

CHAPTER 13

Impacts on Sense of Place Values

CHAPTER 13: IMPACTS ON SENSE OF PLACE VALUES

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Executive Summary

1. **It is more meaningful to speak of senses of place in the Karoo rather than to attempt to define a single sense of place for the Karoo.** This does not mean that all senses of place are equally valid or that any sense of place is justifiable within all contexts. Senses of place are often shared by people who either live in a place, or those who value it as a destination for work or holidays or who view it from an outsider's perspective. Some senses of place may have greater legitimacy than others. They may be regarded to have more value because they are shared by a greater number of people or potentially create value for a larger number of people. Others have more impact because it is the majority view of the people who own land and/or pay taxes and still others carry more weight because they are compatible with a diversity of certain perspectives.
2. **The different senses of place in the Karoo can be placed on a spectrum, ranging from strong anthropocentrism (transformed sense of place) to intrinsic value theories (more static senses of place).** The strong anthropocentric sense of place values (like shale gas development (SGD)) allow for significant transformation of the natural world. It is argued that it is permissible to substitute the current rural sense of place with an industrial sense of place because of the economic benefit it could unlock for the South African population as a whole in the form of energy self-sufficiency. Some people argue that this denotes a weak sense of place. More intrinsic sense of place value theories that appreciate the Karoo for its different inherent cultural, botanical, historical, astrological, palaeontological and archaeological significance, are largely against significant physical transformation of the Karoo. They argue that these different forms of heritage are of both national and international significance. They believe that something as invasive as SGD will cause an irrecoverable loss of sense of place.
3. **All stakeholders in the scientific assessment, including shale gas developers, have an explicit or implicit sense of place.** Some authors argue that a sense of place of the Karoo that is based on the shale gas energy that can be extracted is not a sense of place at all but merely an appreciation of certain utilitarian values present there. This Chapter argues differently. It proposes that there is no one way of valuing a place that can claim a priori more legitimacy than another, except by persuasion of others to that particular point of view. Valuing the Karoo for a job that is linked to SGD is as much a sense of place/or placelessness as valuing it as a tourism destination.
4. **Some senses of place are in conflict with one another whereas others are more compatible.** It could be argued, for example, that shale gas developers employ a sense of place that is in conflict with the average Karoo tourist's sense of place that usually involves a sense of nothing or remoteness. Should SGD occur, a significant measure of this remoteness

or “Niks” of the Karoo could be lost forever. However, for example, the tourism industry’s sense of place and the farming community’s sense of place are far more compatible and even supportive of each other. They both encourage low levels of noise, open space and limited numbers of people.

5. **Sense of place is not adequately protected in Environmental Impact Assessment (EIA) and development planning processes.** The principles of the National Environmental Management Act (NEMA) call for the consideration of all people’s values and the investigation of any potential impacts on it. However, the processes and additional legislation required to achieve this are inadequate. The National Heritage Resources Act (NHRA), for example, does not define or consider sense of place directly but allows for its protection under the definition of National Estate which discusses the concept of cultural landscapes. The timeframes for EIA or other regulatory processes are too short to allow for communities to reach agreements on levels of acceptable change insofar as it is related to sense of place. While debates on acceptable change on senses of place can be more appropriately addressed in strategic planning frameworks such as Spatial Development Frameworks (SDFs) and Environmental Management Frameworks (EMFs), the quality of participation and the resultant frameworks are not up to standard.
6. **SGD in the United States (US) has led to a loss of sense of place.** In Pennsylvania, East Ohio, West Virginia and Colorado, where significant SGD has taken place, citizens have complained of significant negative impacts on sense of place. Over time many citizens have experienced a loss of social identity and a feeling of alienation. The main drivers of these negative impacts have been increased population numbers, visual changes to landscapes, pollution caused by shale gas, higher volumes of traffic and the cultural diversity of people that now reside in these places. While it is anticipated, based on earlier research of similar projects, that a new sense of place will emerge along with another form of social cohesion, this might not compensate for the loss of a particular way of life that cannot be reinstated.
7. **It is not always possible to compensate for loss of sense of place.** Karretjie People, who are itinerant shearers, have historically lived a nomadic existence moving from one farm and town to another. While they could potentially be compensated by shale gas developers for loss of place due to the industrialisation of the parts of the Karoo, they cannot be compensated for the loss of lifestyle or identity that will accompany this transition. This is true for farmers too but it is especially a concern for Karretjie People and other marginalised communities given their vulnerable economic status and their ephemeral, intangible and almost subliminal connection with the Karoo. However, it could also be argued that even if SGD doesn’t proceed it is not a given that their current lifestyles would continue unaltered e.g. due to changes in the farming practices.

