

CHAPTER 9

Impacts on Tourism in the Karoo

CHAPTER 9: IMPACTS ON TOURISM IN THE KAROO

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Executive Summary

Experience indicates that mining and tourism invariably end up in conflict with each other. The impacts of shale gas development (SGD) in the study area might, therefore, result in risks for its tourism sector.

The tourism sector in the study area is important. Currently it houses about 830 enterprises, the most of any business sector. It employs between 10 100 and 16 400 people and annually adds between R2.3 billion and R 2.7 billion (2010 Rand) to the regional gross value added (GVA). The tourism sector in the study area has diversified considerably in recent years, which has dispersed tourism activities throughout the study area, also into the rural areas. Some towns of the study area have much stronger tourism sectors than others and their sensitivity to impacts is probably higher. Consequently locations with very high sensitivity are distinguished from those with high sensitivity and those with medium sensitivity.

The risk associated with an impact equals its consequences times the likelihood of its occurrence. Expected impacts of SGD on the tourism sector are: large numbers of slow-moving trucks on roads leading to and criss-crossing the study area and hindering tourist access, causing road degradation and resulting in noise pollution; reduction of the scenic beauty of the Karoo and its mountainous access routes; replacement of the Karoo brand as a 'place to get away from it all' with an industrial image; crowding out of regular tourists by SGD personnel's use of tourism facilities; problems with basic services such as safe water provision; increased complexity of the integrated management of tourism activities; and exposure to earthquakes. The major consequences of SGD impacts are expected to be a reduction in the number of tourists leading to a decline in the regional GVA added by the tourism sector and a reduction in the number of tourism employees, most of whom are semi-skilled local people with women particularly well represented.

Three broad groups of tourists visit the study area: 1) Those seeking unique Karoo experiences ('getting away from it all', adventures, agri-tourism, hunting, heritage sites, Karoo food, festivals, etc.); 2) Those travelling through; and 3) Business travellers visiting towns for business reasons and people visiting friends and relatives (VFR tourists). The risks from SGD for these groups are expected to differ.

Four scenarios guided the risk analysis; Scenario 0: Reference Case which involves no exploration; Scenario 1: Exploration Only (probably in 2018 to 2025); Scenario 2: Small Gas, in which exploration is followed by limited production of shale gas (probably during 2025 to 2045); and Scenario 3: Big Gas, in which exploration is followed by large-scale production of shale gas (probably from 2025 to

beyond 2050). The upper risk limit was determined by the limit of acceptable change, set at a 20% loss of tourism enterprises. Presently such a loss could result in losses of about 170 tourism enterprises, 2 700 tourism jobs and R 500 million (2010 Rand) in annual regional GVA.

The Reference Case and Exploration Only scenarios are not expected to have significant risks for the tourism sector in the period 2018 to 2025. If the Small Gas scenario is realised, probably during 2025 to 2045, high risks are expected for all tourist groups and locations (losses of up to 16% of tourism enterprises, shedding of up to 2 100 jobs and a decrease of up to R 400 million (2010 Rand) per annum in the regional GVA). If the Big Gas scenario is realised, possibly between 2025 and beyond 2050, very high risks that could reach the upper risk limit could occur in locations with very high sensitivities, e.g. Nieu-Bethesda, Prince Albert, Graaff-Reinet, Sutherland and Colesberg. In areas with high sensitivity, e.g. Cradock and Beaufort West, the risks could be high, possibly reaching losses of 16% of enterprises, 2 100 tourism jobs and R 400 million (2010 Rand) per annum in regional GVA. If either the Small Gas or Big Gas scenarios are realised, mitigation procedures could probably reduce but not eliminate risks for the tourism sector.

A challenge for various government role players as well as the mining and tourism industries is to timeously find ways and means whereby risks could be mitigated. Such an approach has been applied elsewhere. Mitigation procedures could require that: 1) Consensus be reached on the need to protect the tourism sector of the study area; 2) A partnership be developed between the mining and tourism sectors; 3) Tourist access to the study area be protected by declaration of a tourist access route (e.g. the N9) and the barring of shale gas traffic from it; 4) The issue of the fragmented management of tourism across provincial and municipal boundaries be addressed by the possible establishment of an officially empowered tourism agency to manage and support tourism in the study area, and eventually to be funded by a levy on gas producers; 5) Potential impacts of noise, visual, water pollution and other impacts on the tourism sector be handled by using additional exclusion zones to reduce such impacts, also during environmental impact assessment (EIAs) in the rural parts of the study area. However, if either the Small - or Big Gas scenarios are realised, complete recovery of the tourism sector might take an additional decade after termination of gas production and full recovery of disturbed areas.

It should be noted that this was a desktop assessment which used the best available data and that there is currently a lack of information about many important aspects of the tourism sector in the study area (and Karoo), including detailed knowledge of the dispersed tourism enterprises of the Karoo, their tourist offerings and vulnerability to impacts. This should be addressed by adequate baseline studies.

CHAPTER 9: IMPACTS ON TOURISM IN THE KAROO

9.1 Introduction and Scope

Mining and tourism are important sectors of the South African and Australian economies, yet invariably they end up in conflict (De Klerk & Heath, 2015; McLennan et al., 2015). Tourism in the Karoo and shale gas development (SGD) might, therefore, be irreconcilable (Ingle & Atkinson, 2015). This Chapter analyses the potential impacts of SGD, if implemented, on tourism in the study area (Figure 9.3). A lack of standard tourism information (such as bed nights sold and tourist spend) in the study area necessitated the use of quantified empirical information about tourism enterprises in the study area to examine the potential impacts. Four different scenarios: Scenario 0 (Reference Case) which involves no exploration, Scenario 1 (Exploration Only), Scenario 2 (Small Gas) which involves the small-scale production of shale gas, and Scenario 3 (Big Gas) which involves the large-scale production of shale gas (described fully in Burns et al., 2016) are considered. Potential mitigation of negative impacts is also considered.

The management of tourism in South Africa (SA) is complex. The Department of Tourism (DoT) guided by the Tourism Act of 2014 (Government Gazette, 2014) is primarily responsible. The Act addresses issues such as the promotion of quality tourism products and services and enhancing cooperation and coordination between all stakeholders. It seeks to avoid negative economic, environmental and social impacts, and promotes involvement of local people in tourism.

South African Tourism is an agency tasked with marketing the country as a tourism destination. The SA Tourism Review Committee (2015) remarked: “There is a planning hierarchy in government which serves to clarify and position the mandate that SA Tourism carries, starting with the National Development Plan which identifies tourism as an essential part of our economy into the future. Tourism is a key sector contributing to Outcome 2 (decent employment through economic growth) in the state’s Medium Term Strategic Framework for 2014 – 2019. The DoT is charged with developing and implementing the National Tourism Sector Strategy which sets

What is tourism?

Tourism comprises the activities of persons traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes (Go2HR, n.d.)

Tourism is a large world-wide industry and its international receipts in 2014 were worth US\$1.245 trillion (United Nations World Tourism Organisation, 2015). Even in arid and semi-arid areas it has become an important economic driver, e.g. in Egypt, Dubai, Oman and Israel desert tourism is a growing industry (Hobbs and Tsunemi, 2007; Ryan and Stewart, 2009; Zekri et al., 2011).

In the Karoo, farm stays, game farming and hunting, all of which tap into alternate markets, have become key sources of externally derived income (Hoogendoorn & Nel, 2012).

the overall framework for how the country plans to grow the tourism economy. This in turn creates the context within which SA Tourism's Tourism Growth Strategy spells out the strategic approach to the marketing effort.”

Several policies and strategies impact upon tourism in the study area. These are implemented by different authorities and government agencies, a situation that is adding to management complexity (Atkinson, 2016). At the national level, guidance is provided by the National Planning Commission (NPC, 2011), the Marketing Tourism Growth Strategy for South Africa (South African Tourism, 2010) and the National Tourism Sector Strategy (DoT, 2011). The Rural Tourism Strategy (DoT, 2012) highlights the importance of rural areas for tourism and emphasises the fact that rural areas contain important tourism attractions.

At provincial and regional level there are: an Integrated Tourism Development Framework (Western Cape Department of Economic Development and Tourism, 2006), an Eastern Cape Tourism Master Plan (Eastern Cape Department of Economic Development and Economic Affairs, 2009) and a Northern Cape Tourism Master Plan Review (Grant Thornton, 2014). The Non-Government Organisation (NGO); The Karoo Development Foundation (2012), produced a Karoo Tourism Strategy and Kyle Business Projects (2009) produced a Camdeboo Responsible Tourism Sector Plan. In essence the strategies of these organisations are to: develop and market unique tourism products, grow domestic and international tourism arrivals and spend, create sustainable economic benefits and to protect the environment.

9.1.1 The historic importance of tourism in the Karoo

People have visited the Karoo for a long time. The area formed part of the hunting grounds of hunter-gatherers and of the grazing areas of nomadic Khoikhoi pastoralists (Elphick, 1979). The settlement of colonial farmers (“trekboers”) in the Karoo from ca. 1760 (Guelke, 1979) led to the establishment of churches (Fransen, 2006), then towns (Tamarkin, 1996) and later boarding houses to accommodate travellers.

Up to the 1850s there were no proper roads in the Cape Colony (Solomon, 1983), yet people travelled through the Karoo (Green, 1975). By the late 1860s and thereafter goods were ferried across the Karoo by transport riders and ox wagons to the markets of Kimberley and Johannesburg and passenger coaches transported passengers. Hotels appeared and Jewish owners played an important role in their establishment (Kollenberg & Norwich, 2007).

Later railways displaced both transport-riding and passenger coach services (Solomon, 1983) and during the South African War (1899 –1902) large numbers of soldiers and goods were transported across the Karoo, often by train. The arrival of motor vehicles and improvement of roads after World War II rapidly increased travel in South Africa, also in the Karoo (Solomon, 1983). Later air conditioning of motor vehicles eased the plight of travellers driving through the Karoo during the hot summer months. Places such as Swartberg Pass and Gamkaskloof (‘Die Hel’) started receiving increasing numbers of visitors (Milton & Dean, 2010; Toerien, 2012a).

