

INNOVATION IN TOURISM

THE EYES AND THE EARS IN THE SKY



ASTRO-TOURISM IN SOUTH AFRICA

A research study conducted by **Amy-Lee Visagie** and **Chrislin de Koker**
from
Carnarvon High School, South Africa

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Writing this case study changed our understanding and knowledge of the tourism industry. This experience showed us how tourism can impact positively on the lives of all South Africans.

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2. CASE WRITERS



AMY-LEE VISAGIE

I am 17 years old and love to participate in activities that is challenging. Starting with this research was a challenge for me but after the interaction we had with different sources I became comfortable and excited about our topic. I would like to become a travel journalist after completing university studies.



CHRISLIN DE KOKER

I am 18 years old and my dream is to become a flight attendant. Studying tourism in the classroom is something that I enjoy but doing research outside of the classroom was an amazing experience. During our research I learned so much about tourism in my area.



MR. CHRISTO FIELAND

I am a passionate Tourism teacher. My involvement with the students and the research for the case study gave me more insight into potential tourism opportunities in the local area. It also gave me a better understanding of the impact tourism can have on the local community.

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3. SOUTH AFRICA

South Africa situated on the southernmost tip of the African continent. Our country has a population of 57,7 million people according to the latest statistics. The country covers an area of 1,22 million km². South Africa also has a coastline that stretches more than 3 000km (1870 miles) with two oceans, the Atlantic ocean on the west coast and the warm Indian Ocean on the east coast.

The country is divided into nine provinces with a unique diversity of cultures, attractions and landscapes. South Africa has 11 official languages namely English, Afrikaans, Zulu, Xhosa, Northern Sotho, Tswana, Southern Sotho, Tsonga, Swazi, Venda and Southern Ndebele. Our country is known as the **Rainbow Nation** because of our diversity of cultures.



South Africa is a land of many contrasts and infinite natural beauty with mountains, winelands and beaches of Cape Town in the south to the famous wildlife sanctuary of the Kruger National Park in the north; from the craggy Cederberg and the celebrated wildflower displays of Namaqualand to the mountainous desert of the Richtersveld and the vast Karoo open spaces.

The Northern Cape



The Northern Cape is South Africa's largest province and a must-see destination, whether you prefer the ocean, the desert, the bush or quirky towns rich in history and culture. Tourists flock to this province to experience a space so vast that the horizon continues into the future. The province also offers skies so clear that one can easily imagine touching the stars.



The Karoo region is situated in the southern part of the Northern Cape in South Africa. The region includes the small towns of Nieuwoudtville, Calvinia, Williston, Sutherland, Fraserburg, Carnarvon, Loxton and Victoria West and forms the heart of the Karoo. The Karoo area is known for its peace and tranquility where you can recharge your batteries, while exploring the wide unspoiled open spaces dotted with koppies (small hills).

Beautiful clear skies with minimal pollution, limited cloudy nights, dark starry skies and the geological stability of the Karoo add to the attractiveness of the area.

3.1 Sutherland

Sutherland is located 350km from Cape Town and also a very remote area in the Northern Cape. The town has a population of approximately 2 836 residents. The main economic activities in the town are tourism and agriculture (sheep farming).

Sutherland is known as the coldest town in South Africa, with an average annual minimum temperature of 2.8°C (approximately 37°F).



Sutherland is home to the SALT and the tourism industry only developed after SALT was established.

3.2 Carnarvon

Carnarvon is located 591km from Cape Town with a population of approximately 6 600 residents. The main economic activities in the town are also agriculture (sheep farming) and tourism. The town has a rich history and evidence of the British Colonial Secretary Lord Carnarvon is evident across town.



Sutherland, the tourism industry in Carnarvon is only steadily developing due to a smaller variety of visitor activities and experiences.

Sutherland and Carnarvon were identified as the most suitable towns to build the Southern African Largest Telescope (SALT) and the Square Kilometre Array (SKA) Telescope.

4. ASTRO-TOURISM – “The Eyes and the Ears In The Sky”

ASTRONOMICAL TOURISM (Astro-tourism)

Astro-tourism uses the natural resource of unpolluted night skies for astronomical, educational and leisure activities.