8. **This scientific assessment is not able to provide detailed senses of place, but can currently draw limits of acceptable change based on the existing landscape and its land use.** It is recommended that all natural and built heritage sites in the Karoo be regarded as no-go areas and protected by a negotiated buffer from SGD to protect the tourism and heritage potential of these areas. This is insufficient, so in future Strategic Environmental Assessments (SEAs), it is recommended that indicators for sense of place values be included for proposed development projects.
9. **Detailed empirical research of specific sense of place values in a particular context are recommended to be developed in EIAs, SDFs and EMFs.** It is recommended that both quantitative (Likert type surveys) and qualitative (ethnographic type interviews) research should be mandatory in EIAs, SDFs and EMFs to gauge sense of place values. Orton et al. (2016) regards interviews as a mitigation measure for living heritage when people are removed from the land. This Chapter attempts to prevent this loss of sense of place values in the first place by including the m in development processes. The research data gathered would enable communities to develop sense of place indicators within the public participation processes of SEAs, EIAs, SDFs and EMFs that could monitor the limits of acceptable change to their communal sense place.

CHAPTER 13: IMPACTS ON SENSE OF PLACE VALUES

13.1 Introduction and scope

What is meant by this topic? “Sense of place” is emerging as one of the key factors that affects how people respond to energy developments that cause large scale land use changes (Jacquet and Stedman, 2014). As technology advances and populations grow so companies and governments worldwide are looking for new ways to extract energy. Many of these new projects create widespread social and environmental change in the communities where they are being introduced. Shale gas development (SGD), because of the industrial nature of the activity and its location in remote areas, is a form of energy extraction that particularly affects collective and individual “senses of place”. Communities in the United States (US) have begun to oppose SGD with specific reference to an anticipated change to their “sense of place”.

Sense of place is a complex concept that explores the range of factors which define the local distinctiveness of a specific place and the ways in which people experience, use and understand that place. It comprises an attachment that is created from an emotional connection to a place; an identification that makes it part of the person or community and lastly a functional dependence because it is needed for economic or recreational activities (Zia et al., 2014).

The recognition of “sense of place” within scientific assessments reminds us that natural resources are inextricably linked to a social and political context. The concept of sense of place creates a powerful medium for framing the relationship between people, place and events. By recognising that people are part of the ecosystem, and vice-versa, sense of place has the potential to bridge the gap between the science of ecosystems and their management (Larson, 2013). If environmental managers hence understand the meanings and social relations that people attach to an area they will better able to respond and manage these bonds in a way that promotes sustainability (Williams and Stewart, 1998).

Different senses of place depict different ways of valuing a particular physical context, some based on use values to human beings like farming or SGD and others based on the intrinsic value of physical or social environments. Sense of place meaning takes on a variety of forms. Often the community itself is what gives the place its uniqueness. The people of the Karoo town of Nieu Bethesda where the famous owl house stands, for example, are an attraction in themselves. The town is described as “one big family” with “strong-minded, intelligent” people living there (Shenton, 2012). Other times sense of place is found in objects. Culinary artist Rachel Botes locates the Karoo’s unique sense of place in its food and its soil. Botes (2015) associates it with ostrich eggs, springbok, figs, olives and the blue sky. This is all called living heritage.

For others it is a deep-seated emotional connection. “For most of my life the Karoo has just been a dusty old place that I was ready to leave as soon as I could. It was a vast, dry landscape that blurred on my way to boarding school in a nearby town....I have learned that the silence is not a stifled one but the sense of a deeply rooted peace that transcends your and my lifetime. Its vast landscape is not one of abandonment or emptiness but of space that holds” (Minnaar, 2015).