9.1.2 The present importance of tourism in the Karoo

The scope of tourism in the Karoo; its spatial distribution and its growth or decline is examined here. Enterprises in different business sectors of South African towns are present in fairly constant ratios of the total number of enterprises in towns (Toerien & Seaman, 2012a). This is also true for the tourism sector of towns of arid and semi-arid South Africa (Toerien, 2012b). Regularities observed between economic characteristics such as gross value added (GVA) and enterprise numbers in Karoo towns (Toerien, 2014) indicate that more enterprises in a particular business sector of one town than another reflects higher levels of economic value addition in that business sector. In 2015 the tourism sector was the most numerous enterprise (business) sector in the study area, comprising 828 (i.e. 22.2%) out of a total of 3737 enterprises (Figure 9.1). Tourism is, therefore, a major source of income in the study area.

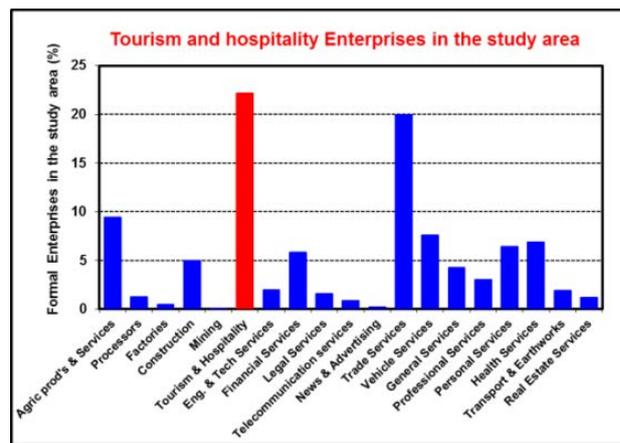


Figure 9.1: The enterprises of the tourism sector (in red) in relation to other business sectors in the study area.

Tourism is, however, not equally distributed through the study area: smaller towns are generally, but not always, proportionally more dependent on this sector than larger towns as shown by an increasing trend of tourism enterprises relative to total enterprises (see red arrow) in smaller towns (Figure 9.2). Even very small towns in the study area have some tourism enterprises.

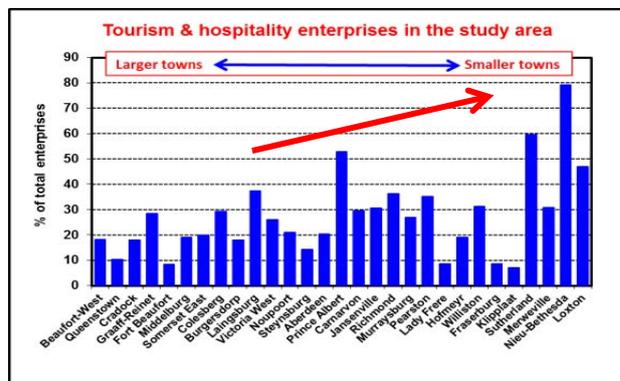


Figure 9.2: The tourism sector in relation to the population sizes of study area towns, ordered from left to right according to their 2011 population sizes.

This does not mean that larger towns and their surrounding areas are not important with regard to tourism. They have the highest total number of tourism enterprises (Figure 9.3) and also have more balanced local economies with a diversity of other business sectors in addition to tourism.

In a number of towns the tourism sector is exceptionally strong, i.e. Graaff-Reinet, Colesberg, Loxton, Prince Albert, Sutherland and Nieu-Bethesda. Towns on national routes (N1, N6, N9, N10 and N12) that cross the study area generally have more tourism enterprises than towns further away from the main routes (Figure 9.3).

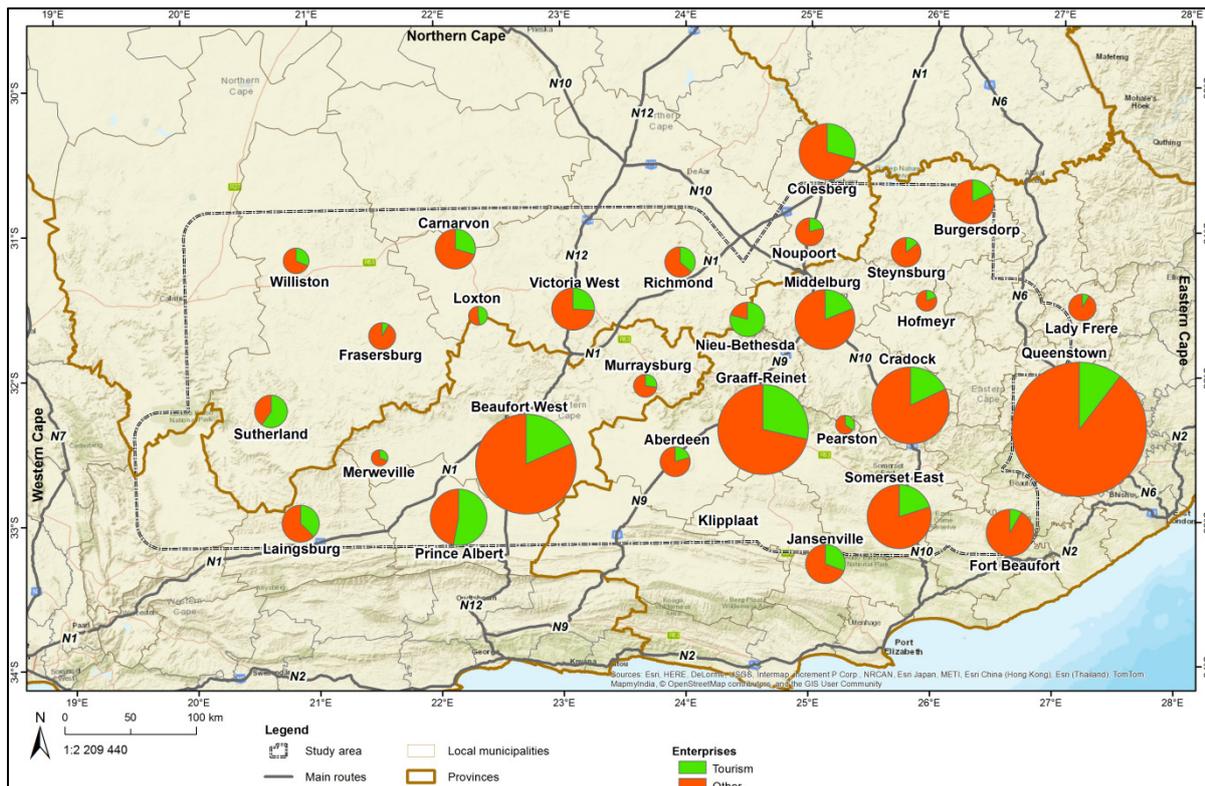


Figure 9.3: Total and tourism enterprises in or close to the study area towns.

Clustering (i.e. grouping) of the study area towns on the basis of their enterprise profiles [done according to the method of Toerien & Seaman (2010)] revealed two clusters of towns that differ markedly in terms of the contribution of tourism to their economies: cluster 1 (red in Figure 9.4) towns has an average of 15.5% and cluster 2 (blue in Figure 9.4) towns an average of 37.4% of their enterprises in the tourism sector. Klipplaat is an outlier with a single tourism enterprise.

Cluster 2 towns include many of the towns usually identified as tourism destinations in the Karoo (e.g. Nieu-Bethesda, Graaff-Reinet, Prince Albert, Sutherland, Colesberg and Beaufort West). These towns and their surrounding areas could, therefore, be very sensitive to negative impacts from SGD, if implemented (also see Section 9.2.2). A number of these towns occur in or close to the area identified as having the highest likelihood of the presence of shale gas (Figure 1.18 in Burns et al., 2016). These

towns are currently marketed as areas where ‘one can get away from it all’ and it is in these sensitive areas that mitigation would be most needed should SGD take place.

All towns in the study area have enterprises providing accommodation (bed & breakfasts [B&Bs], lodges, hotels, self-catering establishments, etc.) (Figure 9.4). Some smaller towns in cluster 2, such as Prince Albert, Sutherland and Nieu-Bethesda have many tourism enterprises relative to their sizes. Most of the very small towns (e.g.

Lady Frere, Hofmeyr, Klipplaat and Fraserburg) do not have any ‘food & drink’ enterprises (Figure 9.4). On the other hand, Graaff-Reinet, Prince Albert and Nieu-Bethesda, all cluster 2 towns, seem to be important destinations for typical Karoo food. Towns on national routes (e.g. Beaufort West, Queenstown, Somerset East, Cradock and Colesberg) also have many ‘food & drink’ establishments (Figure 9.4) but many of their offerings are fast foods and not typical food of the region.

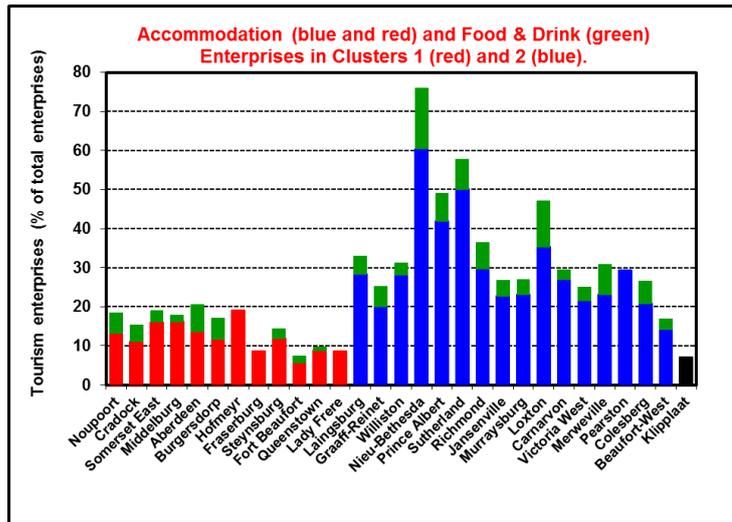


Figure 9.4: The contributions of accommodation and ‘food and drink’ enterprises to the enterprise profiles of two clusters of study area towns – cluster 1 (red) and cluster 2 (blue).

To establish whether the tourism sectors of the study area towns are stable, declining or growing we compared their sizes in 2006/08 with those of 2015/16 (Figure 9.5). The 2006/08 starting point was chosen because the use of smart phones for marketing purposes started taking off from 2007 (e.g. Lunden, 2013). Use of telephone directories of 2006 should, therefore, provide an overview of tourism enterprises at that time. Internet marketing is now used widely in the tourism industry in South Africa, also in the Karoo (e.g. Lekkeslaap, 2016; RoomsForAfrica, 2016; SafariNow, 2016). Internet searches were, therefore, used to obtain 2016 information of tourism enterprises.

