Strategic Environmental Assessment for the South African mid-frequency array of SKA Phase 1 (SKA1_MID)
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Summary

The Department of Environmental Affairs appointed the Council for Scientific and Industrial Research (CSIR) to undertake a Strategic Environmental Assessment (SEA) for Strategic Integrated Project 16, focusing on the South African mid-frequency array of the Square Kilometre Array (SKA) Phase 1, also called the “SKA1_MID”.

The mission of this SEA is “to provide a platform to coordinate research and data collection within the proposed development area of SKA1_MID and integrate the environmental authorisation process ensuring that environmental factors are adequately considered and environmental principles implemented at the strategic planning stage”.

The SEA provides an independent and objective strategic level assessment that provides an evidence-based knowledge set upon which strategic decisions can be made with respect to:
1) the identification of no go areas and assessment of key potential impacts of SKA1_MID,
2) mitigation measures and management actions to be implemented during the design, construction and operation phases of SKA1_MID, and
3) long-term research and monitoring programmes to be implemented on the land owned by the National Research Foundation during the lifetime of the SKA project.

The findings and outputs of the Strategic Environmental Assessment were compiled into two reports: an Integrated Environmental Management Plan (IEMP) which establishes the minimum requirements for the construction and operation phases of SKA1_MID, environmental principles, environmental monitoring and control activities as well as long-term research monitoring programmes to be implemented on the SKA site; and Strategic Environmental Assessment Report (SEA Report), this report, which includes details about the analysis, timeline and activities, stakeholder engagement, and specialist studies conducted during the Strategic Environmental Assessment process.

The SEA Report (this report) aim to provide supportive information for all interested and affected parties and does not form part of the legal implementation of the outputs of the SEA. The report describes the overall SEA process and how key milestones and objectives were achieved and the engagement with interested and affected parties undertaken during the SEA, including comments received and responses provided.
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Abbreviations / Acronyms

Council for Scientific and Industrial Research CSIR
Department of Environmental Affairs DEA
Department of Science and Technology DST
Environmental Management Programme EMPr
Geographic Information System GIS
Government Notice GN
Integrated Environmental Management Plan IEMP
Karoo Array Telescope KAT
Karoo Central Astronomy Advantage Area KCAAA
kilometre km
National Environmental Management Act NEMA
National Research Foundation NRF
Presidential Infrastructure Coordination Committee PICC
Radio Frequency Interference RFI
SKA mid-frequency dish array SKA1_MID
SKA Organisation SKAO
South African SKA Office SKA SA
Square Kilometre Array SKA
Strategic Environmental Assessment SEA
Strategic Integrated Projects SIPs
I. The Strategic Integrated Project (SIP) 16: SKA and Meerkat

In 2012, the South African Government adopted the National Development Plan as long term strategy to address economic growth and broaden socio-economic transformation in the country. A fundamental component of this overarching plan is the National Infrastructure Plan which aims to catalyse economic development and job creation through infrastructure development.

The Presidential Infrastructure Coordination Commission, as the coordinator and facilitator of the National Infrastructure Plan, subsequently identified 18 Strategic Integrated Projects (SIPs) which are large-scale infrastructure projects of national importance and located across all nine provinces aimed at unlocking the development potential in the country. Amongst the 18 SIPs, the Presidential Infrastructure Coordination Commission established two Knowledge SIPs:

- SIP 15: Expanding access to communication technology, which aims at providing for broadband coverage to all households by 2020; and
- SIP 16: SKA and Meerkat, which aims at providing an opportunity for Africa and South Africa to contribute towards global advanced science projects.

The National Infrastructure Plan led to the promulgation of the Infrastructure Development Act (Act No. 23 of 2014) in 2014. The Infrastructure Development Act codifies into law the Presidential Infrastructure Coordination Commission and the National Infrastructure Plan as key mechanisms to coordinate and drive infrastructure development in South Africa. The Infrastructure Development Act aims to facilitate infrastructure development which is of significant economic or social importance to the Republic, by prioritizing the planning, approval and implementation of strategic infrastructure development and improving the management of such infrastructure during all life-cycle phases, including planning, approval, implementation and operations. The Act endeavours to address the lack of co-ordination across the state to ensure common priorities and the management of trade-offs around infrastructure projects, to ensure a sufficiently strong level of public investment, and to improve capacity for managing all phases involved in the development of infrastructure.

The planning, approval and implementation of strategic infrastructure developments such as the SKA project require a “business unusual” approach, as recommended by Mr. Trevor Manuel, chairperson of the National Planning Commission, in order to facilitate efficient implementation. The assessment of the environmental impacts of these strategic infrastructure developments therefore needs to take a “business unusual” approach and the SIPs provide this opportunity. This led to the Department of Environmental Affairs committing to support the efficient implementation of the National Development Plan by undertaking Strategic Environmental Assessments to integrate the regulatory environmental requirements for the SIPs.

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II. Strategic Environmental Assessment Process

1. Overview

Strategic Environmental Assessment is one of the integrated environmental assessment and management tools enabled by South Africa’s National Environmental Management Act (Act No. 107 of 1998) to facilitate the integration of environmental assessment and management principles into environmental decision-making. Strategic Environmental Assessment is one of the highest level instruments which assist decision makers to proactively determine the most suitable development type for a particular area, to assess a proposed policy, plan or programme that has already been developed, and/or to develop, evaluate and modify a policy, plan or programme at its formulation. Two further contributions of the Strategic Environmental Assessments are:

- an advocacy role, where its primary purpose is to raise the profile of the environment,
- an integrative role, where the focus is on combining environmental, social and economic considerations of the projects.

The Council for Scientific and Industrial Research (CSIR) was appointed by the Department of Environmental Affairs to undertake the Strategic Environmental Assessment for Strategic Integrated Project 16 in South Africa. This Strategic Environmental Assessment focuses on the South African mid-frequency array of SKA Phase 1, also called the “SKA1_MID". The mission of the Strategic Environmental Assessment is “to provide a platform to coordinate research and data collection within the proposed development area of SKA1_MID and integrate the environmental authorisation process ensuring that environmental factors are adequately considered and environmental principles implemented at the strategic planning stage”. The Strategic Environmental Assessment process run by the CSIR is an independent and objective strategic level assessment which aims to provide an evidence-based knowledge set upon which strategic decisions can be made with respect to:

1) the identification of no go areas and assessment of key potential impacts of SKA1_MID,
2) mitigation measures and management actions to be implemented during the design, construction and operation phases of SKA1_MID, and
3) long-term research and monitoring programmes to be implemented on the land owned by the National Research Foundation during the lifetime of the SKA project.

The Strategic Environmental Assessment process enables a strategic and systematic approach to stakeholder engagement and management across a broad range of sectors that includes the three spheres of government, the private and public sectors as well as the wider public. The stakeholder engagement process aims to:

- share available and updated information with a diverse group of interested and affected parties in an objective manner,
- record and take into consideration interested and affected parties’ comments, concerns, inputs and local knowledge in relation to the SKA activities,
- discuss different approaches to reduce potentially negative or enhance potentially positive impacts within the affected area using local knowledge, and
- share interested and affected parties issues and/or inputs with the other interested and affected parties as well as with the competent authority for decision-making.

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2 DEAT (2004) Strategic Environmental Assessment, Integrated Environmental Management, Information Series 10, Department of Environmental Affairs and Tourism (DEAT), Pretoria
3 “SKA1_MID” is the abbreviation used by the SKA organisation for the “South African mid-frequency array of SKA Phase 1".
The stakeholder engagement conducted during the Strategic Environmental Assessment process focused on the decisions relating to environmental management issues and socio-economic opportunities i.e. the Strategic Environmental Assessment process and outputs; and the exchange of local knowledge of the study area, issues and concerns of stakeholders with respect to the Strategic Environmental Assessment of SKA1_MID. The Strategic Environmental Assessment consultation activities are described in Section III of this report.

The diversity of opinion rather than consensus building is likely to enrich ultimate decision making, and therefore where possible, the Strategic Environmental Assessment stakeholder engagement is intended to obtain an indication of trade-offs that all stakeholders (e.g. interested and affected parties, technical experts, government departments and authorities) are willing to accept with regard to the ecological sustainability, social equity and economic growth of the affected area in relation to the proposed project.

Specialist scoping level pre-assessments were undertaken for agriculture, heritage (including archaeology, palaeontology, cultural heritage and visual/landscape aspects), terrestrial ecology and biodiversity including avifauna, aquatic ecosystems, and socio-economic aspects. Additional studies were conducted during the Strategic Environmental Assessment including a survey of endangered species present within the study area (Riverine Rabbit), screening of the potential sensitivities related to the presence of bats within the study area and screening of the risks associated with on-site diesel storage within the SKA core area. Further aspects of sensitivity in terms of aviation, defence, telecommunication, weather services, mining, water use, waste management, noise and traffic effects were investigated during the Strategic Environmental Assessment in consultation with the relevant authorities and stakeholders.

The specialist reports were reviewed by independent experts who provided inputs and contributed to improving the results of the scoping level pre-assessments. Details of the specialists and reviewers who prepared the Specialist scoping level pre-assessments and conducted the fieldwork within the study area are included in the Strategic Environmental Assessment Report. The identified sensitivities and no-go areas were subsequently combined and used to revise the preliminary configuration of the South African mid-frequency array of SKA Phase 1 to avoid areas potentially unsuited for development (i.e. no-go areas and areas of Very High sensitivity).

The overall timeline of the Strategic Environmental Assessment of the South African mid-frequency array of SKA Phase 1 is presented in Figure 1 below.
Figure 1: Timeline of the Strategic Environmental Assessment of the South African mid-frequency array of SKA Phase

Note: This diagram does not contain an exhaustive list of all meetings conducted during the SKA1_MID SEA. It aims to provide an overview of key milestones and consultation groups during the SEA process.
2. Strategic Environmental Assessment Inception Phase (Objective A)

Public announcement of the inception of the Strategic Environmental Assessment

Announcements for the initiation of the Strategic Environmental Assessment (SEA) were published in six newspapers. The announcement provided a brief background on the launched SEA and invited stakeholders to take part in the process by registering on the project database. Additional public announcement of the inception of the SEA and invitation to register on the SEA stakeholder engagement database was done in the form of posters placed in the towns of Carnarvon, Brandvlei, Williston and Van Wyksvlei and notice on the project website.

Work plan and progress reports

During the Inception phase, a detailed work plan was prepared to guide the SEA process and agree with the project partners on the tasks and milestones to be completed during the SEA process. The work plan was submitted to DEA and approved in May 2015. During the SEA four progress reports (August 2015, November 2015, January 2016, and May 2016), one Memo for extension of timeframe and regular emails were submitted to DEA to provide up-to-date information on the SEA milestones, activities and preliminary findings. The progress reports and Memo contain any change to the scope of work and timeframe which were agreed upon between the Project partners during the SEA process.

Project website

A project website was launched at the inception of the project, accessible at: http://www.skaphase1.csir.co.za/. The project website was created as a platform for the exchange of information and data between the SEA team and all stakeholders including government officials, local communities, industry representatives, and anyone else interested in SKA Phase 1 development in South Africa. The objective of the project website was to provide:

- continuous update on the SEA activities and
- a portal for registration as interested and affected party.

The project website enabled stakeholders to register on the SEA database and also send comments to the SEA team via an online form. The SEA website can be accessed on the internet at www.skaphase1.csir.co.za (see Figure 2 below). It was open to the public, updated and maintained during the entire duration of the SEA. Relevant documents were uploaded to this website for stakeholders' consultation (e.g. Background Information Document, Questions and Responses documents, Official releases from government on Astronomy regulatory requirements etc). The main language of the project website was English however several pages and documents were translated in Afrikaans as this is the most-spoken language of the study area.
3. Stakeholder engagement (Objectives B, C, D)

Convene project partners

DEA, DST, SKA and SAEON were requested to be project partners for this SEA, thereby providing inputs for and reviewing the findings of the SEA outputs.

Convene Special Advisory Committee

At the highest level, the SEA process was guided by a Special Advisory Committee (SAC) which consisted of relevant authorities and other relevant stakeholder organisations. The Special Advisory Committee was established to provide guidance to SIP16 SEA and ensure that the mandates of all relevant national departments were considered throughout the development of the project outputs. More details on the Special Advisory Committee meetings are provided in Section III of this report.
Key stakeholder consultation

Key stakeholder meetings will be organized during the project process, to discuss methodology and preliminary results, at each milestone of the project. Key stakeholders included:

- Department of Environmental Affairs (DEA),
- Square Kilometre Array (SKA),
- South African Environmental Observation Network (SAEON),
- Department of Science and Technology (DST),
- South African National Biodiversity Institute (SANBI),
- South African Heritage Resources Agency (SAHRA),
- Endangered Wildlife Trust (EWT),
- Department of Water and Sanitation (DWS),
- Department of Mineral Resources (DMR),
- Department of Agriculture, Forestry & Fisheries (DAFF),
- South African Local Government Association (SALGA),
- Farming Associations,
- District Municipalities included in the extent of Phase 1 of the SKA,
- Telecommunication Industry, etc.

More details on the key stakeholder meetings are provided in Section III of this report.

Sector Specific Meetings

Sector specific meetings were organized during the SEA to obtain inputs from various specific sectors, among which the telecommunications sector, the agricultural sector, SANBI, Local and District Government Departments, the local farmers associations, etc. More details on the Sector specific meetings are provided in Section III of this report.

4. Confirmation of Study Area and identification of strategic issues (Objective E)

In order to confirm the extent of the study area for the SEA as well as identify strategic issues to define the terms of reference for the socio-economic assessment, a review of the spatial planning documents available for the municipalities affected by the extent of the SKA was conducted, including Integrated Development Plans (IDP) and Spatial Development Frameworks (SDF) (Table 1). Key spatial information was extracted from the SDFs; and where local SDFs could not be sourced, district SDFs were used or alternatively information from IDPs was used.

The SKA Phase 1 site in the Karoo extends over 2 district municipalities, namely:

- the Namakwa District Municipality (NDM) and
- the Pixley Ka Seme District Municipality (PKSDM).

Within the NDM, two local municipalities will host the SKA Phase 1 project, namely:

- the Hantam Local Municipality and
- the Karoo Hoogland Local Municipality.

In the PKSDM, the majority of the SKA Phase 1 remaining site is included within the Kareeberg Local Municipality with a very small portion included in the Siyathemba Local Municipality.
# Table 1: Municipalities under investigation

<table>
<thead>
<tr>
<th>Province</th>
<th>Local Municipalities</th>
<th>District Municipalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern Cape</td>
<td>Namakwa District Municipality</td>
<td></td>
</tr>
<tr>
<td>Hantam</td>
<td>Namakwa District Municipality</td>
<td></td>
</tr>
<tr>
<td>Karoo Hoogland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Siyathemba</td>
<td>PiXley ka Seme District Municipality</td>
<td></td>
</tr>
<tr>
<td>Kareeberg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other SDFs</td>
<td>Northern Cape provincial SDF</td>
<td></td>
</tr>
</tbody>
</table>

**Access to spatial planning documents for local and district municipalities:**

1. **SPIsys**
The Spatial Planning and Information system database provides the spatial information for local, district and metropolitan municipalities for the Northern Cape and Free State provinces. It has two solutions namely a public and government view. The public view allows one to view and download general plans, SDFs, diagrams. The government view allows one to view data repository with real time links, planning system, interactive routing of information and planning cycles and executive reporting.

<table>
<thead>
<tr>
<th>Database name</th>
<th>SPIsys</th>
</tr>
</thead>
<tbody>
<tr>
<td>Website</td>
<td><a href="http://nc.spisys.gov.za/contact.html">http://nc.spisys.gov.za/contact.html</a></td>
</tr>
<tr>
<td>Managed by</td>
<td>Department of Rural Development and Land Reform</td>
</tr>
<tr>
<td>Contact person</td>
<td>Liezel Afjum 053 832 5084 <a href="mailto:ldohjum@ruraldevelopment.gov.za">ldohjum@ruraldevelopment.gov.za</a></td>
</tr>
</tbody>
</table>

2. **IDPIMS**
The Integrated Development Planning Information Management System IDPIMS provides a single, web-based information system that allows multiple stakeholders, involved in municipal service delivery, to access a core set of planning, funding, programme and project based information over a multi-year period in a consistent manner, thereby enhancing ease of use and promoting integrated planning.

<table>
<thead>
<tr>
<th>Database name</th>
<th>IDPIMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Website</td>
<td>idpnc.cogta.gov.za</td>
</tr>
<tr>
<td>Managed by</td>
<td>Cooperative Governance and Traditional Affairs</td>
</tr>
<tr>
<td>Contact person</td>
<td>Nontuthuzelo Ntshabele 012 334 4646 <a href="mailto:NontuthuzeloN@cogta.gov.za">NontuthuzeloN@cogta.gov.za</a></td>
</tr>
</tbody>
</table>

Terminology and categorisation of spatial information varies for all SDFs therefore predetermined categories are used. This facilitated the analysis of the data on completion of the review exercise. Each reviewer was required to categorise each spatial information type into one of the eight planning categories identified in Table 2 below. Other categories not captured within this table are separately highlighted and digitised. Once the different categories have been identified in the SDF document they are annotated and digitised. Digitised layers were added to existing datasets to conduct spatial analysis during the SEA process and review of socio-economic trends.