For tourists, like Ronell Engelbrecht it is an aesthetic adventure. “... when the city life gets too much for my weary soul, the first place that I long for, is Calitzdorp. I can only close my eyes, and whisk myself away to the Huis River Pass, or the Rooiberg Pass or Groenfontein Road ... and let the silence flow through your body; have you ever experienced a thunder storm while driving through Huis River Pass at dusk with the rock formations changing colour that is unbelievable; have you ever watched the sun rise while sitting under the tree in Gamkasberg Nature Reserve, with no living soul in sight” (Engelbrecht, 2016).

For the landless, Karretjie People who move from one town to the next on donkey carts as itinerant shearers, it is a place of hardship but belonging and of space with relative freedom of movement (De Jongh, 2004). This theme of hardship is also emphasised by some groups like the Karoo Shale Gas Community Forum which is promoting SGD as a form of economic upliftment for the area. “The Karoo is beautiful, but it is also a very sad place. In winter, you see children walking to school barefoot without shoes, through the frost,” says Chairman Chris Nissen (Du Venage, 2013).

For emerging farmworkers and dwellers represented by the Southern Cape Land Committee (SCLC) the Karoo is a source of work. “We are extremely worried because farmworkers will lose their jobs and they will lose their homes on the farms and they don’t have the financial means to move anywhere else,” says organiser Chriszanne Janse van Rensburg (Karoospace, 2012).

The Karoo for the farming community is a multi-billion Rand industry that directly or indirectly supports nearly 100 towns, thousands of schools, hundreds of banks and retailers, and about a million people. Similarly, for retirees and creatives it has become a place to reinvent yourself. “Stockbrokers become rose growers. Company mavens become cheese-heads. Former coal miners now make forest fairies for a living. Old journos become wine-makers” (Marais and du Toit, 2016).

For the national government, the Karoo and its shale gas possibilities is a place of great potential wealth generation for the country. The Department of Mineral Resources (DMR) reports on the possibilities: “It is expected that the contribution of SGD to the growth of the economy and Gross Domestic Product (GDP) would be enhanced by the necessary creation of service industries with all

the attendant implications for sales of goods and services... The potential long-term direct employment opportunities are likely to number in the tens of thousands, with similar numbers in the industries consuming the gas” (DMR, 2012). The number of jobs opportunities for locals is, however, estimated to be much less by some economists. (See Van Zyl et al. (2016) for a more detailed discussion of the impacts on the economy).

A sense of place is a dynamic concept that changes over time. This is illustrated within the travel and tourism industry. In the past, the Karoo was a stop-over as a holiday destination and depicted as a grim, monotonous landscape in travel logs. In the last three decades, the emerging interest in adventure tourism and stargazing in remote places has seen renewed interest in the Karoo as a tourist destination (Atkinson, 2016).

Sense of place values are also political and socially constructs. Each effort to create a place becomes an expression of the values and beliefs of a collection of people in a historical context. Something of this historical dimension of sense of place is expressed in the latest archaeological excavations in Biesje Poort in the Southern Kalahari where, because of the many different layers of objects and interpretations, archaeologists struggle to find a definitive understanding of the meaning of the history of the site. Some archaeologists are calling for the conversation to be kept open so the full range of interpretations can be heard (Morris, 2014). Morris (2014) writes “Narrating Biesje Poort has been about acknowledging the strain of representation, indeed announcing the ‘creaking’, the gaps, the vagueness, the not-always-coherent multi-strandedness of the available accounts”.

Given the diverse, changing, subjective nature of sense of place described above, some argue that it is not meaningful to include it in a Strategic Environmental Assessment (SEA) process. However, others argue that sense of place contains both subjective and objective aspects and that it can be measured (Zia et al., 2014). Landscape architects argue this from a visual perspective. They say there are certain features of a landscape that are more objectively pleasing to a greater number of cultures and people than others. They have found that these features evoke the same positive or negative feelings across a cross section of people (Newtown Landscape Architects, 2011).