4.1 Problem Statement

Before the rollout of the SALT in Sutherland in 2005 and SKA in Carnarvon in 2011 very little tourism infrastructure existed in these Karoo towns.

This case study is investigating the impact on tourism growth in these remote towns as a result of the establishment of SALT and SKA. It furthermore investigates the activities and innovative experiences available to tourists from all over the world.

4.2 Introduction

SALT - The Southern African Large Telescope

SALT is the largest single optical telescope in the southern hemisphere and among the largest in the world. The site was chosen for its good weather, semi-desert setting, absence of light and other pollution. It has a hexagonal primary mirror array 11 metres across, comprising 91 individual 1m hexagonal mirrors.¹ SALT is funded by a consortium of international partners from South Africa, the United States, Germany, Poland, India, the United Kingdom and New Zealand. The telescope has been in full science operation since 2011 and is realising its huge potential as Africa’s Giant Eye on the Universe.



This project is unique to South Africa and welcomes tourist from around the world. Partners from South Africa, Poland, the United States, Germany, New Zealand, the United Kingdom and India have made the construction and operation of SALT possible.

¹ <https://www.salt.ac.za/telescope>

Scan the QR codes below with your phone to read more about SALT or watch a video.



SKA – Square Kilometre Array

All around us, everywhere in the universe, are the radio frequency emissions that are the “leftovers” from the Big Bang. The **MeerKAT** telescope’s core location in Carnarvon has the strongest chance of being detected because the atmosphere is clean and relatively unpolluted by manmade phone signals, television signals, aircraft radar and other electronic equipment. A precursor instrument to SKA Carnarvon, SALT, developed a new telescope the **MeerLICHT** which is best described as a full robotic 0.65m telescope which provides a real-time optical view of transient sky as observed by MeerKAT.

If anything new happens in the sky, this telescope, together with MeerKAT will detect it. Scientist have described the project as the “Eyes and Ears of the Sky”, with MeerLICHT being the “eyes” and MeerKAT being the “ears”.



Scan the QR codes below with your phone to read more about SKA or watch a video.



4.3 Research on tourism growth in Sutherland and Carnarvon

SALT has led to the establishment of 40 Bed and Breakfast businesses and 18 guest farms compared to the two bed and breakfast businesses that existed before the discovery of SALT. In 2005 approximately 250 tourists visited Sutherland annually and in more recent times, at least 12 000 tourists make their way to the area annually.

Before the development of SKA the main purpose for visiting Carnarvon was to experience the history of the town. At that stage only a small number of tourists visited Carnarvon. When the development stage of SKA started, more scientists (business tourists with special interests) flocked to Carnarvon to do research on the development. After the establishment of the SKA, approximately 1 000 tourists visit Carnarvon annually.

The main purpose for visits to Carnarvon has now changed to tourists who came to do research for the SKA. With the increase of visitors to the town, more accommodation was needed. Four new guesthouses opened their doors for these tourists, creating a number of jobs for locals.

4.4 Astro-tourism activities in Sutherland and Carnarvon

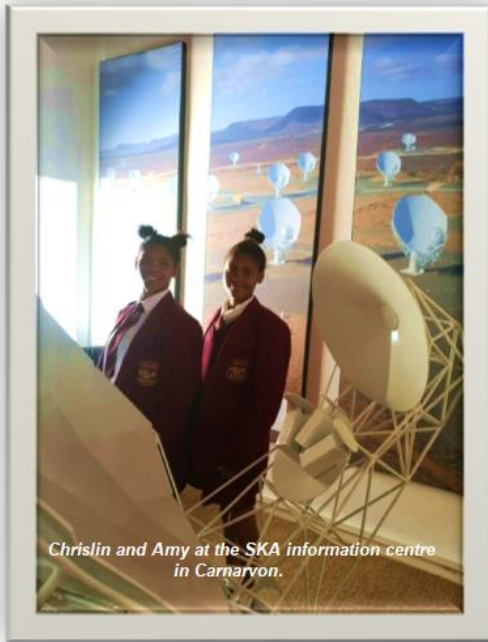
Sutherland offers stargazing opportunities at SALT and on nearby farms. SALT has three tours available for tourist:

- 1st Monitoring the line emission in Southern Galactic Be/X-ray binaries
- 2nd Observing the Transient Universe
- 3rd Observing the Transient Universe (extended)

The towns also offers various other Astro-experiences such as dark sky activities.