# Table 2: categories extracted from SDFs that were reviewed.

<table>
<thead>
<tr>
<th>Number</th>
<th>Planning Category</th>
<th>Information shared in SDFs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Urban expansion</td>
<td>New housing development, new shopping areas, new markets, new suburbs, existing/proposed mixed use areas</td>
</tr>
</tbody>
</table>
### Strategic Environmental Assessment Report 2016

<table>
<thead>
<tr>
<th>2</th>
<th>Industry</th>
<th>Light industrial areas, heavy industrial areas-within urban edge. Areas outside the urban edge demarcated for special/strategic economic developments</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Planned transportation routes</td>
<td>Proposed linkages; roads, taxi/train/bus stations; activity corridors</td>
</tr>
<tr>
<td>4</td>
<td>Priority mining areas</td>
<td>Existing mining activity, proposed/potential mining activity</td>
</tr>
<tr>
<td>5</td>
<td>Priority agriculture areas</td>
<td>High potential agricultural areas; intensive/extensive agricultural areas; existing/proposed agricultural nodes</td>
</tr>
<tr>
<td>6</td>
<td>Priority tourism nodes &amp; landscapes</td>
<td>Existing/proposed game farms; conservancies; scenic routes, heritage areas; botanical gardens</td>
</tr>
<tr>
<td>7</td>
<td>Priority natural areas &amp; open spaces</td>
<td>Municipal/Urban Open Space; Conservation Area; Parks, Recreation; Critical Biodiversity Areas (CBA); Ecological Support Areas (ESA) rivers; wetlands</td>
</tr>
<tr>
<td>8</td>
<td>SKA</td>
<td>Verify if mentioned in SDFs and IDPs and level of technical information provided</td>
</tr>
</tbody>
</table>

### Spatial planning documents consulted:

- Northern Cape Provincial Development and Resource Management Plan / Provincial Spatial Development Framework 2012;
- Northern Cape Provincial Local Economic Development Strategy 2011;
- Northern Cape Draft Human Development Report 2010;
- Namakwa Municipality Integrated Development Plan 2012/2016;
- Namakwa Municipality Reviewed Integrated Development Plan (2013/14);
- Namakwa Municipality Environmental Management Framework and Strategic Environmental Management Plan 2011;
- Pixley Ka Seme Municipality Revised Draft Integrated Development Plan 2015-2016
- Hantam Municipality Integrated Development Plan 2014/2015;
- Kareeberg Municipality Rural Spatial Development Framework/Land Development Plan 2010;
- Kareeberg Municipality Integrated Development Plan 2014/2015;
- Karoo Hoogland Municipality Rural Spatial Development Framework/Land Development Plan 2010;
- Karoo Hoogland Municipality Local Economic Development Strategy 2011;
- Siyathemba Municipality Integrated Development Plan 2012/2013;
- Siyathemba Municipality Draft Integrated Development Plan 2014/2015;
- Siyathemba Municipality Revised Integrated Development Plan 2015;

The following paragraphs provide key information on the biophysical and socio-economic characteristics of the study area for this SEA. This information was extracted from the spatial planning documents listed above and informed the description of the study area and environmental attribute mapping described in the following sections.
The Namakwa District Municipality (NDM) covers a geographical area of approximately 126,747 km² and consists of 6 local municipalities, among which the Hantam Local Municipality and the Karoo Hoogland Local Municipality will both host the SKA Phase 1 project. The NDM is a large arid area with a dispersed population, mainly located in relatively few settlements and generally poor with low education levels (NDM IDP, 2012/2016). The Namakwa Environmental Management Framework (EMF) and Strategic Environmental Management Plan (SEMP) was developed in order to provide a high level plan for sustainable development in the Namakwa District Municipality of the Northern Cape Province. The EMF and SEMP provide an evaluation of the state of the environment, sets out an environmental vision and details the constraints, opportunities, management measures, monitoring indicators and desired state of the environment for the various environmental elements.

Calvinia and Williston are two of the major towns of the NDM which are located in close proximity to the SKA site in the Karoo. The town of Calvinia is part of the Hantam local municipality which covers approximately 36,128 km².

The name Hantam is derived from the Khoisan word !Han-ami, which refers to a plant with edible roots (Pelargonium bifolium, in Afrikaans “uintjies”). !Han-ami means “where the red bulbs grow”. The Hantam Local Municipality also includes the towns of Brandvlei which is located in close proximity to the SKA Phase 1 project site. Since 2011, the population of Hantam Municipality is remaining stable with little or no growth with a population density of less than 1 person per km². There is also a high percentage (%) of backyard housing dwellings and illegal land occupants within the municipal area due to the non-availability of formal housing or serviced sights (Hantam IDP, 2015-2020).

Within the Hantam Local Municipality itself, 10 vegetation types are endemic to the region, among which the Vanrhynsdorp Gannabosveld and Bokkeveld Sandstone Fynbos which are classified as vulnerable, and the Nieuwoudtville Shale Renosterveld which is classified as endangered (NDM Biodiversity Sector Plan Draft, 2009).

The local economic growth rate is currently an estimated 0.59%. Low accessibility is a restriction to economic development in the area. At present, economic development opportunities in the Hantam municipal area is based on four main growth factors:

- agriculture produce, practices and infrastructure (Sheep farming for meat and wool, goat farming, game farming, rooibos tea, Seed potato, lucerne and wheat production);
- mining (salt, gypsum, ceramic clay, quartzite, sandstone, silt and shale)
- tourism (Namaqualand’s annual wildflower displays, heritage of the Khoi San/Nama people, Rooibos tea route); and
- renewable energy projects (solar power).

The Hantam region currently has 300 HIV positive patients and 60 TB patients treated per month. There are 3 fixed clinics in Hantam. These clinics are operational eight hours a day and five days a week. There is also a satellite clinic within the Hantam municipality, operational for about eight hours a day fewer than five days a week. According to the Department of Health, the satellite facilities are understaffed and only 3 professional nurses serve all the clinics within the area (four in Khai Ma, eight in Nama Khoi, four in Richtersveld, thirteen in Kamiesberg and one in Hantam within the NDM). (Kamiesberg Municipality, IDP 2006-2011). Health care facilities in the area also include mobile services in the form of mobile buses for the rural areas. They operate on a weekly basis, or once every second week and on a monthly basis.

Calvinia is the only town within the Hantam Local Municipality that has a dam (the Karee Dam) which is fed by the Karee River and catchment from the Hantam mountains to the north of the town. There are eight boreholes within Calvinia that supply water for the town consumption (Calvinia Nature Reserve, Golf course, Witwal Farm, Willemsrus Farm, Akkerendam, Ramskop Farm and two boreholes
at Downes Farm). All the other towns including Brandvlei utilize boreholes for water supply. Brandvlei is supplied by six boreholes located on the Romanskolk Farm, approximately 45 km east of Brandvlei.

According to the municipal IDP, there are no sanitation backlogs in Hantam Municipality, it is reported that all residents in Hantam Municipality have access to basic sanitation and the bucket system has been eradicated within the municipal area.

The town of Williston is part of the Karoo Hoogland Local Municipality which consists of vast rural and undeveloped areas over a total area of approximately 32,723 km² with a population density of less than 1 person per km². The municipality also hosts the South African Large Telescope (SALT) near the town of Sutherland, which makes it a significant hub for science and technology.

The Karoo Hoogland Local Municipality has 14 vegetation types among which 10 threatened species and 4 near threatened species (large variety of endemic bulb species such as the critically endangered and endemic rye grass Secale strictum subsp. Africanum and the Daubenys (Daubenya aurea) which is classified as vulnerable) (NDM Biodiversity Sector Plan Draft, 2008).

All the water within the Karoo Hoogland comes from boreholes and is used exclusively for household consumption. No borehole water is used for agriculture or industrial uses. Williston boreholes are located at the pump No. 6 on Brandvlei Road, Pump No. 9 on Carnavon Road, Pump No. 10 on Carnavon Road, and Overflow Pump on Carnavon Road.

There are 4 libraries in Karoo Hoogland. The Karoo Hoogland Local Municipality will be introducing the Karoo Hoogland Computer Project which will provide local community access to computer facilities. There is also a Community Soup Kitchen project which will be undertaken within the Karoo Hoogland.

The PKSDM covers an area of approximately 103,410 km² with a low population density of 1.8 people per km². According to the PKSDM IDP, agriculture/farming and commercial services play an important role in providing employment to the working population with approximately 39% of the total working population employed in the agricultural sector and 23% in the commercial services. The municipal IDP refers to three major types of development currently on-going in the district municipality:

- Solar PV energy developments with 8 preferred bidders from the first Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) window and 2 preferred bidders from the second REIPPPP window, representing approximately 295 MW of electricity to be generated from solar PV energy in the district;
- Shale Gas exploration; and
- SKA project.

According to the District Growth and Development Strategy (DGDS), opportunities identified for growth and development include manufacturing, agro-processing, mining and semi-precious stones, etc. The key strengths of Pixley ka Seme’s economy are community services, agriculture, transport and tourism. The small towns’ functions primarily as agricultural service centers and the main economic activities are located in the main urban areas of De Aar, Colesberg, Victoria-West and Carnarvon. The developmental challenges in the district include a rising level of poverty, economic stagnation, unemployment and geographically imbalanced settlement structure. The strategic objectives of the PKSDM as identified in the IDP are to create a growing and sustainable economy with competitive clusters, to create an enabling environment for Enterprise development and ensure access to quality work, and to ensure skill development and poverty alleviation.

The PKSDM lies in the upper region of the Karoo and experiences moderate to hot summers. The average annual maximum temperature is 40°C, while the average annual minimum temperature is -
10°C. Winters are cold and dry with moderate frost occurring at night. The coldest months are June and July. The area is located in a summer rainfall region. Rain occurs predominantly in the form of thunderstorms and 60% of the average annual rainfall occurs between October and April. The mean annual rainfall ranges from 130mm to 300mm per year. The district is battered by severe droughts and often experiences heavy rainfalls with the possibility of flooding. Humidity which is the amount of moisture in the atmosphere is only 43%.

The PKSDM undertake regular assessments in the district to monitor environmental pollution and degradation. Water sampling is conducted on a monthly basis at the raw water supply intake and at the discharge from the waste stabilization ponds. Based on the reports prepared by the provincial representatives of the Department of Water Affairs and Sanitation, the poor level of water quality results of sewerage pollution; intensive agricultural use of fertilizers and pesticides (high salt loads, pesticides and nitrates and phosphates from fertilizers); Industrial wastes, Mining and soil erosion, waste disposal sites in urban areas and pollution by local inhabitants due to lack of education and illegal littering. The Department of Water Affairs and Sanitation indicated that the two main rivers of the district, the Orange and Vaal Rivers, are degraded and polluted due to eutrophication (algal bloom) of water courses.

Most of the remaining spiral arm of the SKA Phase 1 is contained within the Kareeberg local municipality which is one of the 8 local municipalities of the Pixley District Municipality. The Kareeberg Local Municipality falls within the Pixley Ka Seme District of the Northern Cape Province. According to Stats SA, the population of Kareeberg is estimated at 10 653 people with approximately 1.7 persons/km². The 3 main towns of the municipalities are Carnarvon, van wyksvlei and Vosburg. The Kareeberg municipality became a significant region for astronomy and scientific research as the town of Carnarvon has been chosen as the capital of the SKA project in the Karoo region. However, in addition to its recent scientific affiliation, the Kareeberg municipality is distinguished by its rich heritage including corbelled houses dated 1811-1815 in Carnarvon, a fort dated 1899-1902 on top of the Carnarvon Koppie, the first state-funded dam built in 1882 close to Van Wyksvlei and several national monuments in Vosburg. Although the agricultural land capability of Kareeberg is dominated by non-arable, low potential grazing, livestock farming is regarded as the most important pillar of the Kareeberg region which is well known for the quality of meat, such as Karoo lamb. Other agriculture produce of Kareeberg include goats, cattle and sheep, game and the cultivation of lucerne.

The municipal IDP indicates that geological composition does not provide much mining opportunities for Kareeberg. There are areas where mineral deposits occur, especially to the north of Van Wyksvlei (Gypsum) and to the north of Vosburg (Copper). Furthermore, it is stated that the eastern side of Kareeberg is underlain with Potash (Evaporite), which is the third major plant and crop nutrient after nitrogen and phosphate. Small amounts of potash are used in manufacturing soaps, glass, ceramic, chemical dyes, drugs, synthetic rubber, de-icing agents, water softeners and explosives.

In order to ensure a coordinated and strategic spatial development, the Kareeberg municipality has developed strategic development plans at both macro and micro level. The Kareeberg Rural Spatial Development Framework/Land Development Plan (2010) states that “on a macro level there is a need for a more focused development at key nodal points to develop the region strategically within current resource constraints; on a micro level, most town areas are still geographically segregated and direct intervention within former buffer strip areas will be required to integrate communities”. A Macro Strategic Development Concept was therefore developed by the Kareeberg municipality for the entire municipal area as well as micro strategic development concepts for each of the respective nodal points identified in the Rural Spatial Development Framework. The development rationale of the macro strategic development concept for Kareeberg is based on nodal development, corridor development, tourism development, environmental conservation, mining development, and agricultural development. The study identified Carnarvon as “a primary activity node in terms of its
strategic location, existing functions and services provided, expected future development and existing population size”. The aim of the strategic development plan is to “attract private and public investments to Carnarvon to increase economic and social opportunities, to accommodate regional and sub-regional growth and to provide a full range of services and goods”. The towns of Van Wyksvlei and Vosburg are defined as rural service centres, providing access basic services and facilities to rural communities including municipal services such as pay-pay points and social and support services.

5. Environmental attributes Mapping (Objective F)

In consultation with project partners, provinces and district municipalities, the environmental and infrastructural attributes associated with the identified SKA Phase 1 development were spatially mapped (Figure 3). This screening exercise aimed to identify possible key issues and sensitivities within the extent of the SKA phase 1 study area as well as identify needs for further research and data collection. All identified factors were taken into consideration for the specialist studies undertaken to inform the environmental sensitivity mapping.


The environmental sensitivity map (Figure 4) was based on inputs from the specialists, consultation with relevant national, provincial and local authorities, conservation organizations and SKA SA. The environmental and social sensitivities were categorized into areas as follows:

- areas that would not be suitable for SKA Phase 1 development and for which no mitigation measures are available;
- areas that would be sensitive to SKA Phase 1 development but for which mitigation measures are available; and
- areas which demonstrate no sensitivity and are suitable for the SKA Phase 1 development.

Figure 4 illustrates high sensitivity areas within the study area for the SEA. These areas were identified as “not suitable for development” by the SEA specialists.

The SEA specialists also provided inputs on areas which have been degraded and which could be improved as an offset to the SKA project within the SKA Phase 1 SEA study area.
Figure 3: Environmental Attributes Map
Figure 4: Environmental Sensitivity Map
A sustainable development process aims to meet the necessary human development goals while maintaining the ability of natural systems to continue to provide the natural resources and ecosystem services upon which the economy and society depend. The World Commission on Environment and Development\(^4\) defines sustainable development as a “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” In order to achieve this target, a balance between social, economic, and environmental objectives (and needs) must be achieved in the process of decision making especially for national-scale strategic infrastructure development and strategic socio-economic initiatives.

An overview of the fundamental environmental principles underpinning this SKA1_MID SEA is provided below, and more details are provided in Chapter 4 of the IEMP.

1. The ecological integrity, biodiversity and physical attributes of the Karoo should be protected and sustainably utilised. A high degree of environmental awareness should be encouraged amongst all interested and affected parties.

Water quality and availability will likely be the most significant impacts within the study area. A significant trend for increasing temperatures has already been shown by weather stations in the Northern Cape which have been tracking temperature data from 1960\(^5\). Existing low rainfall patterns and water constraints limit the ability of municipalities to deliver water services to local inhabitants effectively. As low rainfall has a significant negative impact on the ability of vegetation to recover after disturbance, any activity resulting in disturbance to vegetation should be limited and mitigated.

The conservation of biodiversity and natural habitats should be encouraged, taking into consideration the needs of the local community to ensure no hindrance of local economic activities and performance. The use of primary raw materials and energy, for instance, should be monitored and suitable principles for reduction, re-use and recycling should be implemented across all activities to minimise waste and carbon dioxide ($\text{CO}_2$) emissions produced as a result of SKA activities. Dust generation should be minimised, where possible, to prevent harm to local flora and disturbance to local communities. This can be achieved by minimising dust by reducing speed on unsealed roads, or arranging road watering if conditions become extreme.

The following principles should be implemented on the SKA development site amongst all SKA employees, sub-contractors and visiting researchers:

- Prohibit development or any kind of direct or indirect impacts on critically important biodiversity sites defined as “no-go areas” during the Strategic Environmental Assessment process;
- Preserve the floral heritage of the study site through the promotion of conservation and protection;
- All species that are endemic to the province should receive the utmost protection;
- Reduce the impact on biodiversity by monitoring the state of threatened species on site;
- Prevent illegal or unsustainable use of biodiversity on site; and

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• Prevent illegal trading of flora in accordance with the Convention on the Trade in Endangered Species of Wild Fauna and Flora\textsuperscript{6} and TRAFFIC\textsuperscript{7}, the wildlife trade monitoring network, regulations.

The International Union for Conservation of Nature (IUCN)'s Red List, which determines the risks of extinction to species, plays an important role in guiding conservation activities of governments, NGOs and scientific institutions, and is recognized worldwide for its objective approach. All populations of Red Data\textsuperscript{8} animal species should be protected and their natural habitat must be retained. Furthermore, all development activities should be limited in Succulent Karoo Programme (SKEP) areas to ensure that the ability to declare a formal conservation area is not compromised.

The public environmental awareness can be encouraged through long term environmental research programmes and the publication of environmental studies to benefit the scientific community and add to the environmental knowledge base of the region. Furthermore the potential declaration of the SKA core area as a special nature reserve provides a unique opportunity to contribute to environmental research and the environmental knowledgebase in the Karoo. The removal of alien plant species should be prioritised, with the support of the Working for Water programme and through a proactive and shared responsibility approach with local communities and authorities. Furthermore, the National Research Foundation is in the process of developing a detailed Land Management plan in light of environmental best practice principles in order to ensure that environmental protection activities and sustainable development guiding principles are incorporated in daily tasks on site.

2. Take actions to mitigate and build resilience to the impacts of climate change. Training and public awareness on climate change and its effects should be encouraged.

The Convention on Biological Diversity (CBD)\textsuperscript{9} defines ecosystem-based adaptation as “the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people adapt to the adverse effects of climate change”. Ecosystem-based adaptation refers to natural solutions to extreme weather problems e.g. creating a buffer of natural vegetation along riparian corridors and around wetlands can mitigate floods, reduce erosion and improve water quality. These environmentally-friendly solutions are often more effective and less costly than artificial engineered solutions and can be easily applied in rural landscapes. The implementation of these techniques at regional scale in the Karoo as well as national scale can be easily aligned with job creation and other projects with significant social benefits.

Several important natural features in the Karoo can support resilience of biodiversity to climate change and should be protected. These features include:

• riparian corridors and buffers;
• areas with temperature, rainfall and altitudinal gradients;
• areas of high diversity;
• areas of high plant endemism;
• refuge sites including south-facing slopes and kloofs; and
• priority large unfragmented landscapes

By preserving these areas in a natural or near-natural state on the proposed development site, and by encouraging people to preserve these areas in the wider Karoo, the National Research Foundation will contribute to the natural adaptation to climate change, support healthy landscapes and the ability of ecosystems to continue to provide ecosystem services to communities.

\textsuperscript{6} https://www.cites.org/
\textsuperscript{7} http://www.worldwildlife.org/initiatives/traffic-the-wildlife-trade-monitoring-network
\textsuperscript{8} http://www.iucnredlist.org/
\textsuperscript{9} https://www.cbd.int/
Local government is a key player in the implementation of these sustainable and environmentally-friendly practices. The Karoo area consists of a low population density with isolated communities with fairly high levels of poverty and inequality which results in a vulnerable population. Climate change will impact remote and rural communities that are already vulnerable. With the assistance from the National Research Foundation and several other agents from the public sector, the private sector and NGOs, local government can teach the local communities to cope with, and respond to the negative impacts of climate change through the implementation of adequate mitigation and adaptation strategies.

The Disaster Management Act (Act 57 of 2002) makes all levels of government responsible for the establishment of disaster risk reduction and management programmes, emergency preparedness, rapid and effective disaster response and recovery strategies; as well as mandates each province, district municipality and metropolitan municipality to establish and implement a policy framework which is consistent with the National Disaster Management Framework. The Northern Cape Department of Environment and Nature Conservation and the National Department of Environmental Affairs are responsible for the Northern Cape vulnerability assessment and the National Adaptation Strategy. The National Adaptation Strategy is aimed at ensuring that adaptation measures are integrated into all government planning, budgeting and development objectives, and its key objectives are to: “build climate resilience and adaptive capacity, provide leadership and guidance in terms of integration of climate change adaptation responses, and optimise and balance policy, planning and implementation”.