Social scientists are beginning to argue that sense of place should be taken more seriously in risk analysis too (Jacquet and Stedman, 2014) because it often indicates strong opposition to land use change and the likelihood of social disruption if the development proceeds. This is because it disturbs not only the economic dependence of people on a place but also their emotional attachment and identity. This is especially the case in small remote communities where the roles of people and the identity of communities are not subject to much change.

One example of a group like this are the Karretjie People whose primary resource base lies in the clientele (the farmers) beyond their own community, and their capital is largely verted and maintained through their specialised skill and the service that they render shearing. They are both integral and peripheral to the wider community and hence they occupy and exploit a distinct social and economic niche. And herein lies their vulnerability – a high premium is placed on spatial mobility and the value they attach and accessibility and variability of place.

The concept of sense of place is also referred to in several other Chapters, each differently and each in a more narrow sense. Atkinson et al. (2016) links the concept to that of collective memory. The connection here is between “history and place”. Umejese (2015) writes that histories are attached to places and the environmental value we attach to a place comes largely through the memories and historical associations we have with it. Toerien et al. (2016) links sense of place to “Die Niks” or the remoteness, silence and solitude that attract people to the place. Within Orton et al. (2016) it is referred to as the meaning, identity and intrinsic character of a place, as provided by its natural and cultural features and one’s experience thereof. The visual aspect of sense of place within heritage is particularly well researched with a visual impact methodology devised to rate a place’s sense of place value.

This Chapter adopts the broadest interpretation of the concept in an effort to compare all the different claims made with regard to sense of place. Judgement is deliberately not made on whether an industrial sense of place for the Karoo has more value than a remote, untouched sense of place (sometimes referred to as a “wilderness”). It is not the brief or responsibility of this scientific assessment to do this, but rather to identify the full range of sense of place values that are expressed by the people/communities. We therefore acknowledge how all expressions of sense of place demonstrate a form of environmental value ranging from very anthropocentric values that allow for an extensive transformation of the physical environment of a place (and could be labelled a more transient sense of place) to more intrinsic values that limit human interference in a landscape (representing more static senses of place).

It should be noted that by deliberately not making a judgement in a scientific assessment does not imply that a judgement cannot or should not be made or that all claims to sense of place are equally valid. It is the responsibility of the communities involved in an Environmental Impact Assessment (EIA) to make this judgement. There will be interpretations of sense of place that may directly conflict with each other and others that are more compatible in a particular context. It is the responsibility of the government and communities involved to engage with these, and justify why they

prioritise a certain sense of place over others. By doing this they are creating new senses of place or sustaining a particular sense of place. This reinforces the importance of individuals and communities registering as interested and affected parties (I&AP) in EIAs.

13.2 Overview of international experience

SGD in the US has brought the issue of “sense of place” to the fore, with specific or implied mention in the literature in Pennsylvania (Perry, 2012), Eastern Ohio (Willow et al., 2014), West Virginia (Sangaramoorthy et al., 2016) and Colorado (Jacquet and Stedman, 2014). While some of the changes to sense of place have been positively encountered, many have been considered negative with some being found to have caused widespread social disruption. The key drivers to a disrupted sense of place have been the rapid change in population diversity and numbers, increased traffic, speedy industrial land development, pressure to submit to gas industry demands, the violation of environmental and administrative laws, land erosion, mudslides, chemical run off and changes in air and water quality. Another key driver of loss of sense of place has been an anticipated, rather than an actual loss of community cohesion and identity as well as uncertainty about potential health impacts.

In Bradford County, Pennsylvania, shale gas was initially perceived positively. It was seen as a way of boosting the local economy and providing jobs for US troops returning from the Middle East. Residents were confident that all environmental concerns would be adequately addressed by the government’s environmental protection agency. However, by 2012, researchers described the community as having experienced “acute social disruption and stress ranging from altered connections with place and ruptures in sense of belonging and identity”. Residents complained of a feeling of loss or fear of loss (Perry, 2012). Key drivers of loss of sense of place in Bradford County were the rapid change in the county’s population, the rapid pace of industrial land development and pressure to submit to gas industry wants and the failure of gas companies and governments to adhere to administrative and environmental legislation and listen to community concerns.