In the near future, tourists to Carnarvon will be able to visit the lookout point within a natural environment close to the telescopes. Carnarvon will have a science center where tourist can get information on the latest astronomical discoveries.

SKA is also in the process of developing a new National Park known as the MeerKat National Park and will involve the SAN people who are considered the oldest inhabitants of South Africa.



Chrislin and Amy at the SKA information centre in Carnarvon.



International visitors to SALT in Sutherland

4.5 Tourism infrastructure in Sutherland and Carnarvon

Tourism infrastructure is the basis of tourism development and the utilisation of existing resources at the destination. Tourism infrastructure includes a large number of services, necessary to meet the needs of tourists and increase satisfaction during their stay at the destination.

Infrastructure in Sutherland

- **Accommodation:** Sutherland offers 88 options of accommodation just to give a few Blesfontein Guest Farm (Unit 5 and 6), Verlatenkloof Guest Farm, Sterland Doekvoet Family Room, The Whitehouse INN, Doringboom Guest House, Sterland Baroe Guesthouse B&B, Stofkraal Guestfarm, Sterland Skrijwershuisie, Toevlug Guestfarm, Rogge Cloof, Andromeda, Blesfontein Guest Farm (Unit 7) (Second Honeymoon suite), Primrose Cottage, Sterboom Guest House, Die Trommel (winkelkje), Blesfontein Guest Farm (Unit 1 and 2), Old farm house/guest house. The Jupiter Guesthouse and Restaurant, Starry Night Self-Catering and Die Heks se Huis - Studio cottages

- **Services:** The following are services are available to tourists:

Die Trommel at Sutherland Mall & Foodzone is a store where tourist can buy general goods. When a tourist wants to have a barbeque (called a “braai” in South Africa) they can get good quality meat at Paulsen’s Butchery. Tourists can get fuel at JWL Garage.

- **Tour packages and tour operators:** SALT offers day tours that are fully guided where tourist can walk through the visitor centre as well as a guided tour of selected research telescopes including SALT. The hourly tour is a self-guided tour of visitor centre and a basic guided tour of SALT.

Night tours include the viewing of interesting objects in the sky through two dedicated visitor telescopes, a 16" Meade and 14" Celestron. Note that visitors cannot visit any of the research telescopes at night, not even SALT. Astronomy is a light sensitive science and no lights are allowed up on the plateau in the evenings making it impossible to see anything at all.

- **Souvenirs and curio shops:** Strawberry Moon Gifts & Eats is a new gift & coffee shop in the heart of Sutherland where you can enjoy a lovely aromatic cup of coffee and freshly baked cake while you enhance yourself with all the lovely handmade gifts from the area and many more locally crafted items typically of the Karoo such as scarfs, clothing, jams, glasses, enamel items, paintings, locally made items, some freshly baked cake, rusks and much more.

Infrastructure in Carnarvon

- **Accommodation:** Carnarvon offers ten options for accommodation: Tiervlei Gustfarm / Gasteplaas , Out of Africa Guesthouses (Unit 1 and 5) , Cape Dutch Guesthouse , Lord Carnarvon Guesthouse (unit 1 and 2) , Stuurmansfontein Corbelled Guesthouse , Osfontein Unique farm Guesthouses , Maritza Bed & Breakfast , Meerkat Manor , Canariesfontein Dutch Hugo Guest farm
- **Services:** The following services are available:
The Blikies bar where you can find a collection of beer cans that relate the history of early years in Carnarvon. Tourist can visit the town museum and learn more about the history of Carnarvon.
- **Tour packages and tour operators:** The museum in Carnarvon was built as a community spot for the Dutch reformed Church in 1907 but was given to the municipality and converted into a museum. Tourists can see a number of exhibits displaying the history of the area, antique items and even an old hearse used by the church. There is a small stone house outside the museum which came from a farm and was moved here piece by piece by local tradesmen. The whole area of Carnarvon is lined with magnificent trees and unique houses built of stone. This interesting town is filled with history, an interesting fort, magnificent museum and fabulous walks.
- **Souvenirs and curio shops:** Tourist can visit the Karoo Mega Stop to enjoy a meal.

