

Speech by Dr Rob Adam, SKA South Africa Managing Director, at the Carnarvon Information Session, Carnarvon, Northern Cape Province, 08 May 2017

Norman van Wyk, Kareeberg Municipal Mayor

Mr Willem de Bruyn, Kareeberg Municipal Manager

Mr Jurrie Hoorn, Chief Whip

Chairpersons and Office Bearers of the Regional Agri SA

Organisation in the Northern Cape

Members of the Carnarvon Community

Thank you Jurrie for welcoming the SKA South Africa team this evening and it is a pleasure to be addressing you again at this Information Session.

It is the aim of these information sessions for the SKA South Africa to provide feedback and afford members of this community with the opportunity to voice concerns and ask questions. At our last information session in this town held in November last year a group decided to stage a 'walk out' which was hugely unfortunate since this is one of the key platforms where the community can voice their opinions and their concerns, and have the opportunity to access information. I therefore encourage each of you to stay for the full duration of this evening's event so that you can engage with my staff on your issues and hear directly from them what is the status of the project, in particular those areas that affect and interest you.

I am encouraged by the rigorous debate on the SKA among this community and want to emphasise the importance that all of you continue to engage with the SKA on your concerns. This makes for a healthy democracy. With your participation, it is my

vision for the SKA South Africa is to continue building our relationship with all the communities surrounding the SKA site in the Karoo. I am intent on ensuring that the SKA project benefits this local community and in order to ensure that the SKA engages effectively with the community I have instructed my team to develop relationships with community representative groups (such as the local and regional Municipalities and Agri SA) so that we can work constructively with organisations / associations that have a mandate to represent all of you.

I am very pleased to report that we have concluded an agreement with Agri SA and are working with them to ensure: the optimisation of land; identify and unlock economic opportunities in this region; together, work on addressing environmental challenges such as predator control, invasive species control and to conduct further research, and; together, work on the development of alternative technology to ensure sustainable connectivity in the area.

I am also very happy that we are able to develop a constructive relationship with the Kareeberg Municipality and have the full support of the Mayor Norman van Wyk. My staff have been working closely with the municipal officials to integrate SKA into the Spatial Development Plans and Integrated Development Plans. This complements our existing relationship and plans with the Northern Cape Local Government and Pixley Ka Seme District Municipality. We have managed to do the same with the Karoo Hoogland Municipality.

Our relationship with the SAN Council has been coming along since 2007 when they endorsed the South African bid to host

the SKA. One of the most honourable occasions held at the SKA site thus far was the ceremonial blessing and cleansing of the SKA project and SKA site. SAN tribes of !Xun and Khwe from Platfontein, the Khomani San and the Xam from the Eastern Cape were all present at this occasion. The Khomani San Traditional Dancers travelled all the way from the Kalahari to be there. The San Peoples are members of the earliest, hunter-gatherer, ancestors of humankind to inhabit Southern Africa. Their territories spanned a large portion of the Southern region, including South Africa and specifically the Northern Cape, overlapping with the core area where the SKA is being built in the Karoo. It is therefore only proper that we have their endorsement to build this project.

In a democracy such as that of South Africa, a number of legislative processes are established using public input that enforces projects such as the SKA to act in the interest of all South Africans. The SKA project is continuously guided by these legislative requirements and as a project of Government, we remain in consultation with all the organs of state in ensuring that the project adheres to all these legislative requirements. By doing so, the project is ensured to be governed by the Constitution of the Republic of South Africa which is drafted in careful consideration of all our Human Rights. There is therefore a legal recourse if any of you feel that the project is acting in direct violation of your Human or Constitutional Rights.

While we have a globally sanctioned mandate the support of the highest level of political will, we have to make sure that we are sensitive and inclusive to the needs of the communities in

the Karoo. SKA is after all the largest science infrastructure project in the world.

A number of legislative-related processes have recently been implemented in this community that ensures that the project abides by our Bill of Rights. One of these were the Public Hearings referencing the Astronomy Geographic Advantage Act which contributed to the amendment of regulations based on the inputs received. These hearings were chaired by Prof van Rooyen and copies of the report is available here this evening for you to read. My staff are available to guide you to access the report if you wish to do so.