In Eastern Ohio local residents complained of feeling vulnerable, disempowered and insecure in their hometowns. While sense of place is not specifically mentioned it is implied (Willow et al., 2014). These feelings of vulnerability were closely associated with human health concerns. Many were anxious about their own health and that of their families. They were concerned that hydraulic fracturing (“fracking”) would contaminate the water and air, resulting in short- and long-term adverse physical health effects. Some additionally discussed stress and mental health consequences. “Several people who have experienced energy development near their homes spoke of the nearly constant worry that began when wells were drilled and may not ever end. Interviewees talked about being afraid to go to sleep with drilling and fracturing underway, about feeling the need to endlessly

rehearse evacuation procedures, about knowing there is danger out there but being unable to pin it down, and about having to decide on a daily basis whether their home is safe to inhabit. In addition to fears related to accidents and direct effects, not knowing if—and how much—contamination is present has also been highly stressful” (Willow et al., 2014).

In Doddridge County, West Virginia, fracking was found to have contributed to a disruption of residents’ sense of place and social identity, causing widespread social distress. It influenced how they perceived the environmental and health impacts of fracking (Sangaramoorthy et al., 2016). They were affected by the environmental changes brought about by SGD operations such as increased traffic, land erosion, mudslides, chemical run off and changes in air and water quality. The general change in landscape from rural to industrial was upsetting. On a more concrete level, the separation of surface and mineral rights with regard to land use, with the latter taking precedence, meant they did not always consent to what was being done on their land.

A health impact study of natural gas drilling in Colorado made an indirect mention of a disrupted sense of place when it found that a major source of stress was fear of future changes to community relations and social cohesion that drilling would bring (Jacquet and Stedman, 2014). It was this anticipated loss that caused stress rather than any actual loss as yet being experienced.

13.3 Special features of the Karoo as an iconic place

The Karoo does not have a single way in which it is valued as a place; there is rather a multiplicity of ways in which people value it, thereby creating many senses of place. Some senses of place may clash in a given geographical area. There may, for example, be conflict between the desire to exploit shale gas in some areas and the need to preserve endemic plant or animal species in others. Furthermore, SGD might threaten a vulnerable population group’s spiritual connection to the Karoo. The itinerant Karretjie People, for example, who attach strong symbolic value to parts of the Karoo may suffer a significant loss of identity as parts of the area industrialise for SGD and no longer resemble anything they understand or have access to.

On the other hand, however, nature tourists’ appreciation for wide open spaces may converge with conservationists’ need to protect endemic species. It could also merge with the desire of astronomers to keep the bright lights of towns away from their stargazing spots. Moreover, farmers who wish to diversify their sheep farming to include other revenue generating forms of income like agri-tourism, would also welcome keeping the Karoo as free of industrial activity as possible to attract tourists for farm stays.

In the section that follows, we provide a broad categorisation of the different senses of place as they have emerged in the public domain around the possibility of shale gas being exploited in the Karoo. These senses of place are, for the sake of convenience, provisionally organised into the occupational or economic interest groups that are found in the Karoo. We have used these interest groups because this is how they appear in the public domain and are recognised by people. However, it should be noted that one cannot generalise, for example, and say that all farmers always value the Karoo as a natural resource only. There are likely to be some that value it as a place of heritage. Similarly, shale gas developers might both value the Karoo both as a resource for SGD and in their personal capacity see it as a tourist destination.

Senses of place are constructed by human beings and collectively by communities and are therefore not static but shift as people and their experiences shift and change. Some farmers, for example, having experienced too many drought seasons might find the selling of their farms to developers a relief. Moreover, Karretjie People, for example, with the diminishing of opportunities to earn an income from seasonal sheep shearing might welcome the possibility of low-skilled part time jobs offered by SGD (except that they might not be first in line when these jobs become available). In the absence of doing detailed ethnographic research among the Karretjie People (who for the purposes of this Chapter are used as representative of marginalised people in the Karoo) there is no way of ascertaining this. It should be noted that we have not focused directly on the Border-Kei region that has Xhosa settlement and subsistence farming however; we include the farmers in this area under the more general heading of emerging farmers.