5. INNOVATION IN ASTRO-TOURISM

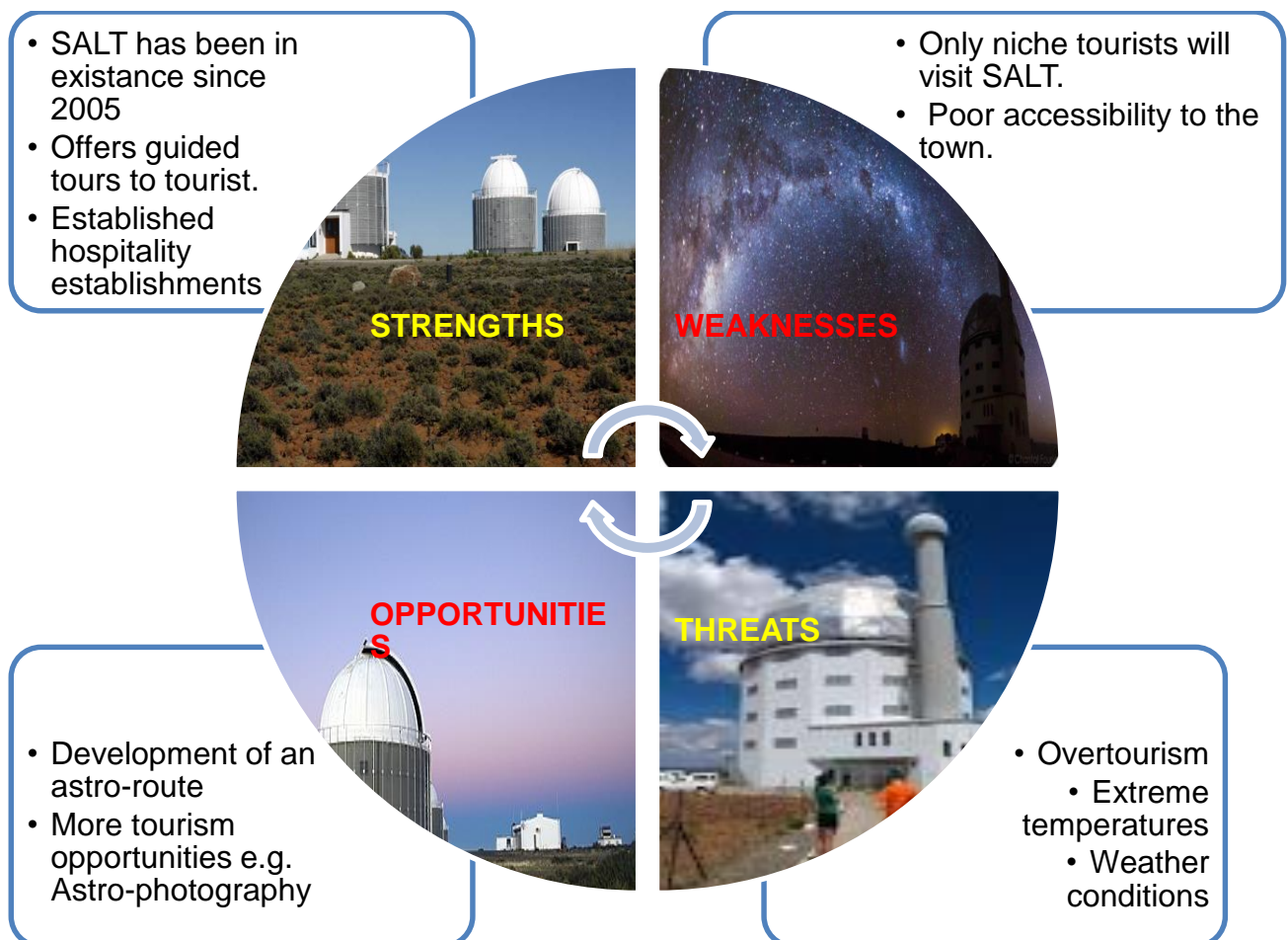
The two towns of Sutherland and Carnarvon provide tourists with an Astro-experience.