The SKA project will be present in the Karoo for an operation phase of at least 50 years (after completion of the construction phase) and therefore must be included in all long-term planning document of the Northern Cape province and local/district municipalities in which it is located. National, provincial and local governments have different responsibilities for disaster management in terms of current legislation. At the local level, municipalities should be responsible for the implementation and maintenance of an all-hazard, full-spectrum comprehensive disaster management programme, ensuring: Prevention, Mitigation, Preparedness, Response, Rehabilitation and reconstruction, and Development. It is the prime responsibility of the local authority to have a contingency plan to deal with any incident such as an emergency and a disaster event; and this disaster management plan should be included in a municipality’s integrated development plan. In line with the National Disaster Management Framework, the Northern Cape Province’s Framework and the relevant municipalities’ Disaster Management programmes (e.g. the Namakwa District Municipality Disaster Management Programme) shall be updated to include specific information and adaptation strategies for the SKA project.

The SKA project should also be taken into consideration for further review of the 2012 climate change Vulnerability Assessment for the Namakwa District Municipality and other regional climate change Vulnerability Assessments and planning documents. It is therefore crucial that the Namakwa and Pixley ka Seme district municipalities as well as the Hantam, Kareeberg and Karoo Hoogland local municipalities incorporate the SKA project into their climate adaptation strategies and disaster management planning. The following principles can be implemented as part of the climate change mitigation and awareness strategy at local and regional scale:

- Long-term monitoring of extreme weather events;
- Long-term monitoring of pest and disease occurrence;
- Adequate support for vulnerable groups;

10 National Disaster Management Centre (NDMC) of the Department of Cooperative Governance : "Disaster management guidelines for municipalities".
11 Amanda Bourne, Dr Camila Donatti, Dr Stephen Holness & Professor Guy Midgley, 2012 - Climate change Vulnerability Assessment for the Namakwa District Municipality. Full technical report.
• Identification and prioritised sustainable management of ecosystems (including agricultural lands) providing critical ecosystem services such as water retention and flood protection, and their restoration where these are damaged or compromised;
• Develop an enhanced understanding of longer term climate variability and change; and
• Develop adaptation tools, technologies and techniques in conserving, rehabilitating and restoring natural ecosystems.

Further climate change mitigation and awareness strategies include the preparation of sector-specific strategies for adaptation to climate variability e.g. consultation with farmers to develop best practices for land management including restoration and maintenance of key ecosystem services (grazing land, rivers, and wetlands).

3. Promote and contribute to the United Nations Sustainable Development Goals

SKA South Africa has established a Human Capital Development Programme to create the required skills to design, construct and operate the MeerKAT and SKA telescopes, and to make optimal use of these radio telescopes for research. The outcomes of the various education initiatives of the Human Capital Development Programme contribute, directly and indirectly, to the achievement of several United Nations Sustainable Development Goals related to education and an improved standard of living through more skilled and higher income job opportunities.

The following United Nations Sustainable Development Goals are supported by the Human Capital Development Programme:
• Goal 1 (end poverty in all its forms everywhere);
• Goal 3 (ensure healthy lives and promote well-being for all at all ages);
• Goal 4 (ensure inclusive and quality education for all and promote lifelong learning);
• Goal 8 (promote inclusive and sustainable economic growth, employment and decent work for all); and
• Goal 10 (reduce inequality within and among countries).

A better education leads to more opportunities in terms of higher skilled and higher income jobs which in turn lead to an improved standard of living, better access to health care and reduced poverty. In support of the United Nations Sustainable Development Goal 5, the Human Capital Development Programme also acknowledges the issue of gender equality and strives to increase the numbers of black and female South African students in science, engineering and technology fields in general, and in radio astronomy specifically.

8. Identification and assessment of environmental impacts (Objectives J)

Specialist strategic impact assessments were undertaken for agriculture, heritage and landscape, terrestrial and aquatic biodiversity, birds, bats, and socio-economic sensitivities. Further aspects of sensitivity in terms of aviation, defence, telecommunication, weather services, and mining were determined in consultation with the relevant authorities. Sensitivity maps were produced for all but the socio-economic assessment. The results were used to develop the Chapter 3 of the IEMP “State of the Environment” as well as Chapter 4 “draft SKA1_MID EMPr”. The specialists’ findings also informed further permit and licenses requirements as described in Chapter 2 of the IEMP “Project Scope” and Environmental Guidelines which are included in Chapter 5 of the IEMP.

The identified sensitivities from the specialist sensitivity maps were subsequently combined into the Combined Environmental Sensitivity map presented in Section II-6 of this report. The following specialists and peer-reviewers prepared the specialist strategic impact assessments’ reports:

The **terrestrial ecology and biodiversity assessment** of the SKA1_MID SEA study area was prepared by Dr Sue Milton, SACNASP Professional Natural Scientist (Reg. No. 400047/08), RENU-KAROO Veld Restoration cc. The report was peer-reviewed by Dr Joh R Henschel, Manager of the South African Environmental Observation Network (SAEON) Arid Lands Node.

The **fine-scale mapping of the SKA core area** was prepared by Simon Todd, SACNASP Professional Natural Scientist (Reg. No. 400425/11), SAEON Arid Lands Node. The report was peer-reviewed by Dr Joh R Henschel, SAEON.

The **avifauna sensitivity study** was prepared by Dr W. Richard J Dean, Research Associate at the DST/NRF Centre of Excellence at the Percy FitzPatrick Institute of African Ornithology at the University of Cape Town. The report was peer-reviewed by Dr Penn Lloyd, Principal Ecologist and Director at Biodiversity Assessment and Management Pty Ltd; and Patrick Morant, SACNASP Professional Natural Scientist (Reg. No. 401514/83).

The **bat fauna sensitivities study** was prepared by Kate MacEwan, SACNASP Professional Natural Scientist (Reg. No. 400123/05), chairperson of the South African Bat Assessment Advisory Panel (SABAAP). The report was peer-reviewed by Professor David Jacobs, SARCHI Research Chair in Animal Evolution and Systematics at the Department of Biological Sciences of the University of Cape Town; and Patrick Morant, SACNASP Professional Natural Scientist (Reg. No. 401514/83).

The **Endangered species survey** was prepared by Bonnie Schumann and Esté Matthew, Field Officers at the Endangered Wildlife Trust (EWT) drylands Conservation Programme. The report was peer-reviewed by Cobus Theron, Programme Manager at the EWT Drylands Conservation Programme.

The **Freshwater Aquatic Ecosystems assessment report** was prepared by:
- Kate Snaddon, SACNASP Professional Natural Scientist (Reg. No. 400225/06), Director at the Freshwater Research Centre, and Senior Consultant and Partner at the Freshwater Consulting Group;
- Dean Ollis, SACNASP Professional Natural Scientist (Reg. No. 400102/06), Freshwater Research Centre, and Freshwater Consulting Group;
- Tumisho Ngobela, SACNASP Candidate Natural Scientist (Reg. No. 100010/15) Freshwater Research Centre, and Freshwater Consulting Group; and
- Donovan Kirkwood, SACNASP Professional Natural Scientist (Reg. No. 400351/14).

The Freshwater Aquatic Ecosystems assessment report was peer-reviewed by:
- Dr Wietsche Roets, SACNASP Professional Natural Scientist (Reg. No. 400191/10), Specialist Scientist: In-stream Water Use at the Department of Water and Sanitation;
- Dr Betsie Milne, DST-NRF Professional Development Programme, South African Environmental Observation Network Arid Lands Node; and
- Patrick Morant, SACNASP Professional Natural Scientist (Reg. No. 401514/83).

The **heritage assessment report**, included in Appendix C-7 of this IEMP, was prepared by:
- Kyla Bluff, Cedar Tower Services (Association for Southern African Professional Archaeologists (ASAPA) Reg. No. 358);
- Nicholas Wiltshire, Cedar Tower Services (ASAPA Reg. No. 359, Association of Professional Heritage Practitioners (APHP) member);
• Jenna Lavin, Cedar Tower Services (ASAPA Reg. No.327, APHP member);
• Jayson Orton, ASHA Consulting (ASAPA Reg. No. 233, APHP member);
• John Almond, NaturaViva (Palaeontological Society Southern Africa (PSSA) Membership, APHP member);
• Bernard Oberholzer, BOLA Landscape Architect (Professional Member of the SA Council for the Landscape Architectural (SACLAP) Reg. No. 87018, Fellow of the Institute of Landscape Architects of SA (ILASA)); and
• Quinton Lawson, MLB Architects (Professional Member of the SA Council for the Architectural Profession (SACAP) Reg. No. 3686, Member of the Cape Institute for Architects (CIA), Member of the Impact Assessment Review Committee of Heritage Western Cape).

The heritage assessment report was peer-reviewed by:
• Natasha Higgitt, Heritage Officer: Impact Assessment at the South African Heritage Resources Agency (SAHRA);
• Ragna Redelstorff, Heritage Officer: Permit Officer – Palaeontology at SAHRA;
• Phillip Hine, Heritage Officer: Permit Officer – Archaeology at SAHRA; and
• Itumeleng Matiseng, Heritage Officer: Burial Grounds and Graves Unit at SAHRA.

The soils, erosion and agricultural potential assessment was prepared by Johann Lanz (Pri.Sci.Nat. Reg. no. 400268/12) Soil Scientist; and the report was peer-reviewed by:
• Anneliza Collett, Department of Agriculture, Forestry & Fisheries (DAFF) - Directorate: Land Use and Soil Management; and
• Dr Andrei Rozanov, Senior Lecturer in Soil Science at Stellenbosch University.

The risk assessment report was prepared by Michael Paul Oberholzer, Director, Risk Assessor and Chemical Engineer at RISCOM (PTY) LTD, SANAS facility accreditation No MHI0013, approved signatory for MHI risk assessments, Registered Professional Engineer (Registration No.: 910085) with the Engineering Council of South Africa, Approved Inspection Authority for MHI Risk Assessments South Africa. The risk assessment report was peer-reviewed by Annick Walsdorff, Chemical Engineer (Environmental Engineering) and Principal Environmental Assessment Practitioner at the Council for scientific and Industrial Research.

Further studies were conducted as part of the SEA in support of the preparation of Environmental Guidelines and long term research and monitoring programmes. These studies informed Chapter 5 of the IEMP. The following specialists and peer-reviewers participated to the preparation of the guidelines and long term research and monitoring programmes:

• The alien invasive plants control and management guidelines were prepared by Dr Sue Milton, Director at RENU-KAROO Veld Restoration cc. SACNASP Professional Natural Scientist (Reg. No. 400047/08). These guidelines were peer-reviewed by Dr Graham Harding, Director at Invader Plant Specialists (Pty) Ltd, SACNASP Professional Natural Scientist, Pest control operator Registration No 2012/036721/07.

• The protection, rescue and translocation programme and the re-vegetation and habitat restoration programme were prepared by Dr Sue Milton, Director at RENU-KAROO Veld Restoration cc, SACNASP Professional Natural Scientist (Reg. No. 400047/08) and peer-reviewed by Dr Joh Henschel, Manager of the South African Environmental Observation Network (SAEON) Arid Lands Node.

• Global change monitoring and land-use change research and monitoring programmes were prepared by Simon Todd, Ecologist at SAEON Arid Lands Node, SACNASP Professional Natural Scientist (Reg. No. 400425/11). These programmes were
peer-reviewed by Dr Joh Henschel, Manager at the South African Environmental Observation Network (SAEON) Arid Lands Node, and Dr Emma Archer, Chief Researcher in Sustainable agriculture, managed ecosystems, Climate Studies, Modeling & Environmental Health at the Council for Scientific and Industrial Research.

- The **predator species long term research and monitoring programme** was prepared by Gabriella Duncan, Intern at SKA SA, SKA SA Young Professionals Programme. The programme was peer-reviewed by Professor Justin O’Riain, Professor at the Department of Biological Sciences of the University of Cape Town, Director at the Human and Wildlife Research Institute; and Lydia Cape Environmental Scientist at the Council for scientific and Industrial Research, Registered South African Professional Natural Scientist - Environmental Sciences Reg No 400359/13.

Furthermore, a **Socio-Economic Assessment, a review of three different socio-economic surveys dated 2007, 2009 and 2015 for the towns of Carnarvon, Williston and Victoria West** and an **agricultural economic assessment** were conducted as part of the SEA process. Further details on these studies are provided in Section II-11 of this document.

The specialists’ strategic impact assessment reports are available on the project website: http://www.skaphase1.csir.co.za/

9. **SKA Environmental Management Programme (EMPr) (Objectives K)**

An Environmental Management Programme (EMPr) is required to ensure that the required mitigation measures and management actions are systematically performed and carried through the construction and/or operation phases of a proposed development. The SKA project will consist of:

- Final Design Phase;
- Construction Phase;
- Operation Phase; and
- Decommissioning Phase.

Activities related to the final design phase, construction phase and operation phase and which may cause environmental damages within the study area, have been considered during the preparation of mitigation measures and management actions included within this EMPr.

Chapter 4 of the IEMP contains the draft EMPr for the South African mid-frequency array of SKA Phase 1 (SKA1_MID) and associated infrastructure. An EMPr plays a vital role in the implementation of consistent and continued environmental management practices during the project life cycle.

This draft EMPr satisfies the requirements of Section 24N of NEMA and Appendix 4 of the Government Notice 982\(^\text{13}\) which regulate and prescribe the content of any EMPr and specify the type of supporting information that must accompany the submission of the report to the authorities (refer to Table 3 below). This draft EMPr includes the pre-construction and construction environmental management requirements prepared for MeerKAT (Karoo Array Telescope) on the farms of Losberg and Meys’dam.

\(^{13}\) Government Gazette 38282 dated 4 December 2014
### Table 3: Compliance with Section 24N of NEMA

<table>
<thead>
<tr>
<th>Requirements of Section 24N of NEMA</th>
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<tr>
<td><strong>Section 24N - 2)</strong> The EMPr must contain- information on any proposed management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified in a report contemplated in subsection 24(1A), including environmental impacts or objectives in respect of:</td>
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<td>• planning and design;</td>
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<td>• pre-construction and construction activities;</td>
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<td>• the operation or undertaking of the activity in question;</td>
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<td>• the rehabilitation of the environment; and</td>
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<td>• (v) closure, if applicable.</td>
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<td><strong>Section 24N - 2)</strong> The EMPr must contain- details of- the person who prepared the environmental management programme; and the expertise of that person to prepare an environmental management programme;</td>
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<td><strong>Section 24N - 2)</strong> The EMPr must contain- a detailed description of the aspects of the activity that are covered by the environmental management programme;</td>
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<td><strong>Section 24N - 2)</strong> The EMPr must contain- information identifying the persons who will be responsible for the implementation of the measures contemplated in paragraph (a);</td>
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<td><strong>Section 24N - 2)</strong> The EMPr must contain- information in respect of the mechanisms proposed for monitoring compliance with the EMPr and for reporting on the compliance;</td>
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<td><strong>Section 24N - 2)</strong> The EMPr must contain- as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and</td>
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<td><strong>Section 24N - 2)</strong> The EMPr must contain- a description of the manner in which it intends to- modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;</td>
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<td>• remedy the cause of pollution or degradation and migration of pollutants; and</td>
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<td>• comply with any prescribed environmental management standards or practices.</td>
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<td><strong>Section 24N - 3)</strong> The EMPr must, where appropriate-</td>
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<td>• set out time periods within which the measures contemplated in the EMPr must be implemented;</td>
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<td>• contain measures regulating responsibilities for any environmental damage, pollution, pumping and treatment of polluted or extraneous water or ecological degradation which may occur inside and outside the boundaries of the operations in question; and</td>
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<td>• develop an environmental awareness plan describing the manner in which-</td>
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<td>o the applicant intends to inform his or her employees of any environmental risk which may result from their work; and</td>
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<tr>
<td>o risks must be dealt with in order to avoid pollution or the degradation of the environment.</td>
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The EMPr was compiled in accordance with the Integrated Environmental Management philosophy which aims to achieve a desirable balance between conservation and development. The Integrated Environmental Management is a key instrument of the National Environmental Management Act [NEMA] (Act No. 107 of 1998) as it prescribes a methodology for ensuring that environmental management principles are fully integrated into all stages of the development process. The basic principles of the Integrated Environmental Management are:

- informed decision-making;
- accountability for information on which decisions are taken;
- accountability for decisions taken;
- a broad meaning given to the term environment (i.e. one that includes physical, biological, social, economic, cultural, historical and political components);
- an open, participatory approach in the planning of proposals;
- consultation with interested and affected parties;
- due consideration of alternative options;
- an attempt to mitigate negative impacts and enhance positive aspects of proposals;
• an attempt to ensure that the ‘social costs’ of development proposals (those borne by society, rather than the developers) be outweighed by the ‘social benefits’ (benefits to society as a result of the actions of the developers);
• democratic regard for individual rights and obligations;
• compliance with these principles during all stages of the planning, implementation and decommissioning of the proposals (i.e. from ‘cradle to grave’); and
• the opportunity for public and specialist input in the decision-making process.

The overall objectives of this draft EMPr are to:
• assist with minimising the ecological footprint of the project on the local environment;
• to ensure that practical recommendations are provided to avoid and mitigate impacts associated with the construction and operation of the SKA project;
• facilitate harmonious co-existence between the project and other land uses in the area; and
• contribute to the environmental baseline and understanding of environmental impacts of SKA infrastructure and activities in a South African context.

These objectives are underpinned by the following concepts and implementation requirements in support to the higher principles of sustainable development:
• Continuous improvement: the National Research Foundation must commit to regularly review and update this draft EMPr, with the objective of improving overall environmental performance;
• Broad level of commitment: a broad level of commitment is required from SKA management board and workforce in order for the development and implementation of this draft EMPr to be successful and effective;
• Flexible and responsive: the draft EMPr must be implemented in a flexible and responsive manner i.e. respond to new and changing circumstances, or provide rapid short-term responses to problems or incidents.
• Integration across operations: the draft EMPr must integrate the various existing SKA line functions and operational units;
• Legislation: It is the responsibility of the National Research Foundation to obtain the required licenses and permits prior to the commencement of the construction activities.

The draft EMPr is an outcome-based EMPr which means that it identifies environmental impacts (potential positive or negative impacts of the development that needs to be enhanced, mitigated or eliminated) and associated management outcomes (target/goal to be achieved in order to avoid or mitigated the impacts). These management outcomes are achieved through the implementation of management actions taking into consideration factors such as responsibility, methods, time periods, resources required and prioritisation; and monitoring activities required to check whether the objectives are being achieved, taking into consideration the monitoring methodology, frequency and responsibility.

10. Reporting / Outputs of the SEA (Objectives L)

The findings and outputs of the Strategic Environmental Assessment were compiled into two reports:

- an Integrated Environmental Management Plan (IEMP) which establishes the minimum requirements for the construction and operation phases of SKA1_MID, environmental principles, environmental monitoring and control activities as well as long-term research monitoring programmes to be implemented on the SKA site; and
A strategic socio-economic assessment was commissioned by DST and SKA SA and conducted as part of the Strategic Environmental Assessment (SEA) of the Square Kilometer Array (SKA) Phase 1. The key objectives of the socio-economic study were to:

- Analyse and describe the existing (past and present) socioeconomic aspects/dynamics of the local-level study area and regional-level study area;
- Identify and analyse the potential direct and indirect positive and negative socio-economic impacts of SKA project including potential local economic impacts and macro-economic impacts of the SKA Phase 1 project; and
- Determine the potential direct and indirect positive and negative socio-economic impacts of the Draft AGA Regulations in the local-level study area and regional-level study area especially the restrictions on the use of voice and data telecommunication devices.