The material was selected from a wide variety of resources including electronic and hard copy material provided by other participants in the scientific assessment who represent a wide spectrum of the diverse opinions on SGD in the Karoo (i.e. both gas companies and anti-shale gas Karoo activists), by web searches that included both pro- and anti-shale gas opinions, by material suggested by reviewers of the first draft and by a literature search on the international electronic academic literature on the impacts of shale gas on sense of place values. In the case of vulnerable communities like the Karretjie People, the advice of a co-author was sought. Works of art, poetry and film material that was available online and related to sense of place was also used where available to develop as diverse an understanding of the different perceptions of sense of place as possible.

13.3.1 *Established Commercial Farmers*

- The Karoo is valued as a resource that should be farmed sustainably.

Karoo farming is a multi-billion Rand industry with some of its products like mohair and Karoo Lamb having achieved worldwide recognition. Farming in the Karoo supports about a million people (Du Toit, 2016a).

13.3.2 Emerging farmers

- The Karoo is valued as a place of economic and social upliftment.

Several emerging farmers are being helped by the national Department of Agriculture, Forestry and Fisheries (DAFF) and other farmers to establish themselves in the Karoo. One example of this is found about 120 km from Carnarvon in the Hantam district where four farmers are being mentored and given stock to begin their own sheep farms (Van Rijswijk, 2011).

- Farming the Karoo is our only source of livelihood.

"Shell must stay away from here," said 59-year-old Molly Nikelo, an unemployed grandmother who supplements her meagre monthly state grant by cultivating a small plot of rare purple garlic for sale in expensive eateries in Durban. "What about the water? It supplies everybody and only comes from one place. People drink it, wash in it and grow vegetables with it. I've drunk this water every day of my life and I've never been to hospital" (Reuters, 2013).

13.3.3 Farm labourers

- The Karoo is valued as a resource that provides jobs.

Each farm, on average, supports between two and 20 people. A total of 100 000 people are employed full-time or part-time on Karoo farms. Many of these workers are also provided with housing and services like water, electricity and sanitation (Du Toit, 2016a).

- The Karoo is valued as a source of family heritage.

Like the farmers who own the farms, many of the labourers have been on the farms for several generations. They have a historical relationship with the land and the farmer and consider the place as part of their own identity. Many of the labourers and farmers have relatives buried on the land.

13.3.4 Karretjie People

- The Karoo is their primary source of symbolic meaning.

"Although the itinerant Karretjie people own no land or do not even have free access to land, their attachment to the region is no less real or authentic than the owners of the extensive tracts of land over which they roam. For the Karretjie People space is an orientation---physically, socially, and cosmologically. It is much more than just a physical place for them---it encodes social meanings and

values as well” (De Jongh, 2012). For example, their names for "farms" do not always in fact refer to farms but to topographical features or other places of significance as chronicled in the oral history of the people.

- The Karoo is their link to their ancestors.

As opposed to the more western-inclined emphasis on individual ownership, economic value and productivity of land, the significance for them and other rural communities is often still also vested in the perception that the soil serves to link them to their ancestors. The land itself as socially constituted plays a fundamental role in the ordering of cultural relations. Both the perceived threats to identity, place and landscape have nudged communities-to re-entrench and defend a specific place -this spawns nostalgic imaginings of such places, and the, sometimes, romanticised community and identity (De Jongh, 2008).

13.3.5 Botanists

- The Karoo is valued as a biodiversity heritage site.

There are well over 6 000 plant species in the Karoo, about 40% of which are found nowhere else. The Succulent Karoo is recognised by Conservation International as one of only two arid zone biodiversity hotspots in the world (Du Toit, 2016b), and is now on the tentative world heritage site list (United Nations Educational, Scientific and Cultural Organisation (UNESCO), 2016). For more detail on the biodiversity and ecological impacts of SGD, see Holness et al. (2016).

13.3.6 Astronomers

- The Karoo is valued for its open skies and lack of pollution.

The open skies, lack of radio interference, absence of light and other pollution in the Karoo make it a valued place for studying the stars. It is to be the new home of the Square Kilometre Array (SKA) telescope. Since the early 1970s, the major telescopes of the South African Astronomical Observatory (SAAO) have operated on a hilltop 1 800 metres above sea level, near the Karoo village of Sutherland, about 370 km inland (SAAO, 2016).