The experience offers plenty of interesting activities such as Sutherland's astronomical observatory, Carnarvon's Karoo Array radio telescope, Karoo architecture and corbelled houses, Anglo-Boer War sites, rock art, ancient paleo surfaces, farm stays and medicinal plants. The well-known restaurant in Sutherland Jupiter restaurant has meals on their menu that also links with the astro-theme that the town is creating. Tourist can also do stargazing at the different accommodation establishments in Sutherland.

Carnarvon is currently developing Astro-Tourism activities similar to what Sutherland has to offer.

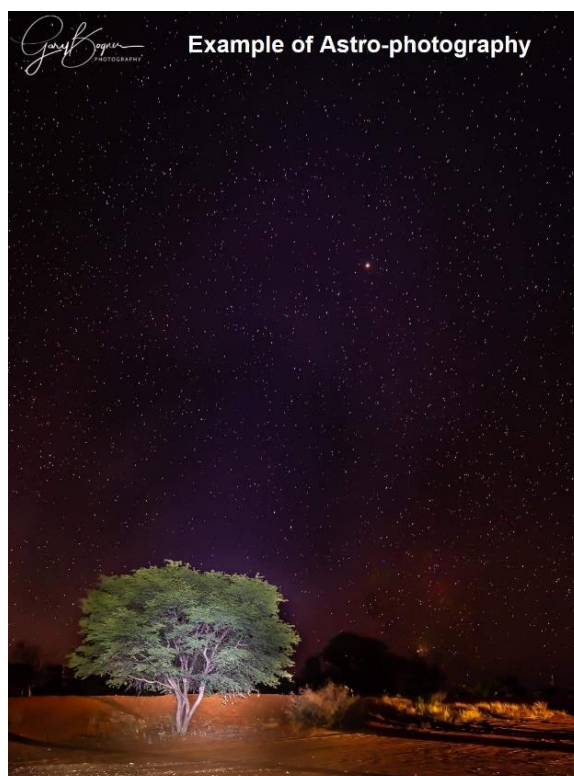
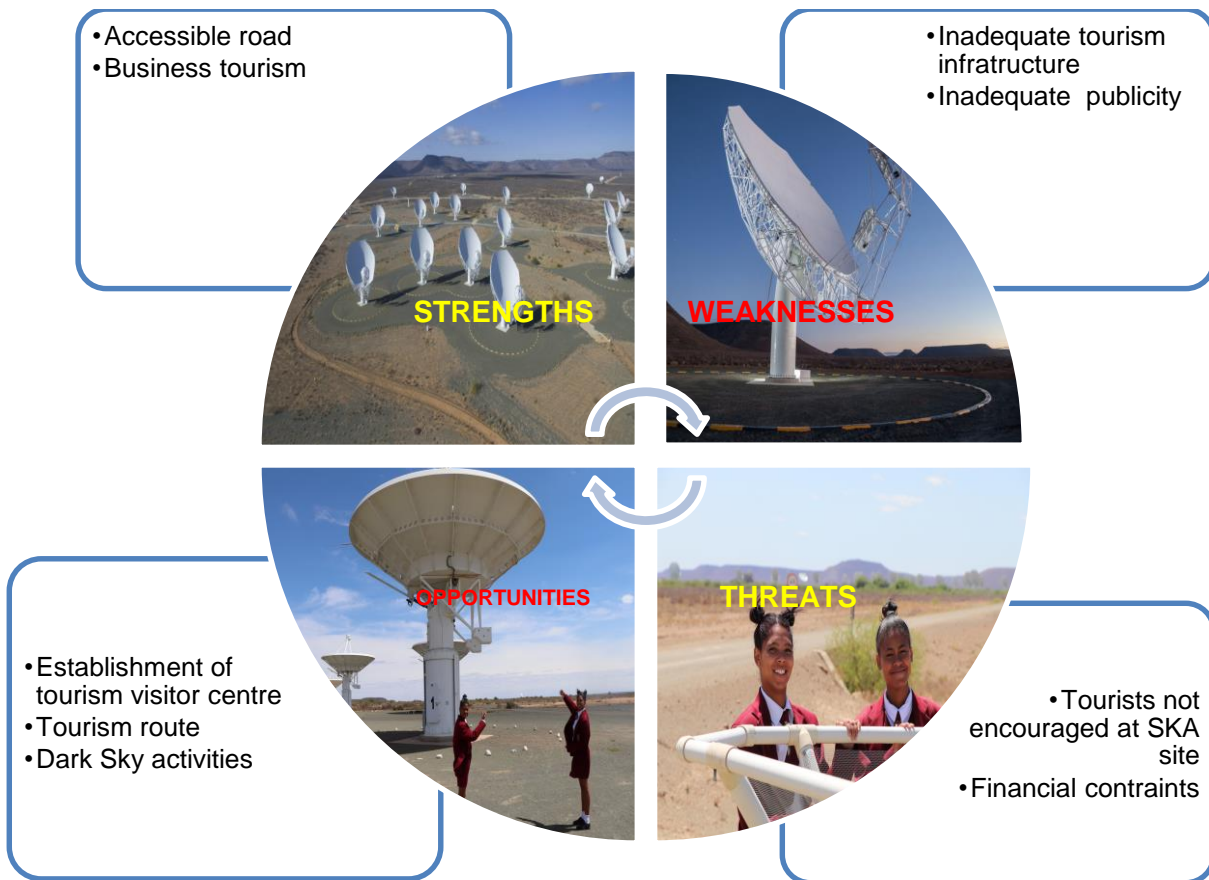
5.1 SWOT Analysis For Sutherland