The strategic socio-economic assessment consisted of three different studies which were conducted by the following experts:

1. The **agricultural economic assessment** was prepared by Professor Johann Kirsten, Director of the Bureau for Economic Research of the University of Stellenbosch; and the report was peer-reviewed by:
2. A review of three different socio-economic surveys dated 2007, 2009 and 2015 for the towns of Carnarvon, Williston and Victoria West was conducted by Professor Doreen Atkinson, researcher at the Faculty of Economic and Management Sciences at the Central University of Technology of Bloemfontein; Research Associate at the Centre for Development Support (CDS) at the University of the Free State and founder member of the Karoo Development Foundation (KDF). The study was peer-reviewed by Professor Cherryl Walker, DST/NRF SARChI Chair at the Department of Sociology and Social Anthropology of Stellenbosch University.

3. The Socio-Economic Assessment was prepared by:

- Professor Doreen Atkinson, C2 NRF-rating Researcher at the Faculty of Economic and Management Sciences at the Central University of Technology of Bloemfontein; Research Associate at the Centre for Development Support (CDS) at the University of the Free State; Founder member of the Karoo Development Foundation (KDF); and Director: Heartland and Karoo Research Institute (cc), Philippolis;
- Rae Wolpe, Managing Director of Impact Economix; and
- Adv Hendrik Kotze, Professor extraordinaire at the Africa Centre for Dispute Settlement (ACDS) at the University of Stellenbosch Business School.

The Socio-Economic Assessment report was peer-reviewed by:

- Dr SW van der Merwe, Senior planner and manager of the Environmental planning department at Dennis Moss Partnership;
- Professor Anthony Leiman, Associate Professor at the School of Economics of the University of Cape Town (Environmental and resource economics; cost-benefit analysis; informal sector); and
- Dr Hugo van der Merwe, Transitional Justice Programme Manager at the Centre for the Study of Violence and Reconciliation in South Africa.

The socio-economic reports are available for review on the project website.
III. Stakeholder engagement during the SKA1_MID SEA

The purpose of this section of the SEA Report is to provide an overview of the stakeholder engagement process conducted during the SEA process including meetings and stakeholders submissions with a “comments and responses trail”.

The Strategic Environmental Assessment process enables a strategic and systematic approach to stakeholder engagement and management across a broad range of sectors that includes the three spheres of government, the private and public sectors as well as the wider public. Following best practices and in compliance with NEMA, the stakeholder engagement focuses on the decisions relating to environmental management issues and socio-economic opportunities i.e. the Strategic Environmental Assessment process and outputs; and the exchange of local knowledge of the study area, issues and concerns of stakeholders with respect to the Strategic Environmental Assessment of SKA1_MID.

The objectives of the stakeholder engagement process were:

- To share available and updated information with a diverse group of interested and affected parties in an objective manner,
- To record and take into consideration interested and affected parties’ comments, concerns, inputs and local knowledge in relation to the SKA activities,
- To discuss different approaches to reduce potentially negative or enhance potentially positive impacts within the affected area using local knowledge, and
- To share interested and affected parties issues and/or inputs with the other interested and affected parties as well as with the competent authority for decision-making.

The stakeholder engagement intended to raise a diversity of perspectives but not to force consensus amongst stakeholders. The diversity of opinion rather than consensus building is likely to enrich ultimate decision making, and therefore where possible, the Strategic Environmental Assessment stakeholder engagement is intended to obtain an indication of trade-offs that all stakeholders (e.g. interested and affected parties, technical experts, government departments and authorities) are willing to accept with regard to the ecological sustainability, social equity and economic growth of the affected area in relation to the proposed project.

Consultation with stakeholders’ included regular meetings with a special advisory committee, local government, conservation agencies and non-governmental organisations, as well as public meetings in the towns of Carnarvon, Williston, Brandvlei and van Wyksvlei.

The local communities, other interested and affected parties, and the wider public were engaged through various communication channels e.g. a project webpage, public meetings, posters, phone calls, bulk sms notifications and advertisements in selected local and regional newspapers. The stakeholder engagement process included a range of techniques for sharing information and providing opportunities to all interested and affected parties to engage effectively, efficiently and equitably. The public meetings notes, official communiques, comments/questions and responses trails and other stakeholder engagement process are included in the Strategic Environmental Assessment Report.

1. Special Advisory Committee meetings

The Strategic Environmental Assessment process was guided by a Special Advisory Committee including the following organisation and state departments:
The Special Advisory Committee made significant contributions to the SEA process including:

- sharing spatial data and information to support the SEA process
- reviewing of draft documents
- providing guidance on relevant legislative procedures
- facilitating focus group meetings

The Special Advisory Committee members were responsible to ensure that the mandates of the organisation and state departments represented on the committee were adequately taken into consideration during the SEA process.
2. Dedicated provincial and local government consultation

Dedicated provincial and local government consultations were undertaken to further inform local and provincial authorities about the SEA, consult on additional information available at local and regional levels, and verify issues and concerns expressed by local stakeholders about the SKA Phase 1 development. The following meetings were organized during the SEA process:

- Meeting on 17 November 2015 with Pixley ka Seme District, Siyathemba and Kareerberg Local Municipalities in Van Wyksvlei;
- Meeting on 17 November 2015 with Pixley ka Seme District, Kareerberg Local Municipality, SALGA and CoGTA in Carnarvon;
- Meeting on 18 November 2015 with Namakwa District Municipality and Karoo Hoogland, SALGA and CoGTA in Williston; and
- Meeting on 19 November 2015 with Namakwa District Municipality, Hantam Local Municipality and representatives from SLALGA and CoGTA in Brandvlei.
- Meeting on 19 August 2016 with Mr Frik Sterkse, Ward Councillor (ANC), Brandvlei
- Meeting on 29 August 2016 with Mr Slambee, Ward Councillor for Vanwyksvlei, ANC
- Meeting on 29 August 2016 with Clr Hermien Steenkamp, DA PR, Brandvlei, Hantam Local Municipality
- Meeting on 30 August 2016 with Kareebega municipality, Carnarvon, Mr Christian Schumann (SAICE), Mr Willem de Bruin (MM Kareebega), Mr Joannet Claassens (LED Kareebega), Mr Emar Isaacs (Interm Kareebega)
- Meeting on 31 August 2016 with Mr Gustav von Mollendorf, Municipal Manager, Karoo-Hoogland Local Municipality
- Meeting on 31 August 2016 in Loxton with Hugo Vorster (Ward councilor for Ubuntu LM) and Ingrid Schofman (Ubuntu Forum for Socio-economic Development)
- Meeting on 1 September 2016 with Paula Jantjies, Mayor, Ubuntu LM, and Mr Xolani Malgas, Acting Municipal Manager
- Meeting on 1 September 2016 with Mr R Pieterse, Municipal Manager; Mr Hennie Greeff, head of Infrastructure Development, Planning and Housing
- Meeting on 1 December 2016 with Northern Cape Provincial working group

3. Focus group meetings

During the SEA process several focus group meetings were organised with key stakeholders from conservation agencies and representatives from other key sectors (e.g. Civil Aviation, Defence, Heritage Resources) to share information and obtain inputs and expert advice on specific issues/technical aspects of the Strategic Environmental Assessment. Additional focus group meetings were organised with Farmers Unions’ representatives and specific communities’ groups including:

- Meeting on 21 October 2015 with the Carnarvon Farmers Forum;
- Meeting on 19 November 2015 with Brandvlei Farmers Union.
- Meeting on 29 August 2016 in Brandvlei with the ward councillor (Mr Sterkse), local farmers (Mr Strauss, Mr Vollgraaff, Mr Louw, Mr Maritz), local stakeholders (Mr Williams, Mr Markus, Mr McLean), local school representative (Mnr van Vuuren), and church representatives (Mr Isaacs, Ds van Vuuren).
- Meeting on 30 August 2016 in Carnarvon with the district municipality LED manager (Mr Sindisile Madyo), SKA community knowledge centre representative (Mrs Moos), local farmers (Mr Snyman, Mr Smit, Mrs Smit), local stakeholders (Mrs Andreas, Mr Mouton, Mr Mathisov, Mr Slavepe, Mrs Adams, Mr Hendriks, Mrs Hoon, Mr Classen, Mrs Malgas, Mrs Moos, Mrs Elsa), local school representatives (Mrs Ramatsetse, Mr Jackson), local pilot (Mr Torr), engineers (Mr Schumman, Mrs Botha, Mr Botha), and church representative (Mrs Witbooi).
Meeting on 31 August 2016 in Williston with the district municipality LED manager (Mr Sindisile Madyo), local farmers (Mrs Leroux, Mr Theron, Mr Wilson, Mr Louw, Mr Wilson, Mr Schoeman, Mr Vijoen, Mr Hodgson, Mr van Zyl, Mr and Mrs van Wyk), local stakeholders (Mr Theron, Mrs Wilson, Mrs Schoer, Mr Oosthuizen).

Meeting on 31 August 2016 in Loxton with Michael de Waal, Gerhard Botha, and Salmari Retief.

Meeting on 1 September 2016 in Mr Luthando Klaas (General manager of Alkantpan Test Range), Mr. Phaphedi Matsapola (Manager SHEQ of Alkantpan Test Range), Mr Van Vuuren (Marketing manager of Alkantpan Test Range) and Mr Verhoef (operations manager of Alkantpan Test Range)

4. Project website

As previously mentioned (Section II-2), a project website was launched at the inception of the project, accessible at: http://www.skaphase1.csir.co.za/ and remained open to the public, updated and maintained during the entire duration of the SEA. The main language of the project website was English however several pages and documents were translated in Afrikaans as this is the most-spoken language of the study area. The project website comprised five different pages including:

- Welcome / Welkom
- SEA Process / SOA Proses
- Documents / Dokumente
- Stakeholder Registration / Registrasie van belanghebbendes
- Contact us / Kontak ons

The website was created as a platform for the exchange of information and data between the SEA team and all stakeholders including government officials, local communities, industry representatives, and anyone else interested in SKA Phase 1 development in South Africa. The website enables interested and affected stakeholders to register on the SEA database via a registration page (Figure 5) and to submit comments and inputs to the SEA team via a contact us/comment page (Figure 6).

Relevant documents were uploaded to this website for stakeholders’ consultation in the “Documents / Dokumente” page (e.g. Background Information Document, Questions and Responses documents, Official releases from government on Astronomy regulatory requirements etc). In particular all official submissions (comments-questions) and responses from relevant stakeholders were uploaded to the “Comments & Responses” folder of the “Documents / Dokumente” page (Figure 7).
Figure 5: Project website registration page
Contact us / Kontak ons

Email / E-pos: skaphase1@csir.co.za

Phone /foon: (+27) 021-888-2408 / 021-888-2462

Comments / Kommentare

Name

Email

Message

Send a copy of this email to yourself

Submit

**Figure 6:** Project website contact us/comment page
Figure 7: Project website Documents / Dokumente page

Questions & Answers 1 to 12

Questions & Answers 1 to 12

Questions & Answers 13 to 24

Questions & Answers 25 to 30

Questions 30.1 to 34.4

Questions 35 to 38

Questions & Answers 39 to 43
5. Official notices

Posters placed in the towns of Carnarvon, Brandvlei, Williston and Van Wyksvlei:

6. Announcements in selected local and regional newspapers

During the SEA process, advertisements for the inception of the SEA, important notifications and announcement of public meetings were published in local, provincial and national newspapers including:

- Die Gemsbok on 11 September 2015
- Die Noordwester/Messenger on 11 September 2015
- Die Noordkaap on 23 September 2015
- The city press on 13 September 2015
- Business times on 13 September 2015;
- Die Rapport on 13 September 2015;
- Die Messenger on 26 August 2016; and
- Die Noordwester, 29 August 2016.

7. Public meetings

This section provides key comments, issues and inputs raised during the public meetings conducted during the SEA process. Responses provided by the CSIR and other experts involved in the SEA process are also provided in this section.

In November 2015, the public meetings consisted of two to three hours sessions where all interested and affected parties were invited to attend presentations given by CSIR in power point format. The
meetings were organized at the four towns surrounding the SKA project, namely: Van Wyksvlei, Carnarvon, Williston and Brandvlei. At the end of the presentations, the attendees were invited to ask questions, provide inputs and comments on the presentations as well share their local knowledge and concerns about the SKA project. The questions, inputs and comments were captured in a questions/comments trail included below.

In August 2016, a different approach was followed on request from various stakeholders in the area who were not able to attend the sessions in November due to the limited time allocated for the meetings in each town. The CSIR thus organize an open door day at each of the town, where posters summarizing the findings of the specialist studies during the SEA process were displayed in the venue, and CSIR representatives were present to engage on a one-on-one basis with interested and affected parties.

November 2015 public meetings:
- Van Wyksvlei: on Monday 16/11/2015 at 5pm in the Van Wyksvlei Community Hall (Hanekom Weg);
- Carnarvon: on Tuesday 17/11/2015 at 5pm in Carnarvon Primary School (Van Wyksvlei Weg);
- Williston: on Wednesday 18/11/2015 at 5pm in the Karoo Kombuis (Lutz Straat 5); and
- Brandvlei: on Thursday 19/11/2015 at 5pm in VG Church Hall (Kerk Straat).

August 2016 public meetings:
- Carnarvon: on Tuesday 30 August 2016 from 10 am to 4 pm in the Kareeberg Library (Lang Street)
- Williston: on Wednesday 31 August 2016 from 10 am to 4 pm in the NG church Hall (Reyneke Street)

An additional meeting was organized in Brandvlei on 29 August 2016, on request from registered stakeholders.

The following stakeholders have attended the public meeting in Van Wyksvlei on 16 November 2015 and have registered on the attendance register at the meeting. These stakeholders are now registered on the CSIR SEA stakeholders’ database:

- Jan Augustyn
- Piro Easton
- Brian Huggett
- Jan-Hendrick Hoon
- Frans Augustyn
- Johan Smit
- Gerda Oberholzer
- Deon Oberholzer
- Francois De Koek
- Johan Bruwer

The key comments and responses captured during the public meeting in Van Wyksvlei have been compiled according to themes in the tables below:

| Theme 1: Strategic Environmental Assessment Process commissioned by the Department of Environmental Affairs in support of SIP 16 and conducted by the CSIR SEA team |
|---|---|
| **Key comments from Stakeholders during the Meeting** | **Responses from the CSIR SEA team** |
| What is the difference between the SEA study area and the AGA regulations area? | The AGA is the Astronomy Geographic Advantage Act of 2007. The AGA defines the core astronomy advantage area, the Central Astronomy Advantage Area and the coordinated astronomy advantage area. The Karoo Central Astronomy Advantage Areas consist of three |
partly overlapping areas with common inner boundaries that coincide with the outer boundaries of the Karoo Core Astronomy Advantage Area as defined in the GOVERNMENT GAZETTE No. 37397 dated 28 February 2014. The KCAAA 1 area covers approximately 12 million hectares.

The SEA study area only includes the land parcels targeted by SKA SA team for the SKA Phase 1 project: 197 antennas in total. The SEA study area includes a core area which consists of 36 land parcels and 3 spiral arms which consists of 131 land parcels. The SKA Phase 1 SEA study area covers approximately 268 000 hectares.

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
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<tbody>
<tr>
<td>The process has started and they are already building MeerKAT, but the impact study is only done now to assess how the towns and the communities will be affected. Why the impact assessment has not been done prior to this?</td>
<td>Two Environmental Impact Assessments (EIAs) and one Basic Assessment (BA) were previously commissioned for the MeerKAT project. The environmental authorisations were issued by the Department of Tourism, Environment and Conservation of the Northern Cape in 2007, 2008 and 2009 for the construction of the MeerKAT project and therefore construction has already started. The SEA is looking at the Phase 1 of the SKA project which consists of an additional 133 antennas to be added to the MeerKAT project (64 antennas). The Phase 1 of the SKA project cannot be constructed prior to the assessment being completed or prior to receiving an environmental authorisation for the construction of the Phase 1 of the SKA project.</td>
</tr>
<tr>
<td>What are the economic and social advantages of the SKA for us?</td>
<td>We are currently drafting the scope of work and approach for the socio economic assessment based on inputs from stakeholders and from local organisations. The socio economic assessment will identify any potential advantages of the SKA for the local communities within the SEA study area.</td>
</tr>
<tr>
<td>Why are you doing a strategic study? What is the Integrated Management Plan?</td>
<td>The strategic environmental assessment (SEA) is conducted because of the strategic nature of the proposed project: the MeerKAT and the SKA projects fall under the Strategic Integrated Project No 16 in support of the National Development Plan; and because of the size of the proposed project: the study area of the SKA Phase 1 project includes 167 land parcels and covers approximately 268 000 hectares. While the EIA tool is used to evaluate the impacts of a proposed development on a small scale site, SEAs are conducted to evaluate the opportunities and constraints of the</td>
</tr>
</tbody>
</table>
We have established businesses, we have 50 permanent workers working in that area, that is excluding our casual workers, and these people are being personally affected. We have to move, we do not have a choice. We do not have a say in all this. We farm in this area for a long time, we have done well here. That is what you people need to take into consideration in the study.

strategic development at regional scale.

The output of the SEA is an integrated management plan (IMP) for the SKA Phase 1 project. The IMP should describe the environmental sensitivities on the proposed site and recommendations on procedures for mitigating and monitoring environmental impacts associated with the proposed activity. It will also provide details on the relevant programmes and permitting requirements associated with the proposed activities, such as alien invasive management programme and a long term research programme.

It is not within the CSIR mandate to say whether SKA will happen or not. The SKA SA needs to receive approval from the Minister of Environmental Affairs for the construction of the SKA phase 1 infrastructure before it can start the construction activities.

Noted. The socio economic study of the SEA will need to look into the economic impacts on the farmers, farm workers, local businesses such as abattoirs and the people living in the towns within the study area.

### Theme 2: Land acquisition conducted by the SKA SA team

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<tr>
<th>Key comments from Stakeholders during the Meeting</th>
<th>Responses from the SKA SA team</th>
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</table>
| The contribution of the SKA is for the country and for science, but nothing for the farmers and the farm workers or the other persons living in this area. The impacts on local people are going to be dramatic. Unemployment is already high, people already struggle to make a living and live properly, there are so many people who are really poor and who live on grants only. Is science more important than food? | It is quite possible that at the end of the study the findings of the socioeconomic may be that there few benefits for the local community but we all need to look at the bigger picture. It is a big project. It has advantages for South Africa as a country. It makes South Africa one of the best scientific destinations in the world. We do a lot of work with Home Affairs and some of the best radio telescope scientists come to South Africa and establish themselves here. That means that we start to build up a knowledge economy. Coal for example will eventually run out, and the economy has to move away from a resource rich economy to a knowledge economy and the SKA is able to influence this. The management of the project is a different matter to whether the project will happen or not. The purpose of the integrated management plan is how the project development will be managed and that is under discussion. You have the opportunity to influence it. Everyone here should think about what our organisation can do to }
make a better impact or for a better contribution towards the community in terms of this process. We already have school programs in Carnarvon schools and soon Van Wyksvlei, Brandvlei, Williston schools will also be linked. We are also trying to build a new hospital in Carnarvon. SKA cannot address all the social ills in the community. It is not possible because it is a team effort, but in terms of the context and abilities that we have, local stakeholders can make suggestions on what can be done in the local area. This is a project and we are trying to contribute to the community. We are looking at getting involved with education, health and we have very good relations with the police stations. We try and improve the police networks and the police stations. What is there that you think we can improve on?