One of the findings of Prof van Rooyen's report indicates that 'ecocide' is a proposal to the Rome Statute and does not exist in law. Ecocide refers to 'wilful, long-term damage' of the environment. It is often used in reference to the destruction of large areas of the natural environment by activities such as nuclear warfare, overexploitation of resources, or dumping of harmful chemicals. On the contrary, by building the SKA here in the Karoo, a number of environmental conservation projects can be started, the results of which would assist us to preserve the natural environment of the Karoo.

The Department of Environment has requested the Council for Scientific Industrial Research to conduct an Environmental Assessment of the potential impacts SKA Phase I would have on this region. Prof van Rooyen's report has also nullified the allegation that there were inefficient environmental impact assessments done before the construction or even the awarding of the SKA bid here in South Africa. In fact, Prof van Rooyen's report indicates that all legislative requirements were

met through the assessments that were and are being done. We appreciate your rigorous involvement in providing comment to the Strategic Environmental Report of the CSIR and we will be using this information to develop a number of programmes so that we can ensure that the project has minimal negative impact on the area, and make sure that we increase our positive impact on the area.

The reports are very technical in nature and therefore misinformation or misunderstanding are easy to arise. I understand that these reports may be very technical and therefore I encourage you to speak to the specialists here tonight to clarify them for yourselves. Allow me to speak to a few of these misunderstanding, miscommunication or misinformation that has come to our attention.

- 1) **Radio silence and Land Acquisition Process.** It is not the intention of the SKA to create a radio silent zone of the entire Northern Cape. The DST (Department of Science and Technology), through the Astronomy Geographic Advantage Act, is looking at establishing regulations that would provide radio protection that would ensure the optimal function of the radio astronomy observatory. This would mean that outside of the core area of the SKA, the bandwidth will be shared with community requirements. To date we have invested in the development of technologies that provided 219 farmers and farmworkers with fixed broadband connectivity via satellite (V-SAT) since December 2015. SKA therefore provided connectivity where there was none previously. At the beginning of this year, following consultation with community representatives to define the connectivity needs, SKA appointed a service provider

that will develop mobile trunked radio service to provide for mobile communication needs. The aim is to establish sustainable trunked radio service in the area to support the management of the protected area, whilst broadening access to and signal coverage of mobile communications to all local stakeholders, including the local farming community, rural safety, emergency and municipal services. Allow me to reiterate, SKA is therefore providing connectivity and ensuring that sustainable connectivity is in place where there were none before. The area where the SKA is situated was declared by ICASA (Independent Communications Authority of South Africa) as an underserviced area in terms of telecommunications services. Prior to the SKA development in the area, of the rural landline infrastructure was limited and had fallen into a state of disrepair due to the vast distances and low user numbers. This, together with the sparse cellphone coverage (which is managed by individual national cellphone operators), had led the area to being declared by ICASA as underserviced.

SKA has not interfered with any cellphone signals in the area because we do not have the legislative mandate to do so.

SKA has invested in alternate communication in the area that is sustainable and will evolve with next generation technology and device upgrades as they become available.

Results from the Strategic Environmental Assessment shows that the project, while under construction, will have certain impacts on the environment such as water usage. As you can imagine, once the construction is complete, the water usage on site will drastically reduce because very few people will be accessing the core area. For the same reason, we built an airstrip on site to provide easy access to site while the SKA is under construction. When the SKA will be operational the landing strip will be used for emergency evacuations mostly.

No plans are in place to build health facilities on site.

You are welcome to speak to Selaelo Matlhane to obtain more information on this.

- 2) **Affected areas and site selection.** The protection philosophy of the Astronomy Geographic Advantage Act is to: Maximise the radio frequency spectrum available for radio astronomy (thus SKA) so that the scientific work is not significantly compromised; Minimise the impact on local people and residual radio interference, and facilitate access to alternative radio communications; to guide the development of Restrictions on sources of Radio Frequency Interference (RFI), for where there are no alternative options, and that this will be highest close to the SKA Virtual Centre (or core) but decrease with distance.

Therefore, the SKA will be having the largest impact on the core area (affecting approximately 132,000 hectares

and therefore the need to purchase the 118,000 hectares of land). Outside of this area, three (3) spiral arms along servitude lines will be used to build and operate antennas. The rest of the AGA areas will be subjected to very minimal legislative requirements.

