and exercise science.

Two learners won prizes at the Expo: Jasmien Jooste, a Grade 11 learner, won a Silver Prize for her project titled *Men and Women: Who pays more?* Jasmien compared the prices of different products on the South African market aimed at both men and women to determine if gender discrimination exists in the pricing policy of South African retailers.

Grade 12 learner Robyn Ford won a bronze prize for her project titled *Gaussian Elimination using Python*, in which she used a computer programme using Python code.

National Science Week

SKA SA participated in National Science week (NSW), a country wide celebration of science, engineering, mathematics and innovation. The 2016 NSW took place from 8 to 13 August 2016.

As part of NSW, SKA SA worked closely with Dr Stephen Ashworth from the University of East-Anglia, Norwich, to implement activities for the awareness, understanding and appreciation of science,



Dr Stephen Ashworth from the University of East-Anglia, Norwich entertained learners from the Karoo operational area during National Science Week.

radio astronomy and the SKA SA among learners and educators in the Northern Cape.

Dr Ashworth treated about 420 Grade 7 learners to his popular *Kitchen Chemistry* programme, during which learners are exposed to basic concepts in chemistry and physics in a very colourful way.

The programme was followed by interactive work sessions, during which about 115 Grade 9 learners from the surrounding areas around the SKA site were taught about the electromagnetic spectrum, spectroscopy and the coding and decoding of observational data.

Dr Ashworth also trained six science educators at Brandvlei Intermediary School and Carnarvon High School to perform demonstrations in the programme to supplement their learning material.

World Robotics Olympiad - Cape Town and Pretoria

On 13 August 2016 several teams from Carnarvon, Williston and Van Wyksvlei participated in the World Robotics Olympiad in Cape Town.

The World Robotics Olympiad is a worldwide competition for young people in which they build robots to strengthen their problem solving skills.

The Sharp Shooters, consisting of Grade 10 learners Zainaldo de Bruin, Brandon Sawall and Maria de Wee, qualified for the next round of the national competition which was held at the Tshwane University of Technology in Pretoria on 10 September 2016. The three competed against more than 10 schools from across the country.

The team from Grantleigh School in KwaZulu-Natal won the competition and qualified for the next round.

Knowledge Olympiad - Carnarvon

After only about 40 learners from several schools participated last year, a record number of entries entered this year for the Olympiad which took place in May 2016. One of the Grade 11 learners from Carnarvon High School, Ryan Phillipus, came third in his grade in the Northern Cape.

Sutherland Career Expo

The Sutherland Career Expo took place in Sutherland in the Northern Cape from 27 June to 1 July 2016. The aim of the event, which was hosted by the South African Astronomical Observatory (SAAO), was to create awareness among learners, educators and members of the community in the Karoo Hoogland Municipal area on careers in science, astronomy and bursary opportunities.

SKA SA had an exhibition stand and held workshops for school groups on science and radio astronomy.

Learners and educators from the Roggeveld Intermediary School in Sutherland, Williston High School, Van Wyksvlei Intermediary School, Nico Bekker Intermediary School and the Nico Bekker Primary School attended the event. About 400 people visited the exhibition during the first three days.