Additional inputs (after meeting):

Frequently asked questions-answers sourced from the EXPLANATORY MEMORANDUM ON THE DRAFT REGULATIONS FOR THE PROTECTION OF THE KAROO CENTRAL ASTRONOMY ADVANTAGE AREAS:

“The study to locate the SKA in South Africa started in 2003 when a thorough study on the suitability of existing and expected conditions in South Africa was carried out to consider hosting the SKA. In South Africa, the Northern Cape Province is by far the most suitable area with the lowest population and industrial density together with the lowest volume of radio communication and electrical activities. Three areas were considered in the Province, i.e. Kalahari, Karoo and Namaqualand. Karoo turned out to be the better option. Notwithstanding the low economic activity density, the Karoo does offer the basic infrastructure required to support the SKA alongside good atmospheric conditions, radio quietness, geotechnical stability and good security conditions. On a global basis, six countries thought that they may offer acceptable conditions but only Western Australia and the Northern Cape Province met the requirements but with the latter being the better option.”

• What is going to happen with the shooting range at Alkantpan?

SKA SA is currently doing radio frequencies tests at the Alkantpan Test Range which is located near Prieska. SKA SA will have to implement certain mechanisms when testing of ballistic weapon...
systems will occur at Alkantpan. They will not be shooting every day.

⇒ Additional inputs [after meeting]:

According to the report by Prof JCW VAN ROOYEN SC, as accepted by the Minister of Science and Technology (D HANEKOM MP) published in the Government Gazette No. 37397 on 28 February 2014: The size of the Alkantpan Test Range located near Prieska is about 86 000 hectare and it is about 80km from the declared Karoo Core AAA. Alkantpan Test Range main business is the testing of ballistic weapon systems. The testing range is not prohibitive of the declaration since it is a matter permitted by section 23 of the AGA Act to be addressed after the declaration of the Karoo Central AAA’s.

- Initially the core of the SKA was two farms: Losberg and Meysdam. Now the core looks much bigger. What is the core for SKA Phase 1?
- What will be the core for SKA Phase 2?

The core for the MeerKAT consisted of two land parcels: Losberg and Meysdam. The core for the SKA Phase 1 consists of 36 additional land parcels.

No additional land acquisition is foreseen for SKA phase 2 as all acquisition of land except for the establishment of servitudes is aimed to be finalised during the SKA land acquisition programme as set out in the briefings.

- We have requested that a legal aid is appointed for the farmers to have an equal level for the land acquisition between the farmers and the SKA SA but the State is not prepared to set up a legal plan for us. We had to find a legal representative ourselves and the person is working for free for us. That is not fair for that person to work for free but this was our last resort, the farmers cannot afford to pay legal fees. The State has put us in the position and they did not give us an equal chance. The expropriation process is not a fair process. If we need to take this to court we will.

Formal written responses in this regard were made to the representative and chairperson of the Kareeb erg Boere Forum.
### Theme 3: SKA Phase 1 project activities and configuration

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<tr>
<th>Key comments from Stakeholders during the Meeting</th>
<th>Responses from the SKA SA team</th>
</tr>
</thead>
<tbody>
<tr>
<td>• What will happen with the farms used in the spiral arms? Will SKA construct new powerlines and other infrastructures on our farms?</td>
<td>The spirals are not affected by purchases; we want to establish servitudes in that area. At this stage the spiral is quite large in that area because we have not yet done final specific studies to say where it should run. The dots on the maps were made by the people in Manchester who said if you put the telescope here it will be the best view that we will have of the sky. That is the scientific analysis. We now have to go and make sure that the dot is not made where there is a riverbed or hill. We are planning to let the power lines run along existing roads so as to not make a new road in the middle of a farm. The power line and the optic fibre cable run together. The SKA has not yet decided on the distance from the telescope to the power line, will it be 2km or just 500m. At this stage it is still being investigated. We now try and communicate with the farmers associations to get contact details of the affected parties and the spirals for information sessions for you per each spiral so that you know where we are going with this process.</td>
</tr>
<tr>
<td>• What will be the total surface area of the SKA in South Africa?</td>
<td>The total SKA collection area after all the telescopes have been erected is expected to be a square kilometre. It is estimated that there will be approximately 2 500 telescopes to get that collection area together.</td>
</tr>
<tr>
<td>• When will the construction be completed? How long will the SKA project last?</td>
<td>We have a construction program for the duration of the next 16 years and an operational program for 50 years after that. The construction of Phase 1 is planned to take place from 2018 to 2023 – with early science in 2020. This however depends on an environmental authorisation being granted by the DEA to SKA SA to proceed to construction phase for the SKA phase 1 in South Africa. The construction of Phase 2 is planned for 2023-2030, however we cannot give details on Phase 2 at this stage because of the lack of certainty on Phase 2.</td>
</tr>
</tbody>
</table>
Regional road crossing the site

People will still be able to use the regional road but we have to apply access control. There will be an access control to check who is coming in and who is going out of the SKA site.

Theme 4: RFI and EMI impats

<table>
<thead>
<tr>
<th>Key comments from Stakeholders during the Meeting</th>
<th>Responses from the SKA SA team</th>
</tr>
</thead>
<tbody>
<tr>
<td>How does the SKA affect those of us with electrified fences on their farms?</td>
<td>Electrified fences cause EMI: electromagnetic interferences which are another form of RFI: radio frequency interferences. EMI are also caused by the use of electrical equipment and machinery. The impacts vary according to the distances from the antennas and also depending on the system and propagation conditions. The SKA radio frequency team will go out and do the tests on the farms which have electrified fences. Should they find that your fence may be a problem they will look at ways to mitigate it. For example, maybe it should not be an energiser but a pulse machine. There will always be a process to look at options to mitigate and to lessen the impact on the telescope. They will make recommendations on a case by case approach.</td>
</tr>
<tr>
<td>What are the impacts and restriction of use of the machinery on the farms?</td>
<td>At this stage we cannot say to you that your generator has an impact, we need to evaluate the impacts on a case to case basis, when the SKA radio frequency team will do surveying in the spiral arms they will detect any interferences. If the interferences come from your generator they will look at mechanisms to improve it. So it is an individual impact process that the SKA radio frequency team will manage.</td>
</tr>
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Additional inputs [after meeting]:

Frequently asked questions-answers sourced from the EXPLANATORY MEMORANDUM ON THE DRAFT REGULATIONS FOR THE PROTECTION OF THE KAROO CENTRAL ASTRONOMY ADVANTAGE AREAS:

“The only possibility of an effect on electrical machinery or activities may be those located close to the Central SKA Infrastructure (up to 36 km from centre) or close to a remote SKA station (up to 16 km), depending on topography. Very few
interference situations are expected, which can be attended to individually when they are identified, and would not involve any of the towns in the area."

- What is going to happen with the cell phone reception, FM radios reception and our landline on the farms?

- We are farming in the area and we do not want to leave our farms. We need to keep our cell phone reception, FM radios reception and our landline otherwise if there is a problem, and how can we communicate with our family, friends, business partners, shops and colleagues in town, the emergencies?

- SKA needs to provide alternative measures to prevent impacts on the farmers who live remotely in the area. The farmers need to maintain their current lifestyle and be able to communicate with the rest of the world.

- What are the costs involved with the alternative measures and who will pay for it? The farmers cannot pay for new technologies every time the SKA decide that the previous alternative is not appropriate.

- In terms of telecommunications, what you are taking away from us is not replaced by something better. This is very outdated technology that you want to give us, with very different frequencies, compared to the latest technology. We had two handsets at home with two lines which we could operate at the same time. We paid only R30 per GIG airtime. Then SKA said they were taking that away, and Jacques Visser from VOX works closely with SKA and we were referred to him. If we speak to VOX, they say we need to speak to Jacques Visser. Now we have the new VOX, which is of a very bad quality. Point two is you gave us an old fashioned handset. They now give us 2 GIGS on the

The SKA SA has introduced the VOX communication system in the area to address the impacts of the SKA on telephone. VOX has been appointed and we subsidise the infrastructure, the dishes and installation of the telephone, and then you have to open an account with Telkom. You will then have access to telephone and data for the internet. Your telephone line must still be in operation.

SKA SEA is aware that there are problems around radio communication and is currently busy with the specifications of a trunk-radio system. The radio will be able to call to a VOX telephone number inside your home and you will also have hand-held radios that you can give to your workers who are for instance at various locations on your farm to be able to communicate with them. The signals that the radio system uses will not interfere with the antennas of the SKA Phase 1.

The business model of such a system is critical to ensure functionality in the area.

SKA SA is not trying to overpower the farmers in the area. SKA SA tries to create opportunities for communication. There are infrastructure costs, but then it’s a business model between VOX, who is the service provider, and then of course the owner, or the subscriber. Those who have problems with VOX, SKA SA will try to facilitate it.
package, but when it is finished one has to pay R125 for another 2 GIGS. They are so clever, you have to buy two at a time, whereas previously we paid R30 for 1 GIG.

<table>
<thead>
<tr>
<th>What are the impacts on cell phone signals in the spiral arms?</th>
</tr>
</thead>
<tbody>
<tr>
<td>The telescopes in the spiral arms of the SKA Phase 1 are far away from the core so the sensitivity is different. The cell phone signals in the towns should not be affected because the signal is emitted from a tower in the towns.</td>
</tr>
</tbody>
</table>

⇒ **Additional inputs [after meeting]:**

Frequently asked questions-answers sourced from the EXPLANATORY MEMORANDUM ON THE DRAFT REGULATIONS FOR THE PROTECTION OF THE KAROO CENTRAL ASTRONOMY ADVANTAGE AREAS:

“The availability of existing cell phone coverage around the SKA central infrastructure is sparse. Due to the high sensitivity of radio astronomy receivers within the SKA area, existing cell phone coverage still causes unacceptable interference to certain parts of the SKA central infrastructure and will need to be restricted. The circular area within a radius of about 80 km from the SKA Virtual Centre is the area where existing usable cell phone signals may be affected. However, cell phone coverage in the towns such as Carnarvon, Van Wyksvlei and Williston will not be affected. To compensate for the loss of communication within the affected area, and also to support SKA operations, an alternative radio communication system that will not interfere with the SKA is being planned for future deployment. It will be an advanced multi-channel duplex radio communication system that will operate with mobile, handheld and fixed radios. The network will use similar frequencies to the existing low frequency mobile communication network (‘Marnet’), which will not be affected by the protection requirements. Additionally, a scheme for low cost satellite VSAT communications is being set up to provide for telephony and internet access.”
### Theme 5: Predator management on the land

<table>
<thead>
<tr>
<th>Key comments from Stakeholders during the Meeting</th>
<th>Responses from the SKA SA team</th>
</tr>
</thead>
</table>

- **What is SKA doing in terms of predator control?** Is it included in the impact studies?
  - The control measures on the land purchased by SKA SA are not part of the SEA study.

- **These things should have been planned earlier because predators are a problem with or without SKA and it is now becoming a bigger problem with SKA.**
  - We do not have the management plan yet, the SKA SA is requesting the assistance and knowledge of the farmers in the area to draft a plan for predator management. We would like to work together with the farmers on this. SKA SA is in the process to form a working group where the farmers will play a pivotal role and come up with a plan for predator management. We asked the farmers associations to nominate people who are prepared to work with the reference group.

- **My neighbours and I all have electrified fences; we do not have a choice. Now these dishes are going to be erected and we will not be able to have electrified fences anymore. So how are we going to implement the predator control measures?**
  - If we all agree on what we are going to do about predator control and commit to at least the minimum then we should be able to resolve this issues together.

- **SKA appointed Pieter Snyman as a mediator to be the link between SKA and us. We have formed a farmer’s forum with Pieter Snyman and had meetings on a regular basis of which I have all the minutes of the meetings. We have shared a lot of information but nothing followed the discussions and there was never cooperation. We were constantly told “we are going to do this and that” and we were even lied to until we realised nothing is happening and we are wasting our time. We had a meeting every second month at Swartfontein and we discussed the frustrations that we experienced. Pieter is a good person, but we need somebody who can give us answers, who can come and tell us why things are not being done in a certain way.**
  - Comments made at the meeting were raised with SKA management and resolutions have been taken for senior management to engage with communities and forums on a more regular basis.

- **We can tell you how to work together. We can tell you how to kill the jackals, but you do not want to hear it. I think those frustrations are getting more. Those of us in the farmer’s forum are the ones that are directly influenced and we are worse off.**
If SKA does not control their land it becomes a breeding ground for predator like Jackals. There are people who had 40%, 60% lamb stock losses. Those of us with 7-, 12-, 16 000ha already struggle. Now you have 120 000ha. What can you do to really make sure they do not come through? There have always been jackals, but once the people are gone you cannot wait two, three years before you do something. You have to put up fences.

We know there is a concern with the size of the land and we want to work together. We are prepared to talk and prepared to share the information with you.

The following stakeholders have attended the public meeting in Carnarvon on 17 November 2015 and have registered on the attendance register at the meeting. These stakeholders are now registered on the CSIR SEA stakeholders' database:

- J.F Jooste
- D. Le Roux
- G. Vermeulen
- Z. G Opperman
- S Böhm
- Nico Smit
- Maretha de Klerk
- Engela Rossouw
- Dries Van Niekerk
- Annelien van Niekerk
- J.F. Conradie
- Niel Viljoen
- I.P. van der Westhuizen

The key comments and responses captured during the public meeting in Carnarvon have been compiled according to themes in the tables below:

<p>| Theme 1: Strategic Environmental Assessment Process commissioned by the Department of Environmental Affairs in support of SIP 16 and conducted by the CSIR SEA team: |
|---|---|
| <strong>Key comments from Stakeholders during the Meeting</strong> | <strong>Responses from the CSIR SEA team</strong> |
| If I want to put up a sun farm on my farm, am I correct in saying the environmental assessment should be done prior to starting the project? | An environmental impact assessment (EIA) is necessary when one or more listed activities, published in Government Gazettes No. R 983, 984 and 985, are triggered by the construction and operation of the proposed development. |
| The SKA has bought the land before an impact study was done and up to now there is no management plan in place for the land that has been purchased. | Constructing a solar PV farm which generates electricity is a listed activity and would require an EIA, however buying land from private sellers, as is currently done for the land acquisition process, is not a listed activity. Accordingly, no environmental assessment process is required to buy one (or more) land parcel(s) from a private seller. |
| There should have been a management plan in place long before the land was purchased. | An environmental management plan was compiled for the MeerKAT EIA. The report can be obtained from STRATEGIC ENVIRONMENTAL FOCUS: <a href="http://www.sefsa.co.za">www.sefsa.co.za</a>, Tel: +27 (0)12 |</p>
<table>
<thead>
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<tbody>
<tr>
<td>349 1307. The SKA SA needs to implement the management actions and mitigation measures included in the environmental management plan during the construction activities for MeerKAT.</td>
<td></td>
</tr>
<tr>
<td>- Why is an EIA not being done for the SKA?</td>
<td>An EIA is conducted to evaluate the impacts of a proposed development on a small scale site. An EIA is not appropriate for large scale projects and strategic level decision making. Due to the strategic nature (the SIP 16 project falling under the National Development Plan [NDP]) and the large study area of the SKA Phase 1 project (more than 200 000 hectares), the SEA is the most suitable environmental assessment tool. The SEA is used to evaluate the opportunities and constraints of the strategic development at a regional scale. The EIA regulations released by DEA in 2014 do not apply to the SEA. The SEA is not regulated (meaning that there is no regulation providing legislated requirements in terms of assessment process and stakeholder engagement for SEAs). The mission of the SKA Phase 1 SEA is to provide a platform to coordinate research and data collection within the SKA study area and integrate the environmental authorisation process ensuring that environmental factors are adequately considered and environmental principles are implemented at the strategic planning stage. Nonetheless, the SKA SA will need to receive approval from the Minister of Environmental Affairs for the construction of the SKA phase 1 infrastructure and cannot start the construction activities before receiving this approval.</td>
</tr>
<tr>
<td>- Are you the right people to be speaking to us? When we bring these issues to you, do you have the authority to implement actions to address these issues?</td>
<td>It is not within our mandate to say whether SKA will happen or not. Our role is to draft an integrated management plan for the SKA Phase 1 project. The plan should describe the environmental sensitivities on the proposed site and recommendations on procedures for mitigating and monitoring environmental impacts associated with the proposed activity. It will also provide details on the relevant programmes and permitting requirements associated with the proposed activities, such as alien invasive management programme and a long term research programme. Inputs from the local community will inform the integrated management plan for the SKA Phase 1 activities. The integrated management plan for the SKA Phase 1 project should be used throughout the project life cycle. It should be regularly updated to remain aligned with the monitored impacts of the project in the area and resulting state of the</td>
</tr>
<tr>
<td>- We have been involved in many of these forums, and we want to know if you have the necessary authority to do something about our issues with the SKA project, or are we wasting our time being here and participating in your forums?</td>
<td></td>
</tr>
</tbody>
</table>
environment, as well as any changes in the project as it progresses from construction to operation and, finally to decommissioning of the SKA infrastructure.

- The MeerKAT studies that were done, who did it and why were we not approached to give input? We did not have the report, where do we get it?

The impact assessments for MeerKAT were managed by STRATEGIC ENVIRONMENTAL FOCUS (SEF). The Environmental Assessment Practitioner who conducted these assessments was Vici Napier.

An EIA was done in 2006-2007 for the KAT 7 project and the authorisation was granted by the Department of Tourism, Environment and Conservation of the Northern Cape on 30/05/2007 – permit No 25/2007.

A Basic Assessment (BA) was done in 2008 for on-site complex and shed for the SKA site as part of the MeerKAT project on Los Berg farm and Mey’s dam Farm and the authorisation was granted by the Department of Tourism, Environment and Conservation of the Northern Cape on 07/10/2008 – permit No 72/2008.

An EIA was done in 2009 for the MeerKAT project including 80 dishes on Los Berg farm and Mey’s dam Farm and the authorisation was granted by the Department of Tourism, Environment and Conservation of the Northern Cape on 06/07/2009 – permit No 41/2009.

To obtain these reports and associated documents and information, you can contact STRATEGIC ENVIRONMENTAL FOCUS: www.sefsa.co.za, Tel: +27 (0)12 349 1307.

- Will stakeholders have free access to the SEA information?

The information generated during the SEA process as well as the questions received in writing from the stakeholders and the responses provided by the CSIR SEA team and/or other relevant parties will be made publicly available on the SEA website www.skaphase1.csir.co.za.