The following SWOT analysis is based on the tourism business development in Sutherland.



5.2 SWOT Analysis For Carnarvon

The following SWOT analysis is based on the tourism business development in Carnarvon.



5.3 Comparison between tourism activities in Sutherland and Carnarvon

TOURISM ACTIVITIES IN SUTHERLAND	TOURISM ACTIVITIES IN CARNARVON
Day and night tours to SALT	Carnarvon Museum
Star Gazing	Old British blockhouse on top of a nearby koppie
Private tours	Appie van Heerden Nature Reserve
Guest farms with telescopes	Stuurmansfontein Corbelled House
Anglo Boer War Graveyards	Eat at De Meerkat Restaurant and Lord's Kitchen Restaurant
Louw House Museum And Memorials	Rhenish Mission Church (built in 1858)
Skurweberg 4x4 Trail	"Blikkies" Bar – interior covered with beer cans
Dutch Reformed Church	Guest house named after MeerKat astro-project
Eat at any of the 5 restaurants with space-titled menus	VR experiences offered by Science Dept of local school
Use private telescopes at guest houses with astro-themed names.	
Scenic drive to Matjiesfontein	
Visit house of famous Afrikaans author (NP van Wyk Louw)	
Dark sky activities	



5.4 Comparison between tourism innovation in Sutherland and Carnarvon

TOURISM INNOVATION IN SUTHERLAND	TOURISM INNOVATION IN CARNARVON
Dark sky activities	VR experiences offered by Science Dept of local school
Use private telescopes at guest houses with astro-themed names.	“Blikkies” Bar – interior covered with beer cans
Star Gazing and laser shows	
Guest farms with telescopes and space lectures	
Eat at any of the 5 restaurants with space-titled menus	
Day and night tours to SALT	

6. FINDINGS

The case writers found that both towns have great potential for Astro-tourism.