With few exceptions (e.g. Colesberg, Fort Beaufort, Fraserburg, Klipplaat and Victoria West) the growth in the tourism sector of the towns outpaced the growth of the total enterprise numbers, further substantiating the growing importance of tourism in the study area. In Aberdeen, Carnarvon, Cradock, Graaff-Reinet, Jansenville, Loxton, Murraysburg, Nieu-Bethesda, Noupoort, Pearston, Prince Albert, Queenstown, Richmond, Somerset East, Sutherland and Williston tourism growth exceeded total enterprise growth by far (Figure 9.5). Not only does the tourism sector have the highest number of

enterprises of all business sectors, but it is also growing more rapidly than other business sectors in the majority of towns. As suggested by Hoogendoorn & Nel (2012) many Karoo towns have entered a post-productive phase in which tourism has replaced the declining role of agriculture. The dispersed tourism activities across the farming areas are likely to be sensitive to negative impacts of SGD, should it be implemented. It is, therefore, of concern that the Karoo, and the study area, straddles the borders between some provinces (Atkinson, 2016). Integrated management and promotion of tourism across provincial borders is needed but will be complex, and this situation will increase the difficulty of mitigating the impacts of SGD, if implemented. Cooperation between provincial, mining and tourism stakeholders would be needed.

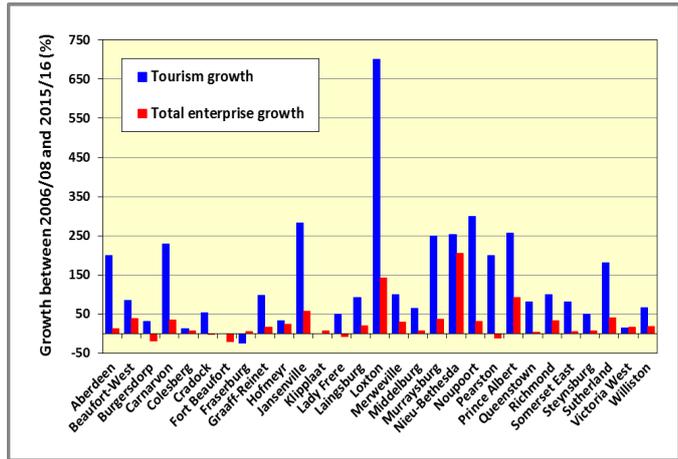


Figure 9.5: The growth (%) in the number of tourism (blue) and total (red) enterprises of the study area towns over 2006/08 to 2015/16.

9.1.3 Why do tourists visit the Karoo?... Its tourism assets

Apart from business travellers and those visiting friends and relatives (VFR travellers) who visit towns for business and personal reasons, it is important to understand why other tourists visit the Karoo. A recent study by Atkinson (2016) used questionnaires to determine why people visit the Karoo. She found that 35% of tourists (respondents): seek authentic and unique experiences, 34% seek convenience (a useful stay-over place), 16% are curious (finding out what the Karoo is about), 7% seek excitement (e.g. sport, hunting, adventure), 5% have loyalty (enjoyed previous visits) and 3% seek rest (having a holiday). Atkinson (2016) concluded that the tourism reputation of the Karoo has shifted profoundly from being hostile, dangerous and boring to being attractive, enticing and spiritual.

Scenery, especially mountains, and nature feature prominently in earlier tourist surveys. The Swartberg Pass, Seweweekspoort and Gamkaskloof ('Die Hel') are highlighted as important experiences. This highlights the importance of mountain passes and other scenic routes as key

“Die Niks”

Nama Karoo landscapes are spectacular in a bleak and dramatic way. There is plenty of ‘niks’ (nothingness) affording wide viewsheds for the crowd-weary traveller and hunter (Milton & Dean, 2010). The Karoo is, therefore, defined by natural open spaces with the occasional koppie or windmill and is populated by authentic local people. The emptiness and undeveloped nature of the Karoo (“Die Niks”) provides an escape for stressed people living in overcrowded cities and is the recognised brand used to market the region.

tourism assets for the region. The wide open spaces are also an important asset. Many respondents indicated that the lack of development and the unspoilt nature of the area attracted them. Getting away from it all and the peace and tranquillity (“The Nothingness” or “Die Niks”) of the Little Karoo is especially important to repeat visitors (Gelderblom, 2006).

Formal Protected Areas as well as private conservation initiatives are important tourist attractions. The Karoo National Park (close to Beaufort West and established in 1979), Mountain Zebra National Park (close to Cradock and established in 1937) and Camdeboo National Park (close to Graaff-Reinet and established in 2005) have experienced increased visitor numbers and investment (South African National Parks (SANParks), 2015a, 2015b).

Saayman et al. (2009) examined the socio-economic impact of the Karoo National Park on the local economy. At that stage only a small percentage (4%) of businesses in Beaufort West owed their existence to the park. For the park to have a greater impact, it was imperative to increase its accommodation capacity, offer more activities and promote activities and attractions in the region. Since then there has been substantial investment in the tourist experience in the parks including the re-introduction of lions and buffaloes in the Karoo and Mountain Zebra National Parks and the expansion of facilities.

The recent significant national and international investment in the establishment and expansion of Protected Areas in the Karoo attracted over 100 000 tourists in 2014/2015 to its National Parks. There is also substantial private investment in conservation including several private nature reserves and the newly declared Protected Environment established on private land between the Camdeboo and Mountain Zebra National Parks (SANParks, 2016).

Agri-tourism is on the increase in the Karoo. The growth in the number of game farms in South Africa, including the Karoo, has been significant (Saayman et al., 2011). Many commercial farmers are either introducing game into their normal farming operations or they are changing from commercial to game farming. The greatest source of income for game farms is hunting and the Northern Cape and Eastern Cape are key hunting provinces in South Africa, visited by local and foreign hunters (Saayman et al., 2011; Van der Merwe & Saayman, 2013; Van der Merwe et al., 2014).

Many visitors to the Karoo view the undeveloped nature of the area including the gravel roads as part of the appeal of the area. This lack of development is particularly important to adventure tourists such

as motor bikers, hikers, 4x4 enthusiasts, hunters and mountain bikers. The absence of light pollution is also an important asset attracting both amateur and professional stargazers.

In tourist surveys in the region, small towns were generally more popular and their relative freedom from crime and hospitable, genuine people are strong attractions (Gelderblom, 2006). Towns with a historic character are particularly important assets for tourism (Orton et al. (2016) provides information about historic towns and important historical sites scattered through the landscape). Prince Albert is one of the most important of the tourist towns in the study area. Its visitors come to rest and enjoy the attractive architecture and mountain scenery. Some 25% of visitors preferred more active recreation such as hiking, cycling and participation in guided tours to see historic sites, the Swartberg Pass, birds or the night skies. Others came to visit friends, trace family history, and escape the Cape Town winter weather or to invest in property (Milton, 1998). Some also explore the area's rich biodiversity under the guidance of local experts.

9.1.4 Food tourism and the Karoo

Food tourism is world-wide a growing tourism product (Long, 2003). It includes any tourism experience in which one learns about, appreciates, and/or consumes food and drink that reflects the local, regional, or national cuisine, heritage, culture, tradition, or culinary techniques of a specific area (Ontario Culinary Tourism Association, 2010). Food tourism is not limited to urban regions and five-star restaurants (Boniface, 2003), but can include farms, farm stalls, fruit-picking sites, cheese manufacturers, honey producers, processors of foods such as preserves and confectionary, cafes, tea gardens and bars as potential sites. The importance in these offerings is that establishments are local and products authentic (Boniface, 2003; Hall et al., 2004).

Food tourism is also a growing tourism industry in the Karoo and has the potential to create unique culinary experiences (Green, 1975). Thus tourism and local food systems are being integrated to promote economic development, respond to the demand for quality food and dining experiences and to build on the cultural and culinary heritage of the region.

Cuisine

Skilled, thoughtful, refined cooking belonging to a particular style and group of people is identified as *cuisine* and is the foundation on which food tourism is based (Long, 2003). A *regional cuisine* is necessary to develop food tourism products that can form the basis of regional development (Gössling & Hall, 2013). It is a unified style of cooking common to most people living in a culinary region and is defined by three criteria: geography, homogenous food culture and defining dishes that are unique and noteworthy (Sackett & Haynes, 2012).

The Karoo has many assets that are supporting this development, including a culinary heritage and regional cuisine. The tourism offerings in the Karoo are authentic, within original small town atmospheres. Traditional foods such as ‘roosterkoek’ have been passed down through generations in the Karoo. The climate and topography have also allowed the propagation and cultivation of local produce shaping the very specific cuisine of the region. Local produce such as Karoo Lamb have been recognised with a designation of origin providing quality and geographical recognition and simultaneously achieving international acclaim (Hoosain, 2015; Kirsten, 2012).

Plans are on the way to establish an association, ‘Karoo Food’, a public, non-profit organisation, to stimulate economic growth and job creation by working towards the sustainability of Karoo hospitality and camaraderie in the food tourism industry (Wright and Wright, 2015). The food and drink tourism offerings in many Karoo towns culminate in very popular food festivals, e.g. the Karoo food festival of Cradock which has become an annual event attended by many visitors.

9.1.5 The drivers of tourism in the Karoo

The recent increase of tourism in the study area (Figure 9.5) prompts the need to understand the phenomenon. Based on Sections 9.1.3 and 9.1.4, this section focuses on those factors believed to have been the main drivers of tourism in the Karoo.

One of the key contributing factors is the generally **improved road infrastructure** after World War II (Solomon, 1983). The national routes (N1, N6, N9, N10 and N12) that connect Gauteng and Western Cape, the two economically strongest provinces, via the study area have all been improved and this plays a vital role in increasing the flow of people through and to the region. The improved roads also benefit tourists to the study area, including business and VFR travellers visiting towns for business or personal purposes.

The **Karoo has also become a destination** in its own right, in line with an international trend towards “desert tourism”, which is often associated with adventure and a desire to “get away from it all”. Its establishment as a popular destination has been associated with a measurable increase in publicity and a change in perceptions regarding the area (Atkinson, 2016). It has been linked with the **development of tourism routes** that combine the use of national roads with tourism offerings, e.g. the N12 Treasure Route, the N12 Battlefields Route and the Friendly N6 Route.

Expanding National Parks and increased conservation-based activities have also stimulated tourism. These parks have also **introduced 4x4 and hiking routes**. There is also a **growth in private conservation initiatives**. The most recent development has been the establishment of a Protected

Environment of over 250 000 ha which includes 65 landowners in a corridor linking the Mountain Zebra and Camdeboo National Parks (SANparks 2016).