The announcements and invitations to meetings will be sent to the stakeholders via emails and/or sms. For those who do not have access to internet, posters will be placed in the towns of Carnarvon, Williston, Van Wyksvlei, and Brandvlei and announcements and invitation to meetings will be sent to the stakeholders via sms.

Stakeholders need to register on the SEA database (here) to receive emails and/or sms.

Important documents will be printed and placed at the libraries, municipal buildings and farmers’ cooperatives in...
<table>
<thead>
<tr>
<th><strong>SKA SA falls under the NRF and NRF under DST, and the CSIR also falls under the DST? You both fall under the same state department? Is that not somewhat of a problem?</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The link between the CSIR and the Department of Sciences and Technology (DST) needs to be clarified. The CSIR is one of the leading scientific and technology research, development and implementation organisations in Africa. The CSIR is constituted by an Act of Parliament in 1945 as a science council. The CSIR’s shareholder is the South African Parliament which is held in proxy by the Minister of Science and Technology. The CSIR’s mandate is to undertake directed and multidisciplinary research, technological innovation as well as industrial and scientific development to improve the quality of life of the country’s people. The CSIR was appointed by DEA as an independent scientific body to undertake a Strategic Environmental Assessment for SKA Phase 1 South Africa in support of the Strategic Integrated Project (SIP) 16: “MeerKAT and SKA”. The Environmental Management Services unit of the CSIR is conducting the strategic environmental assessment for the SKA Phase 1 South Africa and the unit does not hold any interest into the project.</td>
</tr>
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<table>
<thead>
<tr>
<th><strong>When will your study be completed?</strong></th>
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<tbody>
<tr>
<td>Our study will be finished once the specialists have undertaken the necessary fieldwork on the affected land parcels and the studies have assessed the potential impacts, the draft management plan has been compiled and reviewed by stakeholders. This means that we need to have access to the affected land parcels to undertake fieldwork. It is planned that the final Integrated Management Plan will be released to DEA in July-August 2016. After submission of the final Integrated Management Plan to DEA, the public review will be organised by DEA directly as part of the official public review on the gazette of the SKA Phase 1 Integrated Management Plan.</td>
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</tbody>
</table>

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<thead>
<tr>
<th><strong>What will be the impacts of influx of workers to our towns during the construction of the SKA Phase? What about once the construction activities of the SKA Phase are finished? What will happen then?</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>These aspects will be assessed during the socio economic study of the SEA. We have those public meetings to take notes of comments and inputs from local stakeholders based on their concerns and local knowledge of the area (like this comment) and ensure that we investigate all issues/aspects during the socio economic study of the SEA.</td>
</tr>
<tr>
<td>Question</td>
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<td>-------------------------------------------------------------------------</td>
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<tr>
<td>I work at the Kooperasie and the SKA SA buys material and components from us, but once the construction will be finished then the business will decrease dramatically. This impact should be assessed.</td>
</tr>
<tr>
<td>Will the SEA look at the issues with bandwidth, interferences, limitations and effects on people who live in the area? We hear all kinds of gruesome tales about microwaves and stuff. Similar to what happened with the Greenbank Telescope in America.</td>
</tr>
<tr>
<td>If stakeholders send you comments and questions, will you give stakeholders feedback directly or are you just going to say to stakeholders one day read our report and then you can comment? We do understand that you are unable to reply to a million requests.</td>
</tr>
<tr>
<td>Will the SEA assess the cumulative effects on the towns within the SKA Phase 1 study area or surrounding towns?</td>
</tr>
</tbody>
</table>
### Strategic Environmental Assessment Report 2016

- **Will the SEA look at the product we farm with?** We have a unique product. The Northern Cape produces 35% of the lamb meat industry in the country so the SEA needs to consider what will be the impact of the SKA project on the lamb meat industry.

  The socio economic study of the SEA will look into the impacts on the lamb meat industry in the Karoo.

  ➤ Additional response from the CSIR team after the meeting based on SEA progress:
  The SEA team is currently setting up a team of experts in the domain of social and economic sciences to assess the potential impacts, amongst which Johann Kirsten from the Karoo Development Foundation (KDF). Johann Kirsten is an agricultural economist and is also involved with the Karoo Lamb project (www.karooeattoforigin.com).

- **The question is not only what will happen to the farmers, but what about the abattoirs?** What will happen to the person transporting the sheep? The challenge will be where does one draw the line? We’re looking at 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> line, but where do you stop?

  The socio economic study of the SEA will need to look into the impacts on the local businesses such as abattoirs and transport of sheep to the abattoir.

  It will help the CSIR SEA team if stakeholders can send information and local knowledge on these economic impacts. Please send information and inputs in writing to: Skaphase1@csir.co.za

- **I saw somewhere on a website or newsletter there were 900 job opportunities created by SKA up to now.** I would like to know how many are local.

  Noted. We will try to obtain details on the direct temporary and permanent jobs created by the SKA project.

- **It is being said internationally that the Karoo region is a desert where people actually do not live.** We live here, the number of people impacted should be released to show that there are people living here. People should also think of farm workers and how many people will be impacted if farmers leave their farms. The impact factor is not less because there are fewer people here.

  The information generated during the SEA process will be made publicly available on the SEA website www.skaphase1.csir.co.za and it can be consulted nationally and internationally.

  Please send information and inputs in writing to: Skaphase1@csir.co.za

- **We can work together.** All BKBs in the Northern Cape are impacted. It is a business, and

  Please send us information based on your local knowledge of the area so that we can include it during the socio economic study of the SEA. Please send information and
all can work together to get all the information and all can listen and participate to make the study even stronger.

inputs in writing to: Skaphase1@csir.co.za

- We have to look at the timeframe of the SEA and the December holidays breaking the process in the middle. You have mentioned that the Integrated management Plan would be done by February. This is too short, which is a problem for us.

The initial timeframe of the SEA was based on the assumption that the experts doing the SEA fieldwork and assessing the impacts could go to the site anytime. They were planning on going in November but this was not possible as we did not have access to the land that needs to be assessed. We therefore need to amend our timeframe so that we get the results of the SEA fieldwork and SEA experts studies to include into the draft Integrated Management Plan.

We are now looking at March 2016 for the SEA fieldwork and SEA experts’ studies but we need the farmers who are affected by the SKA project to let us access the land so that we can do the fieldwork and assess the impacts.

- It is important that the CSIR SEA process is independent and neutral. For this we would prefer to have meetings about the SEA with the CSIR SEA team only. SKA should not be present when we speak about the SEA because there are people here who feel they cannot say what they would like to say, they feel they are not allowed to say that, they may be disadvantaged in the land acquisition process. If it is only the CSIR SEA team the negativity will be out of the meeting and it will flow more freely.

This is a fair comment and we will take it into account when organising the next public meetings. We have invited the SKA SA team to join the meetings so that they can provide technical information about the SKA project. If the public prefers to discuss the SEA with the CSIR SEA team only that is fine we can organise this for the next meetings.

<table>
<thead>
<tr>
<th>Theme 2: Land acquisition conducted by the SKA SA team</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Key comments from Stakeholders during the Meeting</strong></td>
</tr>
<tr>
<td>It is politically incorrect to speak to people about expropriation before</td>
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<tr>
<td><strong>Responses from the SKA SA team</strong></td>
</tr>
<tr>
<td>Question</td>
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<td>------------------------------------------------------------------------</td>
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<tr>
<td>negotiating with them for the purchase of their land.</td>
</tr>
<tr>
<td>Does SKA SA need more than the land that is being purchased for the SKA Phase 1? Will more land be purchased later on for the next phases of the SKA?</td>
</tr>
<tr>
<td>Are the Member States aware of all the land that you purchase and of the number of people who have to move off the land?</td>
</tr>
<tr>
<td>Who is paying for the land purchase? South Africa?</td>
</tr>
<tr>
<td>Is there no possibility for sheep grazing and SKA installations to co-exist on the land?</td>
</tr>
<tr>
<td>What about electrical fencing on neighbours land?</td>
</tr>
<tr>
<td>Theme 3: SKA SA Organisation</td>
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<tr>
<td>------------------------------</td>
</tr>
<tr>
<td><strong>Key comments from Stakeholders during the Meeting</strong></td>
</tr>
<tr>
<td>• Who are the host countries for the SKA project and who are the Member States?</td>
</tr>
<tr>
<td>• SKA organisation is a London based organisation, how much say do they have in what happens here?</td>
</tr>
</tbody>
</table>
technology and the instrument per se. There are two processes around the SKA, one is the science that they want to do and on the other side is the engineering and building technique that have already taken place at SKA, which has an impact on engineering and technology and specific building methods. It has already been duplicated worldwide.

### Theme 4: Predator management on the land

<table>
<thead>
<tr>
<th>Key comments from Stakeholders during the Meeting</th>
<th>Responses from the SKA SA team</th>
</tr>
</thead>
<tbody>
<tr>
<td>• When a farmer sells land to another farmer, the land is sold with an existing management plan, with specific reference to jackal and caracal. When the farmer buys the land her must implement the plan to maintain the state of the land and the state of the neighbouring lands. The problem is that when SKA SA purchased the two farms for the MeerKAT project they have done nothing. It is now a few years past and nothing has been done still. The jackal and caracal will not wait for the SKA SA to implement the control measure and in the meantime the other farmers loose hundreds of lambs. SKA SA cannot wait for the SEA to be completed before starting to manage the land.</td>
<td>The control measures on the land purchased by SKA SA are not part of the SEA study. We have a construction program for the duration of the next 16 years and an operational program for 50 years after that so SKA want to work the community in tandem to address predator control. We do not have the management plan yet, the SKA SA is requesting the assistance and knowledge of the farmers in the area to draft a plan for predator management. We would like to work together with the farmers on this. SKA SA is in the process to form a working group where the farmers will play a pivotal role and come up with a plan for predator management. We asked the farmers associations to nominate people who are prepared to work with the reference group.</td>
</tr>
<tr>
<td>• Regarding the jackal problem, there is a 30km zone, the rand camps are about 2-3kms wide. What is the possibility that we, the farmers, can use the buffer zone to finance our own losses? In other words I use two camps in the area for my sheep, or goats or springbok or whatever, and I finance the losses that I will have from jackal. Do you understand? It is not in the core area, it is on the rand farms which are the buffer zone. I think it is a possibility, it depends on the typography and such things.</td>
<td>If we all agree on what we are going to do about predator control and commit to at least the minimum then we should be able to resolve this issues together.</td>
</tr>
</tbody>
</table>
The following stakeholders have attended the public meeting in Williston on 18 November 2015 and have registered on the attendance register at the meeting. These stakeholders are now registered on the CSIR SEA stakeholders’ database:

- J.G. Wilson
- J. Carstens
- Lunes Louw
- Dr Joh Henschel
- Izak van der Colff
- Jacobus van Wyk
- Marthinus le Roux
- Albertus du Toit
- Coetzee Reef
- Williston Vleis Kooperasie
- Everhardus Hoon
- Saskia Langner
- Karusaf
- Francois Marais
- J.P. Esterhuys – Landbou Unie
- J. S. Spamer Jnr.
- J. S. Spamer Snr.
- Jas Louw
- Irma Louw
- Ferdie Jordaan J.D. Smit
- G.G. va Wyk
- Elize le Roux
- Dr Koos Wyk
- N.F. Hodgson
- Godfrey Stalländer
- Nico Hodgson
- Schalk Theron
- Dennis Steenkamp
- Dawid Albertyn
- Elizabeth Langner
- Karl Langner
- Johann Langner
- Alice Pienaar-Marais

The key comments and responses captured during the public meeting in Williston have been compiled according to themes in the tables below:

<p>| Theme 1: Strategic Environmental Assessment Process commissioned by the Department of Environmental Affairs in support of SIP 16 and conducted by the CSIR SEA team: |</p>
<table>
<thead>
<tr>
<th>Key comments from Stakeholders during the Meeting</th>
<th>Responses from the CSIR SEA team</th>
</tr>
</thead>
<tbody>
<tr>
<td>• What is a strategic Environmental Assessment?</td>
<td>A Strategic Environmental Assessment (SEA) is an environmental assessment tool used to (i) determine environmental implications of strategic development, policies &amp; plans, (ii) integrate environmental, social and economic considerations, (iii) shape future development and onsite development requirements.</td>
</tr>
<tr>
<td>• Why is an EIA not done for the SKA project?</td>
<td>South Africa’s National Environmental Management Act (NEMA) [Act No. 107 of 1998] promotes the integrated environmental management of activities that may have a significant effect (positive or negative) on the environment. Several integrated environmental assessment and management tools fall under NEMA and facilitate the integration of environmental assessment and management principles into environmental decision-making, such as Environmental Management Framework (EMF), Strategic Environmental Assessment (SEA), Environmental Impact Assessment (EIA), Basic Assessment (BA), Environmental Management Programme (EMPr), Integrated Management Plan, Norms or Standards, and other spatial development tools.</td>
</tr>
<tr>
<td></td>
<td>Due to the strategic nature (the SIP 16 project falling under the NDP) and the large study area of the SKA Phase 1 project (approximately</td>
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</table>
268 000 hectares), the SEA is the most suitable environmental assessment tool. The SEA tool is not regulated (meaning that there is no SEA regulation providing legislated requirements in terms of assessment process and stakeholder engagement). The EIA regulations released by DEA in 2014 do not apply to the SEA tool. While the EIA tool is used to evaluate the impacts of a proposed development on a small scale site, the SEA tool is used to evaluate the opportunities and constraints of the strategic development at regional scale.

The mission of the SKA Phase 1 SEA is to provide a platform to coordinate research and data collection within the SKA study area and integrate the environmental authorisation process ensuring that environmental factors are adequately considered and environmental principles implemented at the strategic planning stage.

- Why is the environmental assessment done in parallel with the land acquisition process? The environmental assessment should be done before the land is purchased to be able to stop the project if there is a fatal flaw.

- What is going to happen if large impacts are identified? An environmental assessment process is necessary when the proposed development triggers one or more listed activities published in Government Gazettes No. R 983, 984 and 985.

Buying land from private sellers, as is currently done for the land acquisition process, is not a listed activity. Accordingly, no environmental assessment process is required to buy one (or more) land parcel(s) from a private seller.

The current SEA process was not initiated due to the land acquisition process, but rather because of listed activities associated with the construction, operational and decommissioning phases of the SKA Phase 1 in SA.

The SEA is used to evaluate the opportunities and constraints of the strategic development at a regional scale. The SKA SA will need to receive approval from the Minister of Environmental Affairs for the construction of the SKA phase 1 infrastructure and cannot start the construction activities before receiving this approval.

- We are already halfway through MeerKAT, and there has been no baseline study to determine the impact. There was in fact two Environmental Impact Assessments (EIAs) and one Basic Assessment (BA) commissioned for the MeerKAT project. The following authorisations for construction of the infrastructure of MeerKAT were issued based on those assessments:

An EIA was done in 2006-2007 for the KAT 7 project and the authorisation was granted by the Department of Tourism, Environment and Conservation of the Northern Cape on 30/05/2007 – permit No 25/2007.

A Basic Assessment (BA) was done in 2008 for on-site complex and shed for the SKA site as part of the MeerKAT project on Los Berg farm and Mey’s dam Farm and the authorisation was granted by the Department of Tourism, Environment and Conservation of the
An EIA was done in 2009 for the MeerKAT project including 80 dishes on Los Berg farm and Mey’s dam Farm and the authorisation was granted by the Department of Tourism, Environment and Conservation of the Northern Cape on 06/07/2009 – permit No 41/2009.

To obtain these reports and associated documents and information, you can contact STRATEGIC ENVIRONMENTAL FOCUS: www.sefsa.co.za, Tel: +27 (0)12 349 1307. The Environmental Assessment Practitioner who conducted these assessments was Vici Napier.

- What is the definition of affected stakeholders?

In the SEA process, when the CSIR SEA team refers to affected stakeholders, it refers to anyone who is interested in the process or directly/indirectly affected by the SKA Phase 1 activities and has registered on the SEA database. All interested and affected stakeholder must register with the CSIR SEA team to let the CSIR SEA team know that they are interested in the process or directly/indirectly affected by the SKA Phase 1 activities.

Registration as interested and affected parties can be done:
- on the website (here)
- during the public meetings
- via phone call (+27 (0) 21 888 2482); or
- email (Skaphase1@csir.co.za).

In the case that interested and affected parties do not have access to a telephone or a computer with internet these persons are invited to express their wish to register at the local libraries, local associations, local NGOs, farmers unions, local municipality which can then communicate with the CSIR SEA team.

- Who are the specialists appointed for the sea?