13.3.7 Palaeontologists

- The Karoo is valued for its unique fossils.

The South African Karoo Basin contains the best therapsid fossil record in the world giving us the exciting opportunity of being able to study the intricate details of the transition into mammals. These animals, that span a period of more than 80 million years from the Middle Permian to the Middle Jurassic, show the gradual acquisition of mammal-like characteristics until it is almost impossible to

distinguish the latest most mammal-like therapsids from the earliest true mammals (Bloemfontein National Museum, 2016).

13.3.8 *Archaeologists*

- The Karoo is valued for its wealth of archaeology and rock art.

Many important archaeological sites are located in the study area. These include rock shelters with deep sequence deposits as at Blydefontein, the pastoralist landscape of the Seacow Valley and many rock paintings and engravings left by both hunter-gatherers and herders. At Nelspoort, the impressive array of engravings is said to be of national significance (see Orton et al. (2016) where all these sites are described and referenced). The Great Karoo is integral to the work of the world's scientists, botanists, archaeologists, geologists, palaeontologists and ecologists (Cape Town Heritage Trust, 2016).

13.3.9 *Lifestyle farmers*

- Karoo is valued as a place of peace and tranquillity.

Top executives leave their jobs and buy farms in the Karoo to experiment with a new, more relaxed way of life. "I'm loving being in nature. I love the dog walks, I love the quiet. I used to define myself through my business and now I wonder why" says Renee Silverstone. "I feel more whole here than I've ever done before" (Du Toit, 2012).

13.3.10 *Creatives and Retirees*

- The Karoo is valued as a place to reinvent yourself.

The concept of the 'creative class' refers to those people who make a living from creative pursuits, including artists, designers and knowledge-based professionals. These people, coming from all walks of life, seek refuge from the city, its crime and fast pace and migrate to small towns of the Karoo. Their investment in property and cultural life and their entrepreneurial spirit has a significant impact on the sense of place of these small towns (Ingle, 2013).

- The Karoo is a source of creative inspiration.

The Karoo has been the inspiration for many poets, visual artists, sculptors, playwrights and other creatives. A recent art exhibition organised by artist Katie du Toit, titled Fear and Loss, is response to their concern that the SGD could destroy "their" Karoo. It represented prominent South African artists' concern about the endangered ecology of the Karoo landscape (Du Toit, 2015).

- The Karoo is a place to retire.

The relatively low cost of land and houses in the Karoo has seen an increase in the number of people wanting to buy property as an investment here. In towns like Colesberg and Hopetown, for instance, you can buy a two-bedroomed house from R380 000. By the time one reaches retirement age, the house could be paid off while in the meantime it could be used as a weekend break or a way to earn extra income (Badenhorst, 2013).

13.3.11 The Land Claimants

- Karoo is a place for restitution and restorative justice.

The SCLC is a non-governmental organisation established in 1987 that promotes equitable land redistribution and supports farm dwellers and emerging farmers in the Eastern Cape and central Karoo. The SCLC has taken an anti-fracking stance. "South Africa is not for sale" said erstwhile SCLC chairwoman, Angela Conway. "We call on all peaceful loving South Africans to urge our government not to fall for the empty promises of multinational companies and promises of creating jobs, at the expense of future generations of our beautiful country" (Oelofse, 2012).

13.3.12 SGD Companies

- A location for cleaner energy generation.

In South Africa we need to limit our carbon dioxide (CO₂) emissions, but also end power shortages and keep electricity prices affordable for everyone. Natural gas could be instrumental both in meeting growing energy demands and contributing to the country's emission reduction targets (Eggink, 2011a).

- A location for wealth generation, economic upliftment and job creation.

The shale gas opportunity in the Karoo could significantly boost South Africa's economy and create hundreds of thousands of jobs (Econometrix, 2012). This scientific assessment has been criticised by some economists as overstating the potential job creation benefits of SGD. See Van Zyl et al. (2016) for more details on the economic impact of SGD.

- The Karoo is valued for its potential to make South Africa more energy self-sufficient.