The **growth in niche tourism** based on festivals and events (e.g. Prince Albert), arts (e.g. Nieu-Bethesda) and science (e.g. Sutherland) also enhances tourism to the Karoo (Saayman et al., 2009; Saayman & Saayman, 2010). The Karoo has a **rich historic heritage** (see Orton et al., 2016), which also enhances Karoo tourism (Maguire, 2009; Koekemakranka Tourism, 2015).

The **rise of agri-tourism** in all its forms (e.g. farm stays, game farming, hunting, etc.) is one of the greatest drivers of modern tourism in the Karoo. **Increased agri-tourism services** offered by farms in the study area include wedding venues and conference facilities, game breeding, hunting, 4x4 and hiking trails, a variety of accommodations, stargazing, horse riding, fishing, and other water activities, especially on the Fish River in the Cradock region. Karoo tourism has over time moved from being more concentrated in the towns to being more dispersed over the rural Karoo farming areas.

There was (in 2015) a broad, but statistically significant correlation between town size (measured by total number of enterprises) and tourism enterprise numbers in the towns of the study area (Figure 9.6). Larger towns generally have more tourism establishments than smaller towns despite not necessarily being labelled as tourist destinations. This relationship indicates that the **business tourism** group (e.g. visits of business people, officials, etc.) and the **VFR** group

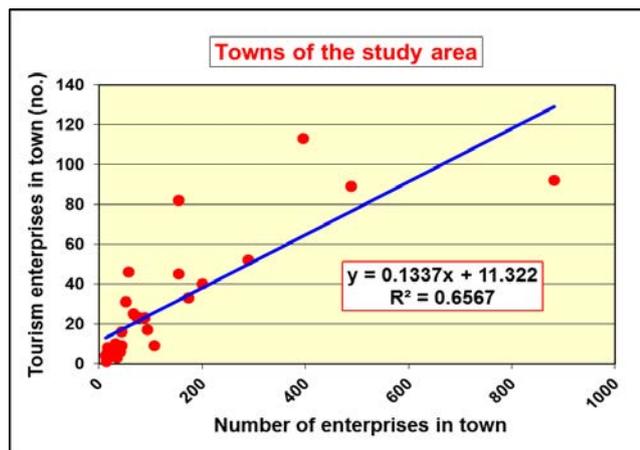


Figure 9.6: The broad correspondence between town size and the number of tourism enterprises in 2015/16 in the study area

are important. The larger a town, the more of these tourists visit it. Unfortunately the data did not distinguish between who visits a town for business/administrative purposes and who visits for VFR purposes. The two groups are, therefore, considered together.

9.1.6 Tourism impacts recorded elsewhere from SGD

Some information is available regarding the actual and projected economic impacts of SGD (see also van Zyl et al., 2016). For instance IHS Global Insight (2009) reported on the economic and energy impacts of proposals to regulate hydraulic fracturing (“fracking”) in the United States (US). There are, however, few formal studies of the impacts on tourism and those available focus mostly on expected

and not actual impacts. Newspaper reports sourced from the New York Times provided some stories of impacts on American towns but there is not much by way of quantified estimates.

Buttler & Fennell (1994) observed that development of the North Sea oil proved both beneficial to the tourism industry through improved infrastructure and guaranteed access to an affluent market. However, it was negative to the pleasure element of the industry, which was displaced and ignored for over a decade. Studies in Pennsylvania (Upadhyay & Bu, 2010), New York State (Rumbach, 2011), Newfoundland (Bezzina, 2013) and Queensland, Australia (McLennan et al., 2015) of shale or coal seam gas development also suggested that some impacts might be beneficial and others detrimental to tourism.

Rumbach (2011) suggested that although the tourism sector creates a significant number of jobs in the Southern Tier region of New York, it is

likely that the value of gas drilling, measured simply by jobs created and wages generated might exceed the value of tourism in the short term. Rumbach (2011) expected the employment ‘boom’ of gas drilling to be relatively short-term and non-local. However, gas production in the Gladstone region of Queensland has resulted in the region becoming a major industrial cluster, with strengths in the export of resources, engineering, construction and manufacturing (McLennan et al., 2015).

In the immediate vicinity of the shale or coal seam gas production, enterprises such as hotels, restaurants, and shopping venues benefited from an influx of gas workers (Rumbach, 2011; Bezzina, 2013, McLennan et al., 2015). Many of the communities where drilling proceeded in North America were relatively sparsely populated and drilling led to a shortage of available hotel rooms (Price et al., 2014), thereby inhibiting ‘normal’ tourism.

Negative impacts of the development of shale- and coal seam gas on tourism

- Air pollution through release of methane gas that must be flared off.
- Continuous noise pollution as a result of drilling, construction and fracking activities.
- Heavy truck traffic because each single-well fracking wellpad requires an estimated 890 to 1,340 truck trips.
- Visual impacts when drilling operations and fracking wells are within sight of residents, visitors and travellers. Flaring of gas adds to the visual impacts.
- Increased seismic activity.
- Disposal of hazardous wastes with the danger of toxic spills during storage or transport of wastes.
- Contributions to climate change and its potential impacts on tourism.
- Negative impacts on tourism products, promotion and visitor perceptions of tourism brands.
- Institutional shifts towards the resources sector.
- Structural lock-in to the resources sector with a two-speed economy and lack of affordable accommodation.
- Negative impacts on infrastructure and support services

Rumbach (2011) considered whether drilling would permanently damage the carefully developed 'tourism brand' of the Southern Tier region in New York State. The region's ability to attract tourists could be damaged in the long-term if the perception of the region as an industrial landscape outlasts the employment and monetary benefits of gas drilling. Other regions where concerns have been raised about regional brand degradation include Newfoundland (Bezzina, 2013), Queensland (McLennan et al., 2015), Tasmania (Department of Primary Industries, Water and the Environment, 2015) and Romania (Muresan & Ivan, 2015). Farmers in the region of the Marcellus Shale Play in the US that produce organic products for high end and organic restaurants were concerned about the preservation of their brands should water pollution occur as a result of fracking (Ong, 2014).

The pace and scale of SGD is a crucial determinant of the overall impact on the tourism economy (Rumbach, 2011). Bezzina (2013) concluded that the overall impact of fracking on tourism would be negative in western Newfoundland. Bezzina (2013) expected a short-term economic boom for the region, including increased occupancy rates for hotels, but predicted a long term negative impact on the regional tourism brand. Tourists are currently attracted to western Newfoundland by landscapes and scenery, camping facilities, hiking trails and boat tours and these nature-based attractions may be negatively impacted.

Upadhyay & Bu (2010) estimated the visual impacts at different distances of gas drilling and wellpads in Pennsylvania. They indicated that such activities were visually not overly intrusive at distances exceeding about 3 km, but lights at wellpads and flaring of gases could be readily seen at night. Visitors flying in to a region with wellpads will, however, see them with potentially negative impacts (see Oberholzer et al. (2016) for more details about visual impacts).

Deutch (2011) and Morse (2014) commented on the good news resulting from SGD. Krauss (2011) remarked that a 17 mile stretch of road between a forsaken South Texas village, Catarina, and the county seat of Carrizo Springs, was until 2010 rundown and a patchwork of derelict gasoline stations and rusting warehouses. By 2011 the region was in the hottest new oil play in the country, with giant oil terminals and sprawling recreational vehicle (RV) parks replacing fields of mesquite. In the Rust Belt of Ohio transformation spread as a result of a surge in domestic oil and gas production and entire economic sectors like manufacturing, hotels, real estate and even law were reshaped (Schwartz, 2014).

Not all impacts lasted. A tumble in gas prices due to increased competition caused the boom in western Colorado, a region rich in natural resources and where oil and gas jobs formed the bedrock of

the local economy, to dry up (Healy, 2012). Main Street businesses were struggling and big new schools built to accommodate a surge of students from the previous energy rush found their enrolments dwindling.

Potential synergies between mining activities and tourism could be exploited, e.g. mining becoming a possible tourism post-boom product (McLennan et al., 2015).

9.2 Consequences, Risks and Sensitivities

An extractive industry such as mining and tourism invariably end up in conflict (McLennan et al., 2015). SGD in the study area would, therefore, create risks for the tourism sector of the study area. The physical steps in SGD, if approved and implemented in South Africa, would not differ materially from those used in the US (see Burns et al., 2016). The negative impacts listed by Upadhyay & Bu (2010), Rumbach (2011), Bezzina (2013) and McLennan et al. (2015) (see sidebar in Section 9.1.6) could also be experienced in the Karoo. A further complexity is that in South Africa mineral resources belong to the State and not the landowners, whereas in the US it is the opposite. The Karoo also falls under the jurisdiction of more than one province (Atkinson, 2016), which adds complexity to the possibility of integrated tourism management in the study area.

Bezinna (2013), McLennan et al. (2015) and others have remarked that the use of local tourist accommodation by gas and oil workers ‘crowd out’ regular tourists but benefit local tourism entrepreneurs. SGD therefore results in an internal restructuring of the tourism industry (McLennan et al., 2015), which could lead to problems following a mining boom. Butler & Fennell (1994) suggested that it can take ten years or longer for tourism to recover from mining.

The development of an understanding of the consequences and risks associated with potential SGD required a special analysis (see digital Addendum 9A) which informed this section.

9.2.1 Tourist groups

Three groups of tourists (see Section 9.1.5) visit the study area: 1) Those seeking unique Karoo experiences (‘getting away from it all’, adventures, heritage sites, Karoo food, festivals, etc.); 2) Those travelling through; and 3) Business and VFR travellers.

The three groups are expected to react differently to SGD impacts. The tourists passing through are on their way to other destinations and will continue travelling through the study area whether SGD takes place or not, unless congestion of roads and noises associated with SGD-related traffic become a

nuisance to them. Business and VFR groups visit towns for business/administrative/personal reasons and the size of these groups is determined by the size of towns. In fact, the size of these groups could increase because of the likelihood of business visits related to SGD activities and personal visits related to SGD workers. Tourists visiting the study area for unique Karoo experiences are expected to be negatively impacted by the problems associated with SGD (see Section 9.1.6). Dependent on their association with one or more tourist groups, different risk profiles are therefore expected for towns in the study area. Digital Addendum 9B presents an analysis of this aspect.