Approval has been obtained from the Ministers of Science and Technology and of Finance to purchase land for the SKA core site. Land purchases are subject to negotiation and the valuation of farms in the Northern Cape, and the services of a professional valuer have been retained. In accordance to the Steps that were communicated, all the landowners were contacted and notified. Valuations were undertaken on all the 36 portions of land. Thus far, the purchasing of 32 properties are 75% complete with only nine (9) properties remaining to be finalised. We are confident that the Land Acquisition Process will be complete by the end of this year. Alice Pienaar-Marais will be able to provide you with much more insights on the Land Acquisition Process and the Servitude Agreements along the 3 Spiral Arms.

It is not uncommon to enter confidentiality agreements during the negotiation process when purchasing land and this was done out of protecting the interest of land owners. Nothing sinister was intended with this confidentiality clause. While the SKA engaged with the landowners directly, the SKA has always been willing to engage with any representative group that the landowners appointed to act on their behalf.

These 32 properties will be enough to cater for the core area and buffer zones of the entire SKA project (Phase I and II). SKA Phase II will see densification along the 3 Spiral Arms. Please do not allow anyone to convince you that SKA will have more than two phases – SKA Phase I (built in South Africa and Australia which will incorporate the 64 MeerKAT antennas which are under construction here in the Karoo), and SKA Phase II (which will expand into 8 other African partner countries).

The site selections followed seven years of rigorous independent testing and our site in the Karoo met all the criteria. These rigorous scientific studies found that the Karoo was one of the best places in the world for radio astronomy because it offers good atmospheric conditions, radio quietness, geotechnical stability, good security and good access to infrastructure.

The SKA is a global project with South Africa being one of the members of the SKA Organisation, amongst other nine member countries, namely the United Kingdom, Australia, the Netherlands, Italy, China, India, Sweden, Canada and New Zealand. The SKA Organisation is headquartered at the Jodrell Bank Observatory, near Manchester in the United Kingdom. Approximately 100 organisations and companies from 20 countries are participating in the design and development of the SKA. An Inter-Governmental Organisation is being negotiated and the inception of the IGO will be marked by a ceremonial event where the Treaty Agreement of all member countries will be signed later this year in Rome. This level of international investment and participation is

only possible because of rigorous detailed research that informs every step (including the site selection process and overall design of SKA) and confidence in the ability of South Africa to participate.

Confidence in South Africa has only increased because of the huge success of the MeerKAT project. The South African team of young scientists and engineers (which includes people from this community) in collaboration with industry, global institutions and universities, have developed technologies and systems for the MeerKAT telescope, including composite telescope dishes and cutting-edge-signal processing hardware and algorithms. Through MeerKAT, South Africa is playing a key role in the overall design and technological development of SKA.

The MeerKAT project has remained on schedule and within budget throughout its course, largely due to the use of rational system engineering methodology in all design, manufacturing and verification activities, and the strict adherence to National Treasury procurement policies and principles. As a bonus, the MeerKAT is performing nearly twice as well as it had originally been specified – at no increase in cost.

The integration of 32 MeerKAT antennas with single polarisation correlator was achieved in the last week of March 2017 and on target – meeting another significant milestone in the construction process. As of close of business on 31 March 2017, 54 pedestal/yoke assemblies have been installed and 43 dishes have

been lifted at the Losberg site in the Karoo. 34 antennas passed acceptance testing and was handed over to SKA SA for fitment of receivers and system level testing.

The MeerKAT 'first light' image of the sky produced with only 16 antennas, shows unambiguously that MeerKAT has joined the ranks of the world's great scientific instruments: in a small patch of sky covering less than 0.01 percent of the entire celestial sphere, it shows more than 1,300 radio galaxies in the distant universe, compared to 70 known in the previous best image, obtained with a telescope in Australia. These results show that the 16-dish AR1 MeerKAT is already the best radio telescope in the Southern Hemisphere, and indicate that when fully completed with 64 dishes by end March 2018, it should indeed be the world's best radio telescope of its kind.