- However, Sutherland utilises the tourism opportunities emanating from the presence of SALT to a bigger extent than Carnarvon with SKA.
- There was an increase in tourist arrivals to both Sutherland and Carnarvon after the establishment of SALT and SKA.
- It was also found that the two towns offer different tourism activities, yet Sutherland offers a greater variety of tourism experiences.
- Sutherland engages in more tourism development than Carnarvon.
- Sutherland receives more publicity regarding Astro-tourism than Carnarvon.
- Carnarvon has very limited Astro-tourism innovation, despite the presence of SKA.
- Carnarvon has no opportunities for souvenir shopping, whereas in Sutherland, tourists can buy different memorabilia.
- Sutherland encourages site visits for tourists to SALT, whereas Carnarvon limits site visits to SKA due to their need for silence.
- Technology such as cell phones near the sensitive site of SKA are not encouraged, however Carnarvon has some of the best broadband access in South Africa.
- One of the most advanced science computer (one of only 3 in Africa) is found in Carnarvon at the SKA.

7. RECOMMENDATIONS

- Carnarvon must use the same approach to Astro-tourism to develop its own tourism innovations with regards to SKA.
- Both Sutherland and Carnarvon must engage in innovative marketing of SALT and SKA as Astro-tourism destinations.
- Carnarvon, like Sutherland has to offer a greater variety of tourism experiences.
- Carnarvon should take Astro-tourism more seriously.
- SKA must collaborate with SALT in creating joint events that will result in more publicity for both towns.
- Carnarvon and SKA must join forces to create innovative Astro-tourism experiences.
- Entrepreneurs in Carnarvon should use this opportunity to develop innovative tourism business such as souvenir shops.
- Tourists must be aware that SKA offers limited site visits due to their need for silence on site. Erect large notice board at town entrances.
- Tourists must be aware that technology such as cell phones near the sensitive site of SKA are not encouraged. SKA can sell professional photographs as souvenirs and thereby generate income for tourism.
- SKA can use their most advanced science computer as a draw card for niche tourists.

It is evident from the research that Carnarvon needs to establish an Astro-tourism industry to attract tourist to the area. The following recommendations are aimed at innovative tourism development in Carnarvon:

- Establishment of the Meerkat National Park in the gorge near the SKA site.
- Lookout point at the first SKA site, called Swartfontein koppie.
- Development of an Astro route
- Private telescopes at guest houses in Carnarvon
- Restaurants showing video clips of space photography
- Visitor centre in Carnarvon
- Virtual Reality experiences at local science centre (high school)
- Establishment of souvenir shops
- Establishment of Dark Sky Sanctuaries on guest farms

8. CONCLUSION

Astro-tourism is new and unique in South Africa. Nowhere else but in the Northern Cape can tourists experience innovative Astro-tourism related activities and experience the peace and tranquility of an authentic Dark Sky Experience. This gives the Northern Cape and the towns of Carnarvon and Sutherland a competitive edge over other provinces in terms of innovation and uniqueness.

Once developed fully and marketed extensively, the unique experiences offered by these two towns have the potential to become a major draw card for a very specific niche market in South Africa.

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Mr. Anton Binneman – Stakeholder manager of SKA
Mr. Pieter Hoffman – Owner Lord Carnarvon Guest House and The Lord's Kitchen restaurant in Carnarvon
Mr. Sivuyile Manxoyi – Manager: South African Large Telescope Collateral Benefits Programme (South African Astronomical Observatory)

10. TEACHER NOTES

The activities that follow are intended for use in a Tourism classroom after the students have engaged with the case study. Teachers may choose to adapt some of the activities to suit the needs of their students and the curriculum of the country.

The activities for this case study have been designed in accordance with the South African Schools Curriculum (Curriculum and Assessment Policy Statement -CAPS) and are suitable for Grade 11 students (16 to 17 year olds) who are studying Tourism.

Teachers must take the following factors into consideration when using the activities in the classroom:

- student diversity
- students with special needs
- organisation of classroom space
- availability of equipment and resources.

Skills to be developed:

- Writing skills
- Creative skills
- Critical thinking skills
- Problem solving skills
- Research skills
- Interviewing skills

ACTIVITY 1: Glossary

Students must read the case study and then copy and complete the table below using a dictionary or the internet to find definitions/explanations for the terms/concepts.