The growth in the exploitation of shale gas reserves in the US, has transformed the country from being short on gas some ten years ago to being self-sufficient or even over-supplied in gas today. South Africa could follow a similar path should it be demonstrated that shale gas is available and can be developed while protecting the environment and character of the country (Eggink, 2011b).

13.3.13 Low skilled workers, the unemployed and the youth

- The Karoo is a place of limited opportunity.

The Karoo Hoogland Local Municipality has an unemployment rate of 23.1%. More than half (55.5%) of employed individuals in Karoo Hoogland are classified as semi- and unskilled. The 2008/2009 Growth Rate was -5.2% (Karoo Hoogland Municipality Draft Revised Integrated Development Plan, 2015/2016).

For the unemployed, such as Petrus Kabaliso from Colesberg, it's a place of marginal existence. "We find old metal, and sometimes the trucks that stop here leave bottles in the rubbish" he says. "We can change this for money, and buy pap [maize meal porridge] and sugar" (Du Venage, 2013).

- The Karoo is a place of loss.

Some workers complain that a lack of jobs means the youth; friends and family have to leave home to find work. They are in favour of fracking in the Karoo. "Creating new jobs will mean my friends and family can come home. Everybody here is losing people who move to Cape Town or Johannesburg looking for work. Our people are all over and they don't come back" says Ricardo Josephs, a petrol pump attendant in Graaff-Reinet. "It will be better for all of us" (Du Venage, 2013).

13.3.14 Tourists

- The Karoo is a valued tourism destination for its remoteness, silence, solitude and clean air (see Winkler et al., 2016).

The Karoo has shifted profoundly from being hostile, dangerous and boring to being attractive, enticing and spiritual. At the same time, tourists are increasingly expressing favourable opinions of the Karoo as a destination, while accommodation facilities are growing apace (Atkinson, 2016).

It has been suggested that the sense of place refers to all those feelings left over once you have accounted for specific worries about water, roads, biodiversity, heritage and social fabric. This, however, is to confuse the concept with something separate from the land uses currently in operation or those envisioned in the future in the Karoo. Embedded in all the ways in which the land is being used and proposed to be used are inherent senses of place. The way in which land is utilised creates a sense of place. Industrial activities, like SGD, create an industrialised sense of place that, when in close proximity to other activities like farming and tourism, could destroy the latter.

13.4 Relevant legislation, regulation and practice

Sense of place is not directly addressed in South Africa. However, the National Environmental Management Act (NEMA) (Act 107 of 1998, as amended), along with the National Heritage Resources Act (NHRA) (Act 25 of 1999), does create a framework which allows sense of place to be addressed:

- Section 2 (principles) of NEMA, *inter alia*, states that “sustainable development requires the consideration of all relevant factors including ... that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied”.
- Section 2 (principles) of NEMA, *inter alia*, states that “sustainable development requires the consideration of all relevant factors including...that decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognising all forms of knowledge, including traditional and ordinary knowledge”.
- Section 24(4) of NEMA, *inter alia*, states that “procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment ... must include, with respect to every application for an environmental authorisation and where applicable ... investigation, assessment and evaluation of the impact of any proposed listed or specified activity on any National Estate referred to in Section 3(2) of the National Heritage Resources Act (NHRA), 1999 (Act No. 25 of 1999)”.

Landscapes with cultural significance do not have a dedicated section in the NHRA but they are protected under the definition of the National Estate (Section 3). Section 3 (2)(c) and (d) list “historical settlements and townscapes and landscapes and natural features of cultural significance” as part of the National Estate. Furthermore, Section 3(3) of the NHRA describes the reasons a place or object may have cultural heritage values; some of these speak directly to the cultural landscapes. In terms of Section 2(vi) of the NHRA, “cultural significance” means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.

It could therefore be argued that current (EIA and development planning) practices, rather than the regulatory framework, are inadequate in addressing sense of place issues. Moreover, the timeframes for EIA or other regulatory processes are often too short to allow for communities to reach agreements on levels of acceptable change insofar as it related to sense of place and quality of life. Stakeholders complain that consultants complete desktop Environmental Management Plans (EMPs), consult only a few people and do not give feedback about the community's comments on their EMPs. Moreover, the SGD public meeting