The ideal conditions on the SKA site here in the Karoo are also attracting the attention of other research projects. Allow me to tell you briefly about the HERA (Hydrogen Epoch of Re-ionisation Array) project. Universities in the America and England have invested \$20 million in establishing this low-frequency radio telescope on the SKA site. Their decision to invest was informed by both South Africa's commitment to preserving the site for radio astronomy through Astronomy Geographic Advantage Act of 2007 and by the local scientific, technical and engineering competence that has been developed around the MeerKAT and SKA projects. HERA is a truly Karoo-based instrument. Construction material are sourced and

fabricated from within South Africa – predominantly from the Carnarvon area. Because the bulk material of construction are light industry materials such as wood and PVC pipe, there is opportunity for local businesses, which don't necessarily have a 'high technology' customer base, to be part of this science instrument. We have local contractors installing our main support poles, cutting our structural elements to size, and making up our reflector surface panels from bulk-supplied material. Similarly, for our construction crew, we assembled a team of local young people who have taken on the construction and made it their own. We have received additional funding to expand this project and now able to employ more people from this community on the project. Advertisement for vacant positions are available – please ask Anton Binneman for assistance with this.

You are always welcome to speak to Anton who is our Northern Cape Stakeholder Engagement Manager on the project. If you are interested in the science of the project you should be able to have your questions answered by anyone of the staff present.

3) Long-term, sustainable investment in the Karoo

Another concern that was raised and came to my attention was the long-term investment that SKA will have for this town. The project prides itself to be investing in the next generation of professionals and therefore invests hugely in youth development and training. There is no better long-term investment than the investment in the education of the youth.

More than 124 learners from grades 8-12 have participated on the SKA SA Schools programme since 2013 where we sponsor learners from Carnarvon and surrounding towns to attend the Carnarvon High School. Apart from other results pointing to the success of this programme, 9 students are now at Universities across South Africa studying toward completing their Bachelors degrees in Science and they are passing their subjects with distinctions. You will see a summary of the SKA SA's investment impact on the Northern Cape. On this summary, you will see that a total exceeding 4,000 learners has benefited from the entire SKA SA Schools Programme that starts with learners in Primary School.

72 students have benefited from our FET training programme since 2011. This is the most expensive training support programme in our Human Capital Development programme, headed by Kim de Boer (who will provide further details). Young professionals from this programme is trained to become professional artisans in qualified areas such as electrician work, lathe machine operators, optical fibre cable technicians, etc. Once qualified these young professionals will have increased opportunities to be employed but will also stand the chance to work for the SKA during the operation phase (next 50 years).

Our other priority is toward local businesses. By the end of November 2016, in excess of R134 million was spent at local suppliers for the construction of MeerKAT and other related projects. Much more was spent but this is the number that we can quantifiably present to the

Auditor General. R1 million was spent on training of 351 people from the Northern Cape communities. As previously mentioned, in excess of R1.7 million was spent on local suppliers for the build of HERA by the end of November 2016 and much more money will be spent now that we have secured the additional funding for this project.

This overall investment according to that information sheet is R220 million which excludes the value of the investment in the training and sponsoring of the youth education programmes.

Our side of the SKA project works, we are ahead of schedule, we comply fully with our design and build mandate thus far, and we are within budget. We want to invite you to continue being part of this project. Together people always make the difference no matter how diverse or how difficult the early beginnings may seem.

IN SUMMARY:

- Science and engineering research is critical for innovation and can help develop our economy and create jobs.
- Projects such as the SKA will assist South Africa to move the economy from a resource-based economy to a knowledge-based economy.
- The SKA will drive technology development and innovation, which will ensure that our country produces highly competitive technology products.

- The pre-construction preparations of the SKA have already created jobs in surrounding areas.
- Local communities in the area are already benefitting from youth investment projects, community development initiatives such as the Knowledge Resource Centre, SMME development and education support.
- SMMEs in the Northern Cape are also being developed, from basic business assistance to improved skills training in order to participate in infrastructure and services opportunities provided by the SKA.
- SKA South Africa facilitated the provision of a very large funding programme from ABSA for emerging contractors in the Karoo.

Challenges will always be there with a project of this nature and magnitude but we stand ready to work with you to solve these.

Anton will explain the structure of the proceeding tonight but the main aim is that you are provided with contact time with the professionals so that you can have your questions answered and raise your concerns. As was previously done, we are asking that you allow us to record the interactions so that we can document the questions posed and have them answered in our next SKA SA Northern Cape Newsletter. The previous newsletter is available in English and Afrikaans where questions are documented which was previously raised. We have received a number of questions from interested individuals and we will make sure that these questions are also included in the next newsletter. As you may be able to understand, we are positioning ourselves to work with organised representative groups that have a clear mandate to represent the community

or significant sub-section thereof. Questions and issues raised by individuals will be dealt with on public platforms.

So we welcome all of you to please stay and spend time with us this evening.

I thank you.