The specialists appointed for the SEA are:

- **Terrestrial Ecology Specialist**: Renu-Karoo Veld Restoration cc
  - Main consultant: Sue Milton-Dean (PhD)
  - Registered with the South African Council for Natural Scientific Professions – SACNASP Reg. No. 400047/08
  - Prince Albert, South Africa / [www.renu-karoo.co.za](http://www.renu-karoo.co.za)

- **Freshwater Aquatic Ecology Specialist**: Freshwater Consulting cc
  - Main consultant: Kate Snaddon
  - Registered with the South African Council for Natural Scientific Professions – SACNASP Reg. No. 400225/06
  - Cape Town, South Africa / [http://freshwaterconsulting.co.za/](http://freshwaterconsulting.co.za/)
- **Heritage Specialists (including Archaeology, Palaeontology and Cultural Heritage):** Cedar Tower Services, ASHA and Natura Viva
  - Main Consultants: MariaGrazia Galimberti, Nicholas Wiltshire, Peter Kloos, Jayson Orton and John Almond
  - ASAPA registered, APHP and PSSA members
  - Cape Town, South Africa / [http://www.cedartower.co.za/](http://www.cedartower.co.za/)

- **Agriculture, Soils and Erosion Specialist:** Johann Lanz
  - SACNASP Professional Natural Scientist in the field of Soils Sciences (Reg. No. 400268/12)
  - Cape Town, South Africa

- **Who is the terrestrial ecology expert who will assess the sensitivities of the land and the ecological features?**
  
  The Terrestrial Ecology Specialist is Sue Milton-Dean. Sue is a plant ecologist with 35 years’ experience, who has been involved in resource assessment in the arid zone (arid savanna, Karoo) since 1987 and before that in coastal thicket, fynbos, indigenous forest and savanna. She currently consults through Renu-Karoo Veld Restoration cc (established 3.2007, directors Sue Milton and Richard Dean) and specialises in Karoo vegetation restoration and dynamics in response to grazing, ploughing, mining, alien plant invasion, drought and other forms of disturbance. Renu-Karoo Veld Restoration cc also produces and markets indigenous Karoo seeds and plants for veld restoration, and accepts Nature Conservation students for experiential training (supporting and mentoring 4 students on one year contracts from 2009-2010). From 1994 to 2010 she lectured at UWC, UCT, US, CPUT and NMMU and ran field excursions on various aspects of resource conservation including rangeland assessment and rehabilitation of Karoo vegetation following overgrazing and mining. From 1999-2001 she was head of Conservation Ecology at Stellenbosch University. From 2002 to 2007 she was a National Research Foundation B-rated researcher (independent researcher whose enjoys international recognition) and part-time Professor in Conservation Ecology at Stellenbosch University. During this time she supervised 24 MSc and 2 PhD theses dealing with resource use and rehabilitation in arid savanna, Nama- and Succulent Karoo and Renosterveld. She is currently Honorary Professor at the Percy Fitzpatrick Institute at the University of Cape Town and a Research Associate at NMMU. To date Sue Milton and co-authors have published 8 books, 15 book chapters, 135 scientific papers, as well as 55 articles in newspapers and popular magazines such as African Wildlife and Environment, Veld & Flora, To Go To. Sue Milton has provided specialist ecological services to Telkom, Eskom, Vodacom, SRK consulting, DWAF, Kwezi-V3 Engineers, Drakenstein Municipality, Eastern Cape Parks Board, Groundwater Africa, CCA Environmental, Ferret Mining, GeoConsult International, Jeffaries & Gren Consulting Engineers, Prince Albert Municipality, Aurecon, SAEO, WESSA, Working for Water, and private clients requiring vegetation surveys or assessments of the grazing value of...
<table>
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<tbody>
<tr>
<td><strong>What is the integrated management plan?</strong></td>
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<tr>
<td><strong>How do we obtain the draft integrated management plan if we want to review it and provide comments?</strong></td>
</tr>
<tr>
<td>The Integrated Management Plan (IMP) is a document which contains a high level assessment of the different level of environmental sensitivities on the proposed site as well as opportunities and constraints that the environment places on development. The IMP provides recommendations on procedures for mitigating and monitoring environmental impacts associated with the proposed activity. The IMP will include relevant programmes and permitting requirements associated with the proposed activity such as alien invasive management programme, a protected areas management programme and a long term research programme amongst others. The IMP document should be used throughout the project life cycle, and therefore it should be regularly updated to remain aligned with the project as it progresses from construction to operation and, finally to decommissioning.</td>
</tr>
<tr>
<td>A draft Integrated Management Plan will be provided to local stakeholders for their review. Hardcopies of the draft Integrated Management Plan will be placed at the public library and municipality buildings in the towns of Carnarvon, Williston, Van Wyksvlei, and Brandvlei. Details on where and when the hardcopies of the draft Integrated Management Plan can be found will be announced via emails and/or letters sent to the updated SEA stakeholders database, on the webpage of the SKA SEA as well as with posters placed in the towns of Carnarvon, Williston, Van Wyksvlei, Brandvlei, and Vosburg.</td>
</tr>
<tr>
<td>All stakeholders, including the competent authority, will be given a period of 30 days to submit comments on the draft Integrated Management Plan. When submitting comments on the draft Integrated Management Plan for the SKA Phase 1 project, stakeholders should bring to the attention of the SEA team any issues which that he/she believes may be of significance to the consideration of the SEA and should discloses any direct business, financial, personal or other interest which he/she may have in the SKA Phase 1 project.</td>
</tr>
<tr>
<td><strong>The background information document says that the affected area is in an area with a low trade potential and is therefore economically sensitive.</strong></td>
</tr>
<tr>
<td>This statement is incorrect. The background information (BID) document does not say that the area is economically fairly non-sensitive. The BID is available on the website as well as at the public library and municipality buildings in the towns of Carnarvon, Williston, Van Wyksvlei, and Brandvlei for your review.</td>
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</table>
fairly non-sensitive. This is incorrect.

| The BID indicates that the SEA aims to determine the cumulative benefits and costs of the various land uses and developments planned within the SKA study area. It mentions that important economic activities and economic trends of the SKA study area will be identified based on existing surveys and data as well as inputs received from local stakeholders, farm owners, local business owners and local authorities during public meetings and group consultation during the SEA.

- These impacts have repercussions on local economy, businesses, jobs etc. These impacts are quantifiable, but it is difficult for land owners, farmers and local inhabitants to understand the overall (cumulative) impacts and quantify it.

Based on further consultation with local stakeholders, farm owners, local business owners and local authorities, the consequences of the loss of agricultural land and the decrease of agricultural activities within the study area as well as restrictions due to radio frequency interferences, on the local economy will be analysed.

Please send us information based on your local knowledge of the area so that we can include it during the socio economic study of the SEA. Please send information and inputs in writing to: Skaphase1@csir.co.za

- Was an economist appointed for the SEA study and can this person calculate the total value, of the impact on the total value chain of our product?

Following the meetings and based on stakeholder feedback, the CSIR SEA team is currently setting up a team of experts in the domain of social and economic sciences to assess the potential impacts. We are in contact with:

- **Karoo Development Foundation (KDF)**
  The KDF aims to create a sense of local ownership and pride in the unique and diverse cultural, architectural and natural heritages of the Karoo, promote regional cohesion in the Karoo, and promote sustainable socio-economic development in the Karoo. The KDF Chair is Prof Johann Kirsten from the Department of Agricultural Economics at the University of Pretoria. Mr Johan Kirsten is a member of the professional association for agricultural economists (AESA/LEVSA) and amongst the two top NRF rated at the B level agricultural economists in the country. Mr Johan Kirsten is based at the University of Pretoria but visit Carnarvon at least once every 3 months due to his involvement with the Karoo Lamb project (www.karoomeatoforigin.com).

- **The Heartland and Karoo Research Institute**
  The director of the Heartland and Karoo Research Institute is Prof Doreen Atkinson. Her research focuses on the arid areas of South Africa, including the Karoo, the Kalahari, and Namaqualand. In partnership with the Karoo Development Foundation, she has organised several conferences in the Karoo, as well as ‘Karoo Parliaments’. These are opportunities for Karoo communities, government departments, NGOs, municipalities, and academics to exchange insights. Her research is both interdisciplinary and
intersectoral, including tourism, agriculture, land reform, farm workers, and small-town development. Prof Atkinson is also manager of the Arid Areas Research Programme, chairperson of the council of the National Museum, secretary and trustee of the Karoo Development Foundation, chair of the Sneeuberg Sustainable Development Foundation, and has served on the NRF selection panel on HESA/IBSA funding.

- There seems to be a conflict of interest because you are appointed and paid by the Department of Environmental Affairs which is actually indirectly a shareholder in the greater project.

The CSIR was appointed by the Department of Environmental Affairs. DEA is not indirectly a shareholder in the greater project. The development of the SKA project falls under the NRF which is under the umbrella of the Department of Sciences and Technology.

The link between the CSIR and the Department of Sciences and Technology also needs to be clarified. The CSIR is one of the leading scientific and technology research, development and implementation organisations in Africa. The CSIR is constituted by an Act of Parliament in 1945 as a science council. The CSIR’s shareholder is the South African Parliament which is held in proxy by the Minister of Science and Technology. The CSIR’s mandate is to undertake directed and multidisciplinary research, technological innovation as well as industrial and scientific development to improve the quality of life of the country’s people. The CSIR was appointed by DEA as an independent scientific body to undertake a Strategic Environmental Assessment for SKA Phase 1 South Africa in support of the Strategic Integrated Project (SIP) 16: “MeerKAT and SKA”. The Environmental Management Services unit of the CSIR is conducting the strategic environmental assessment for the SKA Phase 1 South Africa and the unit does not hold any interest into the project.

- If SKA erects a dish in the middle of my land the SKA will then require a road to access that dish. In the case that there are bushes in the way, those bushes will have to be removed on that piece of road, and they will never grow again. So my farm has been destroyed, it will never be the same again.

The SEA will assess the sensitivities on the ground for the proposed location of the antennas and will make recommendations on the footprint of associated infrastructure such as access roads and mitigation measures to be implemented during construction.

- It seems that the location of the antenna is defined

The design of the SKA Phase 1 installation was done remotely on computer but it is one of the objectives of the SEA to verify the
already but it was done in an office in Johannesburg. What if the location chosen for the antennas is over a family grave, a river, bushman rock art or a kraal?
sensitivities on the ground. The team of experts appointed for the fieldwork of the SEA will ground truth each location chosen for the antennas and verify the sensitivities on the ground. In the case that there is a high sensitivity features such as a family grave, a river, or bushman rock art, the CSIR SEA team will make the recommendation that the antennas needs to be moved to a lower sensitivity location. There is some flexibility on the location of the antennas on the ground, the sitting point can be slightly moved if there is a fatal flaw with the proposed location. The SEA team needs the assistance of the farmers who are affected by the SKA project to let us access the land so that we can do the fieldwork and assess the impacts. The construction cannot start before the DEA has issued an environmental authorisation for the SKA Phase 1 and the environmental authorisation will not be issued if there are major environmental impacts which can be mitigated. It is the intent of the SEA to make necessary recommendations to prevent the impacts where it is possible and to mitigate the impacts where it is not possible.

### Theme 2: Impacts of SKA SA on telecommunication services within the SKA Phase 1 site

<table>
<thead>
<tr>
<th>Key comments from Stakeholders during the Meeting</th>
<th>Responses from the SKA SA team</th>
</tr>
</thead>
<tbody>
<tr>
<td>• What is going to happen with the cell phone reception, FM radios reception and our landline on the farms?</td>
<td>The SKA SA has introduced the VOX communication system in the area to address the impacts of the SKA on telecommunication services. SKA SA subsidises the dish and installation of the VOX system. The stakeholders then have to open an account with VOX as it is currently done with Telkom. You will then have access to a telephone and internet connection. Your telephone line must still be in operation.</td>
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<tr>
<td>• We are farming in the area and we do not want to leave our farms. We need to keep our cell phone reception, FM radios reception and our landline otherwise if there is a problem, and how can we communicate with our family, friends, business partners, shops and colleagues in town, the emergencies?</td>
<td>SKA SA is aware that there are concerns about the use of mobile radio systems for farming and we are currently busy with the specifications of a trunk-radio system. The trunk-radio system will be able to call to a VOX telephone number inside your home and you will also have hand-held radios that you can give to your workers who are for instance at various locations on your farm to be able to communicate with them. The signals that the trunk-radio system uses will not interfere with the antennas of the SKA Phase 1. It is planned that the trial telecommunication system will be given to local stakeholders in the 2nd half of 2016. The SKA SA will help to pay for some of the installation costs, and the farmer will then need to cover his own costs on yearly basis. It is a better option for the farmers and for the people</td>
</tr>
<tr>
<td>• SKA needs to provide alternative measures to prevent impacts on the farmers who live remotely in the area. The farmers need to maintain their current lifestyle and be able to communicate with the rest of the world.</td>
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<tr>
<td>• What are the costs involved with the alternative measures and who will pay for it? The farmers cannot pay for new technologies every time the SKA decide that the previous alternative is not appropriate.</td>
<td></td>
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<tr>
<td>Question</td>
<td>Answer</td>
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<td>In terms of telecommunications, what you are taking away from us is not replaced by something better. This is very outdated technology that you want to give us, with very different frequencies, compared to the latest technology. We had two handsets at home with two lines which we could operate at the same time. We paid only R30 per GIG airtime. Then SKA said they were taking that away, and Jacques Visser from VOX works closely with SKA and we were referred to him. If we speak to VOX, they say we need to speak to Jacques Visser. Now we have the new VOX, which is of a very bad quality. Point two is you gave us an old fashioned handset. They now give us 2 GIGS on the package, but when it is finished one has to pay R125 for another 2 GIGS. They are so clever, you have to buy two at a time, whereas previously we paid R30 for 1 GIG.</td>
<td>SKA SA is not trying to overpower the farmers in the area. SKA SA tries to create opportunities for communication. There are infrastructure costs, but then it’s a business model between VOX, who is the service provider, and the user or the subscriber. Those who have problems with VOX, SKA SA will try to facilitate it.</td>
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<td>When the spiral comes up to Williston, what will the effect be on the cell phones here? Can we assume the cell phone reception will remain in the spiral?</td>
<td>The sensitivities with the telescopes in the spiral arms of the SKA Phase 1 are different. The cell phone signals in Williston are not anticipated to be affected.</td>
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<tr>
<td>Why do the affected people in the area cannot use the optic fibre cables which were installed by SKA SA?</td>
<td>At this stage the technology available for the optic fibre is only sufficient for carrying the data from the SKA SA antennas to the data centre in Cape Town.</td>
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<tr>
<td>We are lacking assistance from the SKA SA in terms of the issues with the telecommunication technologies. The farmers had to communicate with Vodacom and MTN personally because when we approached the SKA team for help we were unable to find anybody who is responsible. We need to know who is the official SKA person who can assist us to resolve the telecommunication technologies problems.</td>
<td>SKA SA has noted the large concern about the telecommunication devices and the loss of signal in the area. SKA SA will organise meetings for the local stakeholders with the SKA SA technical person who can answer all questions about the alternative means of access to telecommunication services that pose least risk of detrimental interference to the SKA.</td>
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<tr>
<td>Theme 3: Land acquisition conducted by the SKA SA team</td>
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<tr>
<td><strong>Key comments from Stakeholders during the Meeting</strong></td>
<td><strong>Responses from the SKA SA team</strong></td>
</tr>
<tr>
<td>• We need clarity on how many land parcels will be purchased in total for all SKA operations and phases. There is no clear information about this: MeerKAT required the purchase of two farms, now SKA Phase 1 is purchasing more than 130,000 hectares of land, so how much more land will be purchased for SKA Phase 2, and Phase 3?</td>
<td>According to what we know, the land that will be targeted for the SKA SA for the Phase 2 of the project is the land that SKA SA is purchasing now and additional land parcels would be investigated for the servitude only. However unfortunately SKA SA cannot say that they will never buy land again because of the lack of certainty on Phase 2 at this stage.</td>
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<td>• I want to make a comment on the land purchase. The farms are purchased by the SKA and the farmers have to move away. They have to remove the sheep from the farm so they sell or move it to another farm. The economic impacts include the abattoirs in the area, for instance the abattoir at Williston and the abattoir at Carnarvon. Other farmers in the area including me also have to market my livestock. If business decreases for the abattoirs they will also move away and then we have to drive long distance to access other abattoirs. This is costing us a lot of money.</td>
<td>I hear your concerns and these impacts will be assessed by the experts during the CSIR SEA.</td>
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<td>• Can the SKA SA put up a map and show us exactly which farms are being affected.</td>
<td>[Alice Pienaar Marais] showed a printed map at the meeting with the land parcels being affected by the SKA Phase 1 project. There is a list of farm names affected by the SKA Phase 1 project with [the Secretary, Burger]. You may also request the information via email to <a href="mailto:pienaarmarais@ska.ac.za">pienaarmarais@ska.ac.za</a></td>
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SKA SA is planning on organising information sessions to explain about corridors and possible servitudes on or next to your farm. This is our plan, but we need to do more studies to have a clear understanding of the physical sensitivities on the ground based on fieldwork. Once the experts appointed for the SEA have ground-truthed the location of the antennas within the spiral arms, the SKA SA will start the servitude process and negotiate the servitude with the affected persons.
• There has been some misinformation at the beginning of the MeerKAT project. We were told that only two farms will be bought and that there will be an optical cable from there, passing us up to Melkbosstrand, it was going to be the best quality technology available here and every farmer will be allowed to withdraw from it.

• We were told that we will get a SKA centre here in Williston, in addition to the one in Carnarvon.

• We were told about the dishes on various farms and that our sheep can just walk in between them.

There is a lot of research and development work that is conducted for the SKA SA project, the technical details change as the project evolves. The design of the SKA Phase 1 has only recently been finalised and therefore it is possible that the details that were shared with the public previously have now changed.

The fibro-optic cables that will be installed as part of SKA Phase 1 will only be sufficient to transport the data that will be collected at the antennas in the Northern Cape to the Cape Town SKA offices.

The SKA centre in Carnarvon has not been built yet. It is not sure whether or not there will be other centres built in the area, but we are not ruling out the idea.

The main problem with sheep grazing within the SKA site is the human activities that are associated with the sheep grazing. The SKA SA must protect the MeerKAT and SKA radio telescopes from all sources of radio frequency interference including cars, machinery, telecommunication devices, etc.

• It seems that there is no benefit for the people in the area. The SKA SA aims at providing benefits at national scale but none at local scale. The people in the area are severely affected but do not receive any benefit. This is unfair.

The economy doesn’t revolve around resources but the knowledge and the skills we instil in people to use the resources to produce new things and to sell that knowledge. For example, when we first had access to Internet, we were very excited if we had a few hundred kilobytes but then it became 1 megabyte, and it was a surprise that we could get to the megabyte. Soon after we had 20 megabytes, and then all of a sudden, we were speaking about gigabytes. These days on site we have a dedicated 10 gigabyte line for the data that is collected from the antennas and sent to Cape Town via the fibre optic cables. We already have the technology for a 100 gigabyte line but what we have to do to facilitate the SKA operation is to develop a 200 terabyte line.

The reality is that in the new world, the people need technology to live and work. We cannot even travel across the country or a city without a GPS. Technology like the GPS is the result of radio astronomy.

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The reality is that in the new world, the people need technology to live and work. We cannot even travel across the country or a city without a GPS. Technology like the GPS is the result of radio astronomy.
In relation to the land acquisition, what is going to be done with the extraction of water for the construction of the SKA Phase 1 project?

What will be done to prevent that when that amount of water is extracted the surrounding farms no longer have water?

The boreholes on the SKA site are monitored on a monthly basis to see how much water SKA SA uses on-site at this stage. The same principle will apply with SKA Phase 1.

SKA SA has also started a programme to clear Prosopis trees on the SKA farms. Studies showed that the removal of these trees causes a natural rise in the water table as the trees extract water from the ground. So this is part of the counter measures SKA SA put in place here at SKA to increase the water table on the SKA site and surrounding area.

Additional information on water use for the SKA project sourced from the SKA SA team:

There are a total of 18 boreholes on the Meysdam and Losberg farms that supplied water during the construction of MeerKAT, with a combined maximum supply of approximately 575kl/day. An estimated 700kl/day will be required for construction purposes and for domestic supply at the existing Losberg construction camp, and new construction camps which will be established for SKA Phase 1.

SKA SA has commissioned a geohydrological study as part of the construction planning to look at existing boreholes in the areas where construction is being planned, to see what the water table looks like. It all forms part of the information SKA SA has to submit to the department of Water Affairs so that SKA SA can obtain a water licence in order to undertake construction in the specific areas. The current boreholes potential yield of 575kl/day will first have to be verified by the geohydrological study. Should the yield be confirmed, additional boreholes will be required in order to supply the total required estimate of 700kl/day. Should a lesser yield be confirmed, more boreholes will need to be installed.

From the boreholes at the construction camps, the water is pumped to storage tanks, treated as indicated above and thereafter reticulated as bulk services from where the contractors will connect and supply the various locations within each construction camp.

### Theme 4: Predator management on the land

<table>
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<tr>
<th>Key comments from Stakeholders during the Meeting</th>
<th>Responses from the SKA SA team</th>
</tr>
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<tbody>
<tr>
<td>• Once the farmers abandon the farms, no one will take over their predator control activities and the land then becomes a habitat for caracals and jackals.</td>
<td>The SKA SA is working on a predator management plan to ensure that the best efforts are made to prevent problem with predators on neighbouring farms. We do not have the management plan yet; the SKA SA is requesting the assistance and knowledge of the farmers in the area to draft a plan for predator management. We would like to work together with the farmers on this. SKA SA is in the process to form a working group where the farmers will</td>
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<tr>
<td>• The farmers have well established predator prevention programs and it need to be implemented on all the farms in the area to be efficient.</td>
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</table>
play a pivotal role and come up with a plan for predator management. We asked the farmers associations to nominate people who are prepared to work with the reference group.