9.2.2 Consequences of impacts on the tourism sector of the study area

The consequences of SGD on the tourism sector of the study area are examined with the aid of a five point scale: slight but noticeable, moderate, substantial, severe and extreme. Table 9.1 summarises the expected impacts associated with different consequence levels.

Table 9.1: Consequences and impacts of potential SGD on tourism in the study area.

Consequence level	Impacts
Slight, but noticeable	Little densification of traffic on the roads of the study area; slight increase in truck noises; no rig noises; visual impacts no worse than those of railways, roads, wind pumps, power and telephone lines in the study area. The ability of municipalities to deliver services is unencumbered by SGD. Business and VFR tourist numbers are in step with the size of towns and their growth. Numbers of tourists travelling through are not affected and tourists seeking Karoo experiences visit the study area in growing numbers because of further growth of agri-tourism, ecotourism, adventure tourism, culinary tourism, etc.
Moderate	More pronounced traffic densification because of transport of some SGD equipment, materials and workers; truck noises are more pronounced but still acceptable; municipalities, even the small ones, are able to provide the services needed, e.g. road repairs, safe water, etc.; noise associated with exploration (e.g. seismic and drilling) increases in rural areas; the presence of rigs and flaring of gas have some visual impacts; visits of technical experts associated with exploration increase the number of business visitors to the study area; some crowding out of regular tourist groups is experienced in towns and areas close to exploration activities. VFR tourist numbers are not impacted much; through tourists continue as before and tourists seeking Karoo experiences still visit the study area, although some might come in close contact with the noise and visual impacts of exploration activities; the limited scale of exploration activities does not affect the image of the study area as a tourist destination; the Karoo tourism brand is not negatively influenced.
Substantial	Substantial traffic densification because of the transport of SGD equipment, materials and workers; with no mitigation, large numbers of slow-moving trucks on all of the major and many of the minor roads of the study area interfere with the access of tourists to the study area; truck

Consequence level	Impacts
	noises are very pronounced as large numbers of trucks ferrying materials and wastes continuously pass through towns or close to rural tourism facilities; all groups of tourists are affected by noise pollution, especially those using accommodation close to routes used by SGD trucks; drilling rigs operating in rural areas intrude through noise and visual impacts; the growth of towns and visits of technical and other experts associated with SGD increase the number of business visitors to the study area; crowding out of all regular tourist groups is a regular occurrence in towns and areas close to SGD activities; an influx of job seekers and SGD workers to the study area; VFR tourist numbers increase as town populations grow; most municipalities struggle to provide adequate services such as road repairs, provision of safe water, etc.; tourists passing through avoid study area roads and stay over in the towns outside the study area; tourists seeking Karoo experiences increasingly exposed to the presence of SGD operations with their associated noise, visual and other impacts; the study area increasingly gets an industrial image to the detriment of the Karoo's brand as a 'place to get away from it all'; some tourism enterprises are no longer viable concerns and cease to exist; many workers in the tourism sector become redundant and lose their jobs; the negative impacts on the tourism industry of the study area extend at least a decade after SGD had been terminated and rehabilitation activities completed.
Severe	Still higher truck densities on major and minor roads; more truck noises in towns as well as rural areas; more visual impacts; more business tourists; more crowding out of regular tourist groups; increasing deterioration of roads; more municipalities that struggle to provide safe water, adequate waste handling and adequate road repairs; tourists in rural areas are increasingly in contact with SGD operations; the number of tourists that seek Karoo experiences dwindle; the Karoo brand suffers and is replaced by an industrial image; the agricultural sector in the study area loses a main differentiator through the decline of the tourism sector and the study area's attraction as a place to have Karoo experiences diminishes; many tourism enterprises, especially in the rural areas, are no longer viable and disappear; many workers in the tourism sector become redundant and lose their jobs; the negative impacts on the tourism industry of the study area extend at least a decade after gas production has been terminated and rehabilitation activities completed.

The above analysis suggests that the major expected negative impacts of potential SGD on the tourism sector in the study area are a reduction in the numbers of 'regular' tourists, losses of tourism enterprises, a reduction in regional economic value addition by the tourism sector and declining tourism employment. The potential losses of enterprises, value addition and employment in the tourism sector of the study area are interlinked: if the number of tourists declines, the number of tourism enterprises declines, and then the economic value added by the tourism sector and the number of employment opportunities in the sector decline in step. The consequences terms are calibrated here (Table 9.2) and can be used in risk analyses.

Table 9.2: Calibration of consequences terms.

Impact	Slight	Moderate	Substantial	Severe	Extreme
Loss of tourism enterprises	<5%	5 - 9.99%	10 – 14.99%	15 – 20%	>20%
Loss of economic value added	<5%	5 - 9.99%	10 – 14.99%	15 – 20%	>20%
Loss of tourism employment	<5%	5 - 9.99%	10 – 14.99%	15 – 20%	>20%

9.2.3 Risk assessment

Should SGD be implemented in the study area, the likelihood of impacts on the tourism sector and the severity of their consequences determine the risks to which the tourism sector of the study area would be subjected. The lack of trustworthy publicly available tourism information (e.g. the number of bed nights sold and tourist spending at tourism establishments) bedevils assessment of the risks from SGD to the tourism sector in the study area. To overcome the problem, use was made of Standard Industry Classification (SIC) data available for 16 of the 29 towns of the study area to develop insight into these risks (see Digital Addendum 9A for details of the full analysis).

The dataset used included the nominal total GVA for 2010 and the GVA contributions of the following nine broad economic sectors: agriculture, mining, manufacturing, electricity supply, construction, trade, transport, financial services and other services to the economies of the 16 towns. It also included total employment as well as employment numbers in each of the above broad sectors. Census 2011 population data and 2015/16 enterprise numbers (total and tourism-related) of the 16 towns completed the dataset.

The presence of positive correlations between a number of economic, demographic and entrepreneurial characteristics of the 16 towns enabled three different analyses by which losses of tourism enterprises could be interpreted in terms of losses of employment and losses in economic value addition. Thereafter the analysis was extended to the towns not included in the dataset in order to develop a complete picture of the risks to the tourism sector in the study area (see Digital Addendum 9A).

The upper risk limit is determined by the limit of acceptable change, which was set at a 20% loss of tourism enterprises (see Section 9.2.2). Losses in excess of that figure could be catastrophic to the tourism sector and its role players of the study area. Using the calibrated consequences (Table 9.2) the expected losses of: (i) employment and (ii) economic value addition by tourism was developed for a range of risks (Table 9.3). The table presents an analysis of the risk levels that might arise under the

different scenarios of SGD in the study area. It takes into account three sensitivity levels (medium, high and very high) to expected SGD impacts at different locations in the study area as well as the likelihood of their occurrence (see Digital Addendum 9B for detailed analysis).

Table 9.3: The losses in tourism enterprises, employment and value addition that may be associated with negative impacts by gas exploration and production on the tourism sector in the study area.

Loss in tourism enterprises	Tourism employment loss	Loss in GVA R million (2010 Rand p.a.)	Risk
< 4%	<530	<100	Very low
4 – 8%	530 - 790	100.1 - 200	Low
8.1 – 12%	791 – 1 580	200.1 - 300	Moderate
12.1 – 16%	1 581 – 2 110	300.1 - 400	High
16.1 – 2 0%	2 111 – 2 660	400.1 - 500	Very high
>20%	>2 660	>500	Limit

The expected consequences of the Reference Case, for the tourism sector in the study area were estimated to be slight (Table 9.1) and extremely unlikely (Table 9.3). In fact, it is expected that overall the tourism sector will continue to grow during the next three decades. Business and VFR tourist numbers would be proportional to the size of towns and tourists driving through the study area would continue to travel through and use accommodation and other services. Tourists seeking Karoo experiences would increase because farmers in the study area are expected to remain financially stressed (Oettle et al., 2016) and more would diversify their activities into agri-tourism. Towns are also targeting the tourism industry for economic growth and job creation. Tourism facilities and products would, therefore, increase in the rural areas as well as in the towns, attracting even more tourists. Mitigation procedures would not be necessary.

According to the Exploration Only scenario; exploration activities might start in 2018 and continue to about 2025 (Burns et al., 2016). This would result in some exposure of tourists seeking Karoo experiences to the consequences of the expected impacts in the study area: some traffic densification, some noise and visual disturbances and some crowding out of regular tourists (see Table 9.3). However, the consequences are expected to be moderate (Table 9.1) and without mitigation the risk for the tourism sector should be low (Table 9.4): losses of tourism enterprises less than 8%, losses of tourism employment < 790, loss of regional GVA <R 200 million per annum (Table 9.3). Mitigation steps could decrease the risk for the tourism sector to very low: losses of tourism enterprises less than 4%, losses of tourism employment < 530, and loss of regional GVA < R 100 million per annum (Table 9.3). It is, however, doubtful whether mitigation procedures would be justified in the period 2018 to 2025 unless they require a long time to put in place (see Section 9.3).

Should the Small Gas scenario become reality; the consequences of SGD during 2025 to 2045 would increase to severe. All of the impacts described in Table 9.1 would be experienced: traffic densification, noise and visual impacts, reduced tourist access to the region, crowding out of regular tourists and losses of tourists, especially those that seek Karoo experiences, and a decline in the Karoo tourism brand. These impacts are expected to be very likely and the risks for the tourism sector to be high (Table 9.4). Without mitigation of the impacts, the study area could lose up to 16% of its tourism enterprises, shed up to 2 100 jobs in the tourism sector, and the regional GVA could decrease by R 400 million (2010 Rand) per annum (Table 9.3).

Mitigation would reduce, but not eliminate, the risks. With mitigation the risk level to the tourism sector could decline to moderate, i.e. loss of tourism enterprises 8 to 12%, loss of tourism jobs 800 to 1 600 and reduction in regional GVA R 200 million to R 300 million (2010 Rand) per annum (Table 9.3). Should the SGD activities of the Small Gas scenario terminate around 2048 and full rehabilitation has been established (Burns et al., 2016), the tourism sector could still take at least another decade to recover.

The consequences of the Big Gas scenario for the tourism sector in the study area from about 2025 to beyond 2050 would range from severe to extreme and are expected not to be spread evenly across the study area (Table 9.4). For locations with very high sensitivity (Figure 9.7), the consequences would be extreme and very likely (Table 9.4), which translates into very high risks for the tourism sector in these localities, i.e. losses of up to 20% of tourism establishments, a concomitant loss of tourism employment and a reduction in the regional GVA. Mitigation steps are expected to reduce the risks in the highly sensitive locations to high (Table 9.3 and Table 9.4), but some tourism enterprises and jobs would probably still be lost and the tourism contribution to the regional GVA be reduced.