Term/Concept	Definition
Innovation	
Rainbow Nation	
Karoo	
Astro-tourism	
SALT	
SKA	
telescope	
optical telescope	
hexagon	
consortium	
MeerKAT	
MeerLICHT	
Observe transient objects in the universe	
astronomists	
Big Bang	
Corbelled houses	
Overtourism	

ACTIVITY 2: Sustainability

Small rural towns such as Carnarvon and Sutherland are sensitive to “Overtourism”.

Have a class discussion on:

- The possible causes of *overtourism* in Carnarvon and Sutherland.
- The impact of *overtourism* on the local communities
- The impact of *overtourism* on the natural environment
- Solutions to the problem of *overtourism*

ACTIVITY 3: Responsible tourist behaviour

When visiting an astronomical site, tourists have to adhere to very specific (and sometimes unfamiliar) sets of rules and regulations.

The following regulation appears on the SALT website (<https://www.salt.ac.za>):

PLEASE DO NOT DRIVE UP THE ROAD LEADING TO THE DOMES. This is a “NO LIGHTS” research area. International and local astronomers are at work!

Visit the SALT website and make a list of all regulations pertaining to responsible tourist behaviour at the site. Give possible reasons why SALT has implemented these regulations.

ACTIVITY 4: Entrepreneurship and Innovation

Research has shown that Carnarvon has to develop tourism infrastructure in the town to cater for the needs of tourists.

Read the scenario below and follow the instructions that follow:

SCENARIO:

The local authorities in Carnarvon in collaboration with the SKA, have decided to establish a Visitor's Centre in town. The visitor's centre will provide information on local tourist activities and experiences, house exhibitions and information displays about the SKA and give locals the opportunity to sell locally manufactured items to tourists. The visitor centre will also include a small restaurant selling light meals, refreshments and home-industry² items.

² Items made in private homes intended to supplement income for local residents

QUESTIONS:

- 4.1 Design an advertisement to be placed in the local newspaper to invite interested parties / stakeholders to a planning meeting in the local town hall.
- 4.2 Write a post for the “Carnarvon Knows-It” Facebook page to invite interested parties / stakeholders to a planning meeting in the local town hall.
- 4.3 Draw up an agenda for this meeting.
One of the agenda items must be “Innovative tourism offerings in Carnarvon”.
- 4.4 Write a fictitious (use your imagination) summary on the
 - outcomes of the meeting
 - decisions taken at of the meeting
- 4.5 Make a list of possible job opportunities that will be created by the Visitor’s centre.

ACTIVITY 5: Marketing

A farm in the Carnarvon area has decided to market itself as a “**Dark Sky Sanctuary**”.

- 5.1 Do research to understand what is meant by a “Dark Sky Sanctuary”. Make a list of innovative activities that are associated with a “Dark Sky Sanctuary” experience.
- 5.2 Give possible reasons why tourists would want to visit this farm and experience a “Dark Sky Sanctuary”. Have a class discussion and evaluate these activities for tourism potential.
- 5.3 Identify the type of tourist who would want to visit the farm to experience a “Dark Sky Sanctuary”.
- 5.4 Write an article for a travel magazine about this newly established “Dark Sky Sanctuary” in the Karoo region of South Africa. Include a map, GPS coordinates and some pictures in the article.

ACTIVITY 6: Interview

You have been asked to do an interview with the tourism manager at SALT in Sutherland.

In preparation for an interview, you have to do some research on tourist activities available at SALT. The focus of the interview must be on innovation and uniqueness of tourism experiences at SALT. Due to time constraints, you are required to use technology to record the interview.

- 6.1 It is important to know how to conduct a successful interview. Make a list of DO’s and DON’T’s you have to keep in mind when conducting the interview.

6.2 Write down TEN questions that can be asked to the tourism manager of SALT during the interview.

6.3 Explain what technology you will use to record the interview and give reasons for your choice.

6.4 Do a role play in class where students can work in pairs to conduct the interviews.

THE END