The following stakeholders have attended the public meeting in Brandvlei on 19 November 2015 and have registered on the attendance register at the meeting. These stakeholders are now registered on the CSIR SEA stakeholders’ database:

- N.F. Maritz
- F. Strauss
- Kobus Vollgraff
- Henk Maritz
- Freddie Hendrikse
- Johnnie Visser
- N.J. Folscher
- Trollie Louw
- Dawid Sass
- Johanna Moyo
- Christian Cloek
- Sharon Coetzee
- Petrus Goeman
- Clairelize Trompille
- Geldine Styles
- Deon Klaaste
- Frik Sterkse
- Lenie van der Westhuizen
- Wilfred M. Hendricks
- Daniel G. A. Beukes
- Gerrit Sas
- Schalk Sauls

The key comments and responses captured during the public meeting in Brandvlei have been compiled according to themes in the tables below:

<table>
<thead>
<tr>
<th>Theme 1: Strategic Environmental Assessment Process commissioned by the Department of Environmental Affairs in support of SIP 16 and conducted by the CSIR SEA team:</th>
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<tbody>
<tr>
<td><strong>Key comments from Stakeholders during the Meeting</strong></td>
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<tr>
<td>- Why was the environmental assessment not done prior to the commencement of the SKA project?</td>
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</table>

The current SEA process was not initiated due to the land acquisition process, but rather because of listed activities associated with the construction, operational and decommissioning phases of the SKA Phase 1 in SA. The SEA is used to evaluate the opportunities and constraints of the strategic development at a regional scale.

Due to the strategic nature (the SIP 16 project falling under the NDP) and the large study area of the SKA Phase 1 project (approximately 268 000 hectares), the SEA is the most suitable environmental assessment tool. The SEA tool is not regulated (meaning that there is
no SEA regulation providing legislated requirements in terms of assessment process and stakeholder engagement). The EIA regulations released by DEA in 2014 do not apply to the SEA tool. While the EIA tool is used to evaluate the impacts of a proposed development on a small scale site, the SEA tool is used to evaluate the opportunities and constraints of the strategic development at regional scale.

The SKA SA will need to receive approval from the Minister of Environmental Affairs for the construction of the SKA phase 1 infrastructure and cannot start the construction activities before receiving this approval.

| **Who has commissioned the SEA study?** | The CSIR was appointed by the Department of Environmental Affairs to undertake the study. |
| **Can the CSIR or the Department of Environmental Affairs stop the SKA SA project?** | It is not within the CSIR mandate to say whether SKA will happen or not. Our role is to draft an integrated management plan (IMP) for the SKA Phase 1 project. The IMP should describe the environmental sensitivities on the proposed site and recommendations on procedures for mitigating and monitoring environmental impacts associated with the proposed activity. It will also provide details on the relevant programmes and permitting requirements associated with the proposed activities, such as alien invasive management programme and a long term research programme. |
| **So what can the CSIR do to help the local stakeholders?** | The mission of the SKA Phase 1 SEA is to provide a platform to coordinate research and data collection within the SKA study area and integrate the environmental authorisation process ensuring that environmental factors are adequately considered and environmental principles implemented at the strategic planning stage. |
| | The SEA will assess the sensitivities on the ground for the proposed location of the antennas and will make recommendations on the footprint of associated infrastructure such as access roads and mitigation measures to be implemented during construction. |
| | The IMP document should be used throughout the project life cycle, and therefore it should be regularly updated to remain aligned with the project as it progresses from construction to operation and, finally to decommissioning. |
| | Potential economic benefits arising from the construction and operation of the SKA facility in the Karoo will be analysed taking into consideration the potential spin-off opportunities of the SKA |
activities in the Karoo and at provincial/national scale. This also includes the nature and intensity of the impacts resulting of the loss of agricultural land and the decrease of agricultural activities within the study area.

Based on further consultation with local stakeholders, farm owners, local business owners and local authorities, the consequences of the loss of agricultural land and the decrease of agricultural activities within the study area as well as restrictions due to radio frequency interferences, on the local economy will be analysed.

Please send us information based on your local knowledge of the area so that we can include it during the socio economic study of the SEA. Please send information and inputs in writing to: Skaphase1@csir.co.za

- Can we submit comments on the AGA regulations?

The CSIR SEA team is not part of the public participation process on the AGA regulations. This process is run by the Department of Science and Technology. The stakeholder engagement for the SEA does not have an influence on the regulations of the AGA. It is important to note that DST has started their own public participation process on the AGA regulations and the impacts/consequences of the AGA regulations on local communities. It is very important that you submit comments and participate into that public participation process as well as those comments and inputs will be collected by DST and can help to improve the AGA regulations before it is finalised. We are not part of the AGA public participation process, it is being conducted by the DST, and they should inform the local towns when the meetings will be planned.

- Can you give details on the spiral arms and what are the servitudes for phase 1 on the farms?

The specialists of the SEA need to conduct the site visits and assessment of potential impacts at the location of the antennas within the spiral arms before the SKA SA can start the servitude process and negotiate the servitude with the affected persons. SKA SA needs to have a clear understanding of the physical sensitivities on the ground in order to refine the footprint of the associated infrastructure and the final location of the antennas. Based on the specialists’ field work and data collection on the farms, the specialists of the SEA will provide recommendations on the footprint of the access roads, power line and fibre optic cables as well as mitigation measures for construction.

**Additional question received from stakeholders after the meeting and responses from CSIR SEA team:**

- Why do we need a new TV decoder and will we get it for free?

In South Africa to date, terrestrial television was broadcast in an analogue format. The country is currently migrating from analogue to digital broadcasting and the migration should be completed by
the end of 2015. The migration is being done worldwide and not only in South Africa. The Government of South Africa is responsible for developing the policy for Broadcasting Digital Migration (BDM). Government is also responsible for ensuring that funding is available for the Scheme for Ownership Support (SOS) for poor households and for the development of a Set Top Box (STB) manufacturing strategy. The Department of Communications is driving this process on behalf of government and is working with other government departments such as the National Treasury. Terrestrial broadcasters need to migrate their services onto digital. The affected broadcasters are SABC, ETV and MNet. They will be responsible for establishing new services, migrating existing services (SABC 1, 2, 3, ETV, Mnet) to digital. The 2008 Broadcasting Digital Migration Policy states that Universal Service and Access to all citizens is a key component of a successful migration to the DTT platform.

The Government will provide free STB to more than 5 million poor television household owners. The priority will be given to those household in the border region areas of the country and those living around the SKA area in the Northern Cape. The subsidy will be allocated by the Universal Service and Access Agency of South Africa (USAASA) a government agency mandated to disburse subsidies for STBs. The purchase of the STB is a once-off cost. You will, however, have to continue paying your TV license.

The role the South African Post Office will play in this initiative will be the processing of payments for the STB, issuing of the STB and the payment of the Installers to install the equipment. As indicated certain households will qualify for subsidised set top boxes. The South African Post Office will also verify if the applicants’ SABC television licences are valid and up to date.

For more details, please see the documents on the STB and the process for applying for STB Digital migration have been uploaded to the SEA website – you can access the documents here: Documents / Dokumente → Documents from SKA SA & DST / Dokumente uit SKA & DST → Process for applying for STB Digital migration (http://www.skaphase1.csir.co.za/?page_id=808)

Please also see the provided link on digital migration as published by the Department of Communication:

<table>
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<tr>
<th>Theme 2: SKA project in South Africa</th>
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<tr>
<td>Key comments from Stakeholders during the Meeting</td>
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<tr>
<td>- The SKA SA project is going to restrict us tremendously in terms of land value, safety of sheep, and replacement of farms in our area. SKA SA does not have the right solution yet.</td>
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<tr>
<td>- What is going to happen to the farm workers who lose their job and who will be moving to the towns? What skills do you think they have? What other jobs do you think they can get?</td>
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<tr>
<td>- What is going to happen to the kids of the farm workers who will be moving to the towns? Is there going to be space in the schools in town?</td>
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• How are we going to sustain our lifestyle and our business activities if we do not have cell phone signal? It affects the farmers, our families, and the farm workers and their families.

• The farm workers currently working on the farms might lose their jobs. They cannot find another job. This is unacceptable. I want the farm workers to stand up for their rights.

• We need to obtain more detailed information about the changes and impacts on telecommunication services and devices. The community here do not have the funds or facilities to contact SKA or come to the meetings in Carnarvon.

• We want to meet with the SKA person responsible and capable to give us details and answer our questions about the telecommunication services issues, the land acquisition and the overall SKA project including all phases.

• If the cell phone and internet signals are taken away we will be prepared to start a petition for the whole community to take it up with national government because this is unacceptable. Communication is a big thing in terms of the town’s sustainability and the other thing is representation for the people sitting here who will not get up and speak. So there has to be a channel through which they can communicate freely via the community or from SKA’s side.

The SKA has a division that deals with the telecommunication services and alternative devices. Send your questions to us and we will make sure that it gets to the right person to make contact with you.

• What is going to happen to the farmers and their family who are living on the farms targeted by SKA for the core? What do they do with their sheep and their business?

• What are the farm workers going to do? Where are they going to live and work? Our country already has an unemployment problem and now SKA come to look at space and people have to leave.

We have already erected 8 of the MeerKAT dishes. KAT-7 has been working for almost 7 years. The reason why we are buying the land now is to construct SKA phase 1 which will include 197 antennas in total, 64 from the MeerKAT project and an additional 133 for the SKA Phase project.

We have started the land acquisition programme early to give enough time to the farmers to make
- How many people are affected in the core area?

alternative plans. If we buy their farm now the farmer, his family and his farm workers will have until December 2017 to move off the farm. It gives the farmers enough time to buy another farm or to sell the stock. No one can live on these farms after December 2017 because it is the core of the SKA site and it must be protected of any radio frequency interference.

In the case that the farmer is closing business and no longer requires the services of the farm workers, SKA SA intends to retain a certain amount of farm workers to work at the SKA site. SKA SA has already budgeted for about 40 farm labourers. Many of the farms are outposts with no farm labourers on the ground.

We will negotiate directly with the farm owners to know exactly how many people are on these farms and what is planned with the farm workers.

- We also need a forum in Brandvlei to provide information to the community here. There has been no SKA representation in Brandvlei as a link to deal with questions from the community up to now.

We are happy to welcome you on site and show you the whole site. We are not hiding anything from you.

- The people living in Brandvlei, the farmers and farm workers should be empowered to be able to say when they do not agree with something that is happening. Currently we do not have a say and I feel that our hands are tied behind our backs.

The spirals have not been identified for purchase but only for servitude. SKA SA is planning on organising information sessions to explain about corridors and possible servitudes on or next to your farm.

The spiral corridors look rather large at this stage since the SKA SA still need to refine the route for power line and fibre optic cables. Once the experts appointed for the SEA have ground-truthed the location of the antennas within the spiral arms, the SKA SA will start the servitude process and negotiate the servitude with the affected persons.

- We need to know which farms are being directly affected by the land acquisition programme and by the servitudes. The people will be removed and it is important that we know which farms are impacted.
The distribution of the SKA tenders between Carnarvon and the other towns is not fair.

As a contractor, I have to drive an extra 100kms per day to transport the workers from my site to the SKA site so I cannot charge the same price than the contractors in Carnarvon. The cheapest bid will always be Carnarvon so they will always get the tenders.

I hear your concerns about the fact that Carnarvon is getting several benefits due to the proximity to the site.

The road from Carnarvon to the site is going to be tarred, and the current construction company, FC Construction, went to the local towns and trained people on how to tender, draw up a business plan, how to work cash flow, and do quotes, so that they can quote for work and to plough back 15% of the contract value into local community.

The cheapest bid will always be Carnarvon so they will always get the tenders.

What is going to happen for Phase 2 of the SKA? How many spirals will there be for phase 2?

SKA SA cannot give details on Phase 2 at this stage because of the lack of certainty on Phase 2. The land acquisition programme has two focus areas. Land acquisition for the core and securing servitudes in the spiral arms for applicable infrastructure. The acquisition section has been defined as best possible to include all required acquisitions for the full SKA project in the foreseeable future.

The meeting on 29 August 2016 in Brandvlei was attended by the ward councilor (Mr Sterkse), local farmers (Mr Strauss, Mr Vollgraff, Mr Louw, Mr Maritz), local stakeholders (Mr Williams, Mr Markus, Mr McLean), a local school representative (Mnr van Vuuren), and church representatives (Mr Isaacs, Ds van Vuuren). The key comments and concerns expressed by the attendee are:

- Lack of clarity/details on the SKA project activities and components;
- Insufficient engagement between SKA SA and local stakeholders, need for more consultation from SKA SA and DST about key decisions and planning affecting local communities;
- Telecommunication services and devices - current proposals do not suit local farmers as it does not provide for their needs and does not match what they are currently using. The group emphasized the need for more research about the potential impacts of the restrictions on telecommunication services and devices;
- Concerns about negative impact on business, lifestyle, and land value in the area due to access to internet and cellphone reception on farms; and
- Concerns about the future use of the provincial road P02996 currently being tarred.

Various stakeholders visited the venue and consulted the posters during the open door day in Carnarvon on 30 August 2016 and a few one-on-one discussions were held between interested and affected stakeholders and the CSIR. A larger group gathered at mid-day and a group discussion occurred with the socio-economic specialists of the SEA. The discussion was focused on socio-economic aspects and potential impacts of the SKA project on the local economy and socio-economic dynamics of the affected area. The larger group included various stakeholders including the district municipality LED manager (Mr Sindisile Madyo), SKA community knowledge centre representative (Mrs Moos), local farmers (Mr Snyman, Mr Smit, Mrs Smit), local stakeholders (Mrs Andreas, Mr Mouton, Mr Mathisov, Mr Slavepe, Mrs Adams, Mr Hendriks, Mrs Hoon, Mr Classen, Mrs Malgas, Mrs Moos, Mrs Elsa), local school representatives (Mrs Ramatsetse, Mr Jackson), local pilot (Mr Torr), engineers (Mr Schumman, Mrs Botha, Mr Botha), and church representative (Mrs Witbooi). The key comments and concerns expressed by the attendee are:
• Lack of clarity/details on the SKA project activities and components;
• Insufficient engagement between SKA SA and local stakeholders, need for more consultation from SKA SA and DST about key decisions and planning affecting local communities;
• Insufficient involvement from municipalities;
• Follow-up required for the computer centre and other social incentives in local area;
• More information and details required about the opportunities for work and collaboration with SKA.

Various stakeholders visited the venue and consulted the posters during the open door day in Williston on 31 August 2016 and a few one-on-one discussions were held between interested and affected stakeholders and the CSIR. As in Carnarvon, a larger group gathered in the morning and a group discussion occurred with the socio-economic specialists of the SEA. The discussion was again mainly focused on socio-economic aspects and potential impacts of the SKA project on the local economy and socio-economic dynamics of the affected area. The larger group included various stakeholders including the district municipality LED manager (Mr Sindisile Madyo), local farmers (Mrs Leroux, Mr Theron, Mr Wilson, Mr Louw, Mr Wilson, Mr Schoeman, Mr Vijoen, Mr Hodgson, Mr van Zyl, Mr and Mrs van Wyk), and local stakeholders (Mr Theron, Mrs Wilson, Mrs Schoer, Mr Oosthuizen). The key comments and concerns expressed by the attendee are:

• Lack of clarity/details on the SKA project activities and components;
• Insufficient engagement between SKA SA and local stakeholders, need for more consultation from SKA SA and DST about key decisions and planning affecting local communities;
• Telecommunication services and devices – current proposals do not suit local farmers as it does not provide for their needs and does not match what they are currently using. The group asked for collaboration with SKA on the use of the fibro-optic line, combined with local wireless internet;
• Concerns about negative impact on business, lifestyle, and land value in the area due to access to internet and cellphone reception on farms; and
• Issues with insufficient investment into the Williston town and local area, need for a technical committee with SKA for local communities to engage with SKA and DST.

8. Comments/questions and responses trail

A comments and responses trail document was prepared in order to capture the key questions and comments submitted to CSIR via emails, letters and fax during the SEA process. Responses provided by the CSIR and other experts involved in the SEA process are also provided in this document.

The combination of the stakeholders’ questions and comments together with the responses of CSIR and experts involved in the SEA process constitutes the SEA questions and responses trail.

9. Interested and affected parties database

A preliminary stakeholder engagement database was prepared at the inception of the SEA, based on the attendance registers of previous meetings organized by SKA SA. All stakeholders who provided their details to the SEA team via the following channels were added to the SEA stakeholder engagement database:

• online registration on the SEA website;
• request in writing sent to the SEA team (letter, fax or email); and
• sign attendance register of public meetings and focus group meetings.

The SEA stakeholder engagement database was continuously updated during the SEA process and contains 520 registered stakeholders as of 30 December 2016. Due to the requirement of the
IV. Limitations and Assumptions

1. Existing data for the study area

At the time of the SEA process, available public spatial data and field observations were very limited. The gaps in the understanding of which species occur in which parts of the Karoo made the spatial mapping process a challenging one, due to the lack of information synthesis on the ecology of species of interest and lack of spatial data for relevant environmental attributes and scales. In parallel to the SEA process, several research programmes have been initiated in order to address the lack of survey data and analysis thereof in areas of the Karoo specifically identified due to missing baseline biodiversity information. These research programmes include:

- the Karoo biogaps project, funded by the Foundational Biodiversity Information Programme (FBIP), a joint initiative of the Department of Science of Technology (DST), the National Research Foundation (NRF) and the South African National Biodiversity Institute (SANBI); and
- a long term research and monitoring programme led by SAEON, including a Global change monitoring and detection research and monitoring programme and a land-use impacts and change research and monitoring programme.

2. Access to land

The specialist fieldwork was planned for November 2015 however due to the early stages of the land acquisition programme and the activities of the DST public consultation for the AGA draft regulations the fieldwork was postponed to March 2016. In March 2016, several farmers denied access to their land for the SEA studies despite extensive time contacting the farmers (phone and emails) to organise the access to the land for the specialist fieldwork. Limited access to the affected land parcels resulted in limited ground truthing of the environmental features to be impacted by the SKA Phase 1 infrastructure and activities. The specialist studies and assessment thus do not include detailed information on ground-truthed sensitivities, but rather describe the potential impacts and recommendations for the core and spiral arms based on sites which could be visited and extrapolation of data. In order to address the lack of data and information on the land parcels for which access was denied, additional data and information was requested from the SKA team. The submission of the specialist reports and maps to the CSIR was thus further delayed due to the need to update the specialist studies and incorporate the new data and information into the specialists’ sensitivity mapping and impact assessment. Additional ground-truthing by specialists will be necessary prior to construction of the SKA Phase 1 project. The current SEA process (1) does not have sufficient budget and time to send the specialists to conduct more fieldwork in the area and (2) does not have the security of land access for additional specialist fieldwork.

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14 Government Gazette Notice 37067 on 26 November 2013