For locations with medium and high sensitivity (Figure 9.7) the consequences are estimated to be severe and very likely. This would result in high risks (Table 9.4) and without mitigation of the impacts, these localities could lose up to 16% of their tourism enterprises, shed many jobs in the tourism sector, and the regional GVA contributions could decrease substantially (Table 9.3). Timely mitigation procedures are expected to reduce the risks in these locations, but would not eliminate them. After SGD ceases beyond 2050 and total rehabilitation is finally effected (see Section 1.4.3.1 in Burns et al., 2016), full recovery of the tourism sector would probably take at least another decade.

Table 9.4: Risk assessment for different tourism sectors from negative impacts of gas exploration and production and for different scenarios and with or without mitigation.

Impact	Scenario	Location*	Without mitigation			With mitigation		
			Consequence	Likelihood	Risk	Consequence	Likelihood	Risk
Tourism impacts	Reference Case	Very High Sensitivity	Slight	Extremely unlikely	Very low	Slight	Extremely unlikely	Very low
	Exploration Only		Moderate	Very unlikely	Low	Slight	Extremely unlikely	Very low
	Small Gas		Severe	Very likely	High	Substantial	Likely	Moderate
	Big Gas		Extreme	Very likely	Very high	Severe	Likely	High
	Reference Case	High Sensitivity	Slight	Extremely unlikely	Very low	Slight	Extremely unlikely	Very low
	Exploration Only		Moderate	Very unlikely	Low	Moderate	Very unlikely	Low
	Small Gas		Substantial	Likely	High	Substantial	Likely	Moderate
	Big Gas		Severe	Very likely	High	Severe	Likely	High
	Reference Case	Medium Sensitivity	Slight	Extremely unlikely	Very low	Slight	Extremely unlikely	Very low
	Exploration Only		Slight	Very unlikely	Very low	Slight	Very unlikely	Very low
	Small Gas		Substantial	Likely	High	Substantial	Likely	Moderate
	Big Gas		Severe	Very likely	High	Severe	Likely	High

* See Figure 9.7

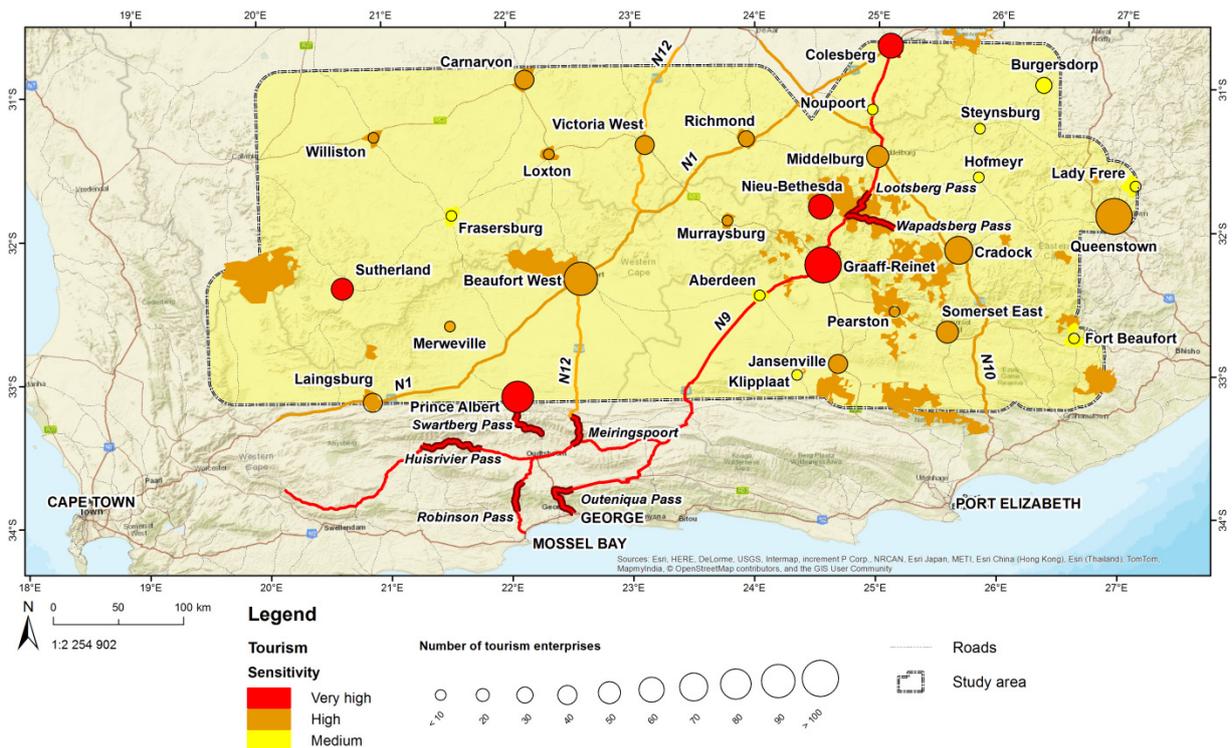


Figure 9.7: Map of the sensitivities to negative impacts of SGD on protected areas, major roads and the tourism sectors of towns of and the access routes from the south to the study area

Figure 9.8 presents a risk map of local community exposure to air pollutants across four SGD scenarios, with- and without mitigation.

9.2.4 Sensitivity of the tourism sector to negative impacts

Once risks were identified (Table 9.4) the evaluation of the sensitivity to impacts of SGD on the tourism sectors of towns, the rural areas, and access routes to the study area from the south was enabled (see detailed analysis in Digital Addendum 9B).

The evaluation firstly considered the access routes of tourists to the study area and for reasons outlined in digital Addendum 9B certain passes over and ‘poorts’ through mountains were judged to have a very high sensitivity. Atkinson (2009) identified six Karoo tourist routes, three of which cross or skirt the study area.

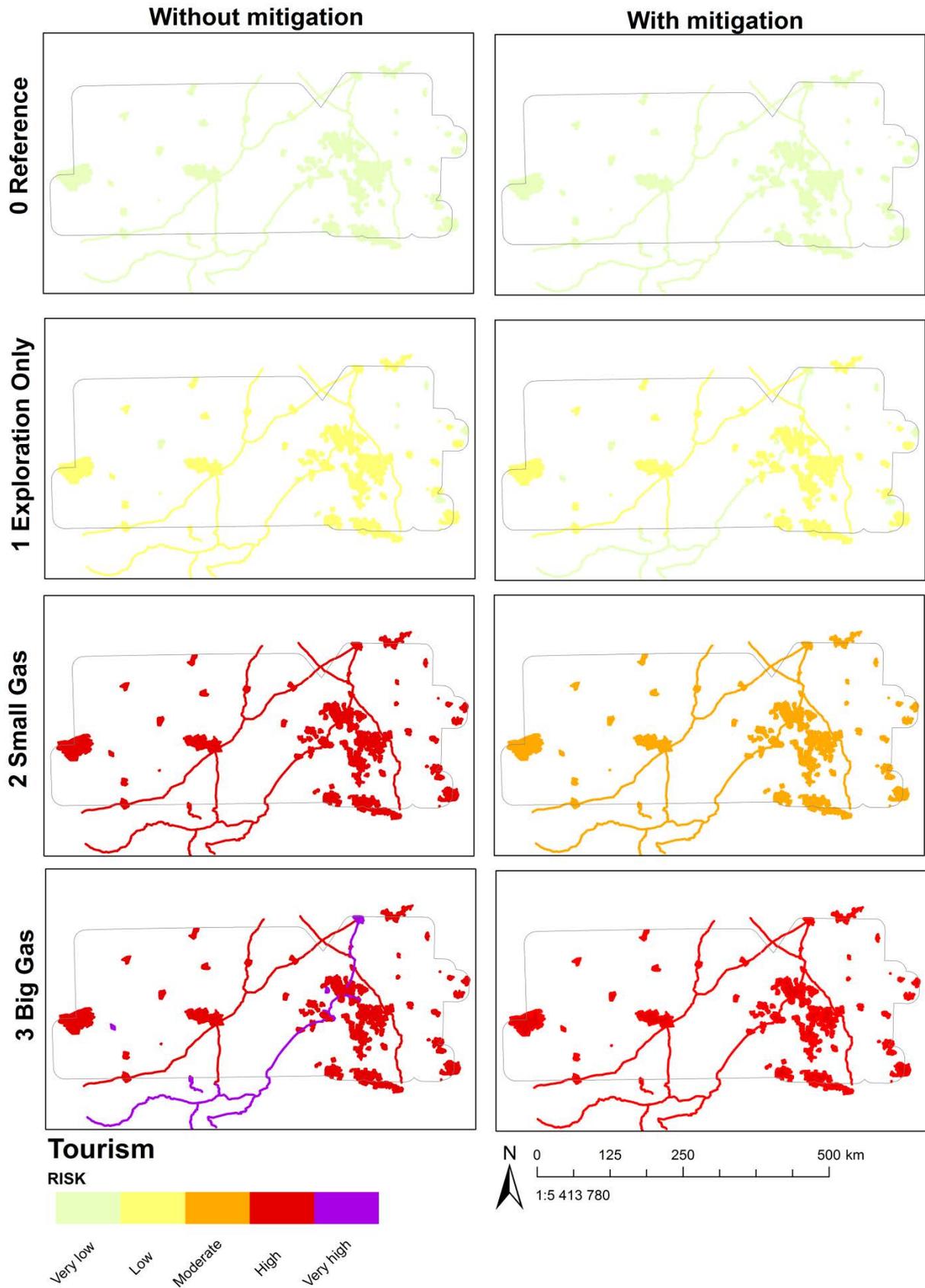


Figure 9.8: Map indicating the risk to tourism across four SGD scenarios, with- and without mitigation. Note: the risk of regional impacts to dispersed tourism facilities are not presented in this map.

The Camdeboo Route (N9) provides access to the central part of the study area and is an important access route. It features in mitigation proposals in this assessment (see Section 9.2.2) and is judged to have a very high sensitivity. The Great Karoo Route on the N1 passes partly through the study area and carries a lot of north-south traffic. The Sundays River Route on the N10 skirts the study area. The sensitivity of both of the latter routes is judged to be high.

Agri-tourism, eco-tourism and other niche tourism activities have contributed to the dispersal of tourism facilities throughout the study area. There is, however, a lack of information on the precise location of these facilities. Therefore, the whole of the study area was judged to have a medium sensitivity except where otherwise indicated. As better information about the location of tourism facilities and assets becomes available, the sensitivity estimates of specific locations might have to be adjusted.

The sensitivity assessment of the tourism sector of towns was based on two tests: (i) Does a town have more or fewer enterprises than the average number of tourism enterprises per town in the study area (i.e. the total number of tourism enterprises in the study area divided by the number of towns) (Figure 9.9). This test considers a town’s relative contribution to the tourism sector of the study area. (ii) Does a town have a higher percentage of enterprises in the tourism sector than the average for the study area (total number of tourism enterprises in the study area divided by the total number of enterprises in the study area and expressed as a percentage) (Figure 9.10). This test considers a town’s relative dependence on the tourism sector.

It should be noted that the data for each town also includes tourism enterprises in the surrounding countryside and thus each town deemed to have a certain sensitivity level would also have a surrounding countryside with the same sensitivity level.

Towns that exceeded the norm in either test were designated leaders and those that did not, were designated laggards.

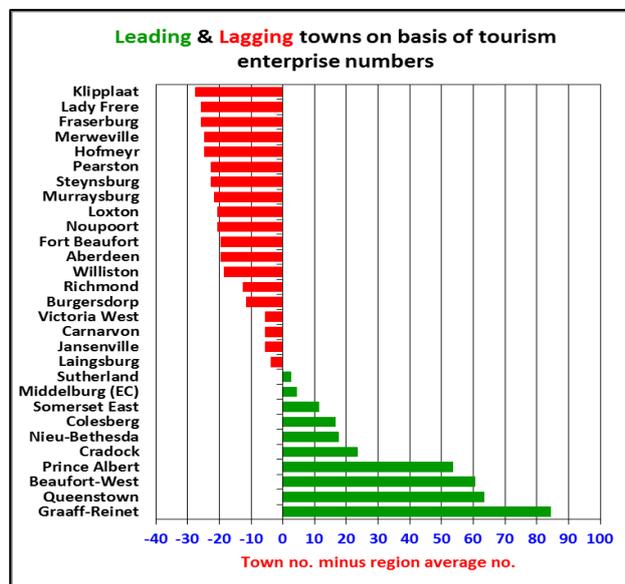


Figure 9.9: Leading (green bars) and lagging (red bars) towns in the study area in terms of number of tourism enterprises per town. Regional average is total number of tourism enterprises in the study area divided by the number of towns.

Taking into account that all towns in the study area have one or more tourism enterprises, the minimum sensitivity accorded to towns in the study area is medium. The sensitivities of leading towns in both categories have been judged to be very high. The sensitivities of towns that are leaders in one but not the other category have been judged to be high. The sensitivities of towns that are laggards in both categories have been judged to be medium. Table 9.5 summarises the results.

Five towns are deemed to be very sensitive: Graaff-Reinet, Nieu-Bethesda, Prince Albert, Sutherland and Colesberg. All of these towns have reputations as tourist destinations. Colesberg is additionally positioned as an overnight stop for travellers between the metropolitan areas of Johannesburg and Cape Town.

The sensitivity of Beaufort West, Cradock, Middelburg, Queenstown and Somerset East is deemed to be high. These are all large towns and derive their enterprise number leadership probably partly from the business and VFR travellers and partly from overnight visitors. Cradock also attracts some niche visitors, such as for culinary experiences of Karoo food and aquatic activities.

Two tourism assets seem to play significant roles in the group of small towns that are laggards in the number of tourism enterprises but leaders in tourism sector strength: (i) overnight visitors on main routes from inland to the south (N1 and N12 routes) or to the West Coast (R63 route) benefit Carnarvon and Williston on the R63, Laingsburg and Richmond on the N1, and Victoria West on the N12; and (ii) a Google search confirmed that many hunting opportunities are advertised in the vicinities of all of the towns in this group. The Square Kilometer Array (SKA) is also being constructed close to Carnarvon and this town's tourism enterprises are benefiting from business tourism associated with this activity.

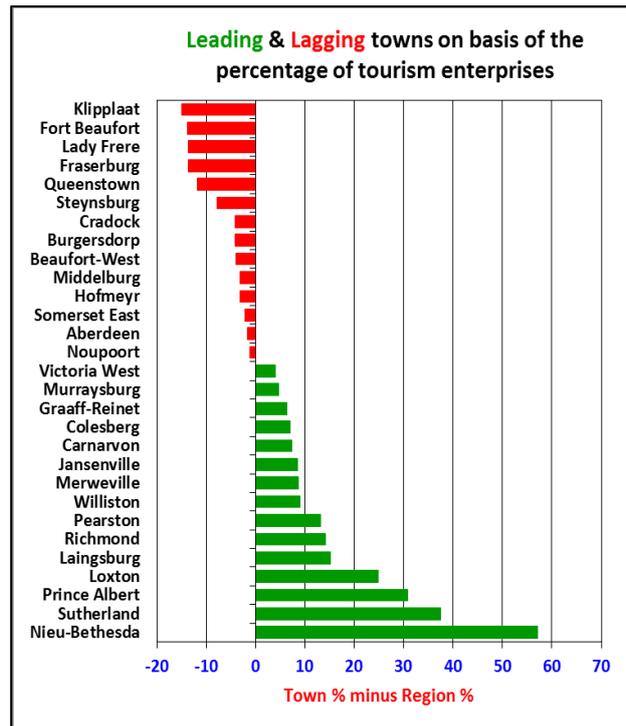


Figure 9.10: Leading and lagging towns in terms of the strength of their tourism sectors (expressed as % of total enterprises). The norm is the average strength of the tourist sector (% of all enterprises) for the whole of the study area.

Table 9.5: Assessment of the sensitivity to negative impacts by SGD on the tourism sector of towns in the study area.

Town	Enterprise numbers	Tourism sector strength	Sensitivity
Graaff-Reinet	Leader	Leader	Very high
Nieu-Bethesda	Leader	Leader	Very high
Prince Albert	Leader	Leader	Very high
Sutherland	Leader	Leader	Very high
Colesberg	Leader	Leader	Very high
Beaufort-West	Leader	Laggard	High
Cradock	Leader	Laggard	High
Middelburg	Leader	Laggard	High
Queenstown	Leader	Laggard	High
Somerset East	Leader	Laggard	High
Carnarvon	Laggard	Leader	High
Jansenville	Laggard	Leader	High
Laingsburg	Laggard	Leader	High
Loxton	Laggard	Leader	High
Merweville	Laggard	Leader	High
Murraysburg	Laggard	Leader	High
Pearston	Laggard	Leader	High
Richmond	Laggard	Leader	High
Victoria West	Laggard	Leader	High
Williston	Laggard	Leader	High
Aberdeen	Laggard	Laggard	Medium
Burgersdorp	Laggard	Laggard	Medium
Fort Beaufort	Laggard	Laggard	Medium
Fraserburg	Laggard	Laggard	Medium
Hofmeyr	Laggard	Laggard	Medium
Klipplaat	Laggard	Laggard	Medium
Lady Frere	Laggard	Laggard	Medium
Noupoort	Laggard	Laggard	Medium
Steynsburg	Laggard	Laggard	Medium

Aberdeen, Burgersdorp, Fort Beaufort, Fraserburg, Hofmeyr, Klipplaat, Lady Frere, Noupoort, and Steynsburg are laggards in the number of tourism enterprises and in tourism sector strength (Table 9.5). The tourism sector has not yet become a major strength of these towns, and the sensitivity of their tourism sectors was judged to be medium, the same as that of the rest of the study area.

The study area contains many protected areas such as national and private nature reserves. The sensitivity of these areas was judged to be high.

The above analysis enabled the development of an integrated map of the sensitivities of the tourism sector of the study area to negative impacts of SGD (Figure 9.7), which shows that if SGD is implemented, the Protected Areas, roads and towns with high and roads and towns with very high sensitivities will have to be considered carefully.

9.3 Mitigation of Impacts on the Tourism Sector of the study area

Mining and tourism invariably end up in conflict (De Klerk & Heath, 2015; McLennan et al., 2015). The dispersion of tourism activities throughout the study area and tourism's sensitivity to negative impacts from SGD (Figure 9.7), suggest that if the Small or Big Gas scenarios (see Burns et al., 2016) become reality, such conflict could be unavoidable in the study area. In fact, two camps have already emerged in the Karoo's 'great shale debate' (De Wit, 2011). De Wit (2011) states that conservationists argue that SGD will leave massive irreparable environmental scars on one of South Africa's iconic landscapes. Others argue that there is a strong empirical correlation between energy use and wealth, and gas burns almost 50% cleaner than coal. Toerien (2015) suggested that the nature of the conflict is a dilemma between the conservation and utilisation of resources and creation of a win-win situation requires special efforts.

This prompts the question whether mitigation of negative impacts on the tourism sector is possible. Rumbach (2011) suggested that individual impacts in gas and oil production in Newfoundland are unlikely to have serious and long-term consequences, but without mitigation they could cumulatively do substantial damage to its tourism sector. He also suggested that municipal and county governments have many tools at their disposal to help mitigate the impacts of SGD.

Earlier analyses have shown that the tourism sector has the most enterprises of all business sectors in the study area; it generates a lot of employment and adds a lot of economic value (see Section 9.1.2). Should SGD operations result in a 20% decrease in tourism enterprises, more than 2500 employment opportunities and R 500 million (2010 Rand) in economic value per annum could be lost to the study area (Table 9.2). The majority of these jobs are held by semi-skilled local people, of which a high proportion is women. These facts provide powerful reasons to consider mitigation.

The impairment of the tourism sector in the study area during 2025 to 2045 by either the Small or Big Gas scenarios could result in significant risks for this sector (Table 9.3). The following problems are expected and should be considered for mitigation purposes: traffic densification that complicates

tourism access to the study area, its associated noise pollution, degradation of roads by heavy traffic and ‘crowding out’ of regular tourists by workers of the SGD sector. Visual impacts, water pollution, the presence of hazardous wastes, increases in earthquakes and the carbon footprint could also negatively influence the perceptions of tourists about the study area. As a result the Karoo tourism brand could be degraded and require rejuvenation following SGD.

Possible mitigation steps should be considered timeously. Issues to be considered are: provision of relatively hassle-free access of tourists to the study area, cooperation between government authorities, cooperation between the mining and tourism industries to minimise SGD impacts on tourism, cooperation between all levels of government and the tourism industry to overcome the fragmented management of tourism in the study area, the general lack of tourism-related information in the study area (especially in its rural areas) and active cooperation between local municipalities and the tourism industry to minimise local impacts on the tourism sector. Mitigation would, therefore, require active participation of different role players: central government in the form of different departments, some provincial governments, all local municipalities in the study area, and the mining and tourism industries.

9.3.1 Reaching consensus on the need to protect the tourism sector of the study area

Should exploration activities start in 2018 (see Burns et al., 2016) it would be advisable for the Department of Environmental Affairs (DEA) to initiate an activity to bring the role players in the tourism sector of the study area together to seek consensus on the need to protect this sector should either the Small or Big Gas scenarios (see Burns et al., 2016) become reality. The role players should include the DEA, the Department of Energy (DME), the Department of Transport (DoTr), the provincial governments of the Northern Cape, the Eastern Cape and the Western Cape, all local municipalities in the study area, the mining industry (possibly through the South African Oil and Gas Alliance, [SOAGA]) and the tourism industry (e.g. through the South African Tourism Board and/or the Karoo Development Foundation).

Once the role players, and in particular the mining industry, have agreed that tourism is an important business sector in the study area and that the SGD activities of either of the Small or Big Gas scenarios (Burns et al., 2016) would create risks for the sector, the seeking of win-win situations to minimise impacts on the tourism sector could be pursued. Two considerations could then be addressed: (i) mitigation of negative impacts, and (ii) creating partnerships between the different role players.

9.3.2 Developing a partnership between SGD and the tourism sector

De Klerk & Heath (2015) suggested that ecotourism destinations and SGD can co-exist if certain critical factors are considered and applied. This can lead to a long-term partnership between the two industries that should be enforceable beyond mine closures. McLennan et al. (2015) observed that there are key synergies between mining and tourism in two regions in Queensland, Australia. Strategies that could enhance the co-existence of the two sectors include, *inter alia*: (i) the development of trust, communication and partnership between the two sectors, (ii) development of a joint long-term vision and strategy, (iii) development and improvement of industrial tourism products and industry tours, and (iv) improvement of information flows.

The importance of tourism in the study area and the likelihood that SGD might adversely impact on the tourism sector over a long period (2025 to beyond 2050) suggest that the creation of a partnership between SGD and the tourism sector in the study area is advisable. Such a partnership would enable: (i) the development of trust between the two sectors, (ii) an understanding of the needs of the other sector, and (iii) creation of good information flows between the two sectors. The DEA should perhaps play a role bring leaders of the two industries together before exploration activities start (possibly in 2018). The discussions should focus on the possibility of creating an active partnership between the two sectors, possibly with the involvement of the DEA and DoT.

Only a few companies are involved in the potential exploration and production of shale gas in the study area. Cooperation between these companies should be possible in order to enter into a partnership with the tourism sector and SAOGA could perhaps facilitate representation of the mining sector. The South African Tourism Agency could perhaps facilitate representation of the tourism industry.

9.3.3 Tourist access to the study area

Traffic congestion as result of the large numbers of slow-moving, heavily laden trucks envisaged in the Small and Big Gas scenarios (see Table 9.1) would hinder tourists on their way in or out of the study area. This is expected to result in a shift of tourists to areas not affected by SGD.

Many tourists access the Karoo (and study area) from the south using routes that have mountain passes over or ‘poorts’ through mountains (Figure 9.7 and Digital Addendum 9B). The scenic beauty of the mountains adds to their tourist experiences. Traffic congestion on the passes or in the ‘poorts’ would negatively influence the experiences of these tourists. To deal with a potential high risk of a loss of tourists to the study area (Table 9.3), it is necessary to consider a strategy by which relatively

hassle-free access of tourists to the study area can be protected. The routing of shale gas trucks hauling supplies have to be considered with this problem in mind.

One possibility is that the N9 national road, a major south to north route through the study area, should be kept free of SGD truck traffic. The idea of the exclusion of trucks from specific routes is not new. For instance, in California commercial vehicles with three or more axles, or a gross vehicle weight of 9 000 pounds or more, are prohibited on Route 2 between the City of La Canada Flintridge and County Route N4 (California Department of Transportation, 2016).

To implement this idea, agreement would be necessary: (i) between the mining sector and the tourism sector that it is in the best interests of both sectors to ensure that there is at least one relatively unhindered (by SGD trucks) tourist access route to the study area, and (ii) between the DoT (as policy maker), the South African National Roads Agency and the mining industry that SGD trucks will be barred from the N9 route.

The N9 route could be proclaimed a 'Tourism Protection Route'. This route would be a logical extension of the R62 Route (Figure 9.7), which has been successfully developed as an internationally known tourist route in the Little Karoo (Route 62, 2016). The Route 62 brand name is legally protected and the intellectual property belongs to a close corporation of stakeholders (G. Lubbe, *pers. comm.*). The process to achieve the necessary legal protection for the R62 and to market it internationally took about eight years and required leadership and champions (J. Marais, *pers. comm.*). Protection of tourist access to the study area by proclaiming and marketing the N9 as a Tourism Protection Route would probably also require a long lead time. Luckily professional experience and know-how are available to guide the pursuance of this option, but given the long lead time required, action should not be delayed too long after exploration activities start in order to have the route operative before 2025 should either of the Small Gas or Big Gas scenarios be implemented.

9.3.4 Resolving the issue of fragmented management of tourism in the study area

Relationships in the tourism sector of the study area are complex. Several central government departments, three provinces and a number of municipalities (district and local) are linked in one way or another with the tourism sector in the study area. Each of these role players pursues its own strategies and Atkinson (2016) pointed out that the jurisdiction of more than one province over the Karoo adds complexity to coherent management of tourism in the Karoo. To overcome this complexity and to develop an effective management model, policy makers in government, particularly in the DEA, DMR, the DoT, the provincial governments of the Eastern Cape, Northern Cape and Western Cape, and the district and local municipalities involved in the study area should together

consider the problem of fragmented management of tourism in the study area in case either the Small Gas or Big Gas scenario (Burns et al., 2016) becomes reality.

One way to improve integrated tourism management in the study area and to protect its tourism sector could be to create a tourist agency in the study area timeously. Such an agency should be fully authorised and empowered, perhaps as a statutory body, to manage tourism holistically in the study area. The proposed agency could then become a body to speak and negotiate on behalf of the tourism industry in the study area.

The agency could with the support of the mining sector also drive a process to develop industrial tourism products and tours associated with mining as suggested by McLennan et al. (2015). This might help to minimise negative impacts on the tourism sector in the study area.

Because of the potential negative impacts of SGD on the tourism sector in the study area and in the period prior to gas production (i.e. 2018 to about 2025), the proposed tourism agency could perhaps be funded from government sources. Once gas production starts, a tourism levy on such production could be used to fund the agency's activities.

9.3.5 Handling noise, visual, water pollution and other impacts

Mitigation of visual (Oberholzer et al., 2016), noise (Wade et al., 2016) and water pollution (Hobbs et al., 2016) as well as the handling of hazardous wastes (Durrheim et al., 2016 and Oelofse et al., 2016) requires world class practices during the exploration and development phases. However in some instances and from a tourism perspective, government policy makers (e.g. in the DEA) might have to supplement these steps further. For example, the impacts of visual and noise disturbances on rural niche tourism (i.e. agri-tourism, ecotourism, adventure tourism, heritage tourism, hunting, etc.) in the study area and their mitigation should be considered by government officials (e.g. officials of the DEA) as well as professionals involved in Environmental Impact Assessments (EIAs) of specific exploration and production activities.

The use of buffers (exclusion zones) around rural tourism facilities (e.g. cabins, cottages, houses, lodges, conference venues, etc.) during exploration activities (which might start by 2018) requires early consideration. The buffer distances mentioned in Holness et al. (2016), Oberholzer et al. (2016), Orton et al. (2016) and Wade et al. (2016) provide some indication of what would be required and these would need to be systematically integrated by EIA professionals to determine the appropriate buffer for each tourism facility from a tourism perspective. More important routes and sites should of necessity require larger buffer distances.

Water pollution can potentially have a significant impact on the provision of safe water to all tourist categories. This includes niche tourists that visit rural tourism facilities such as farm stays, game farms and the like. Problem incidents with water supply in rural areas during the exploration phase could cause avoidable embarrassment. In addition to the implementation of world class practices (see Section 5.7 in Hobbs et al., 2016), it could be considered by the Department of Water and Sanitation (DWS) that the water supplies of all rural tourism establishments in the vicinity of exploration activities in the study area be subjected to regular water tests. It might also be advisable that tourism entrepreneurs in the rural areas undergo special training in how to ensure the provision of safe and acceptable water to their tourist clients. The DEA, DWS and the DoT could take the lead in the handling of this issue and the potential tourism agency could be involved in managing training programs.

Earthquakes have the potential to scare and possibly harm tourists visiting or passing through the study area (Table 9.2) and can also damage heritage architecture which attracts tourists. Durrheim et al. (2016) examines this aspect and considers mitigation possibilities.

9.4 Gaps in knowledge and Monitoring needs

Although knowledge about tourism in the Karoo has expanded much in the past decade (e.g. Atkinson, 2016), this analysis has re-emphasised that there is a general lack of tourism-related information in the study area (especially about tourism facilities and products in its rural parts). Gathering of information would require active participation of different role players: central government in the form of different departments, some provincial governments, all local municipalities in the study area, and the mining and tourism industries. The lack of information also necessitates active cooperation between local municipalities and the tourism industry to address the many information gaps.

Four such gaps are of particular importance if the Exploration Only scenario becomes reality and the lead time from about 2018 to 2025 offers a time window in which these gaps could be addressed:

1. The location of tourism enterprises and the types of tourism products they offer in the rural parts of the study area.
2. The degree to which different tourist groups (niche, pass through and business tourists) utilise tourism facilities in the different towns and rural areas of the study area.
3. The number, needs and wants of the pass through tourism group.
4. The number, needs and wants of business and VFR tourists and their economic importance to Karoo towns.

Studies to address these information gaps should be initiated in follow up activities of the Strategic Environmental Assessment (SEA). Should the proposed tourism agency become reality, it could become the lead organisation to ensure that the lacking information is collected during the 2018 to 2025 time window.

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9.7 Digital Addenda 9A – 9B

SEPARATE DIGITAL DOCUMENT

Digital Addendum 9A: Estimates of employment, value addition and the potential impact of shale gas development (SGD) on the tourism sector of the study area.

Digital Addendum 9B: Tourism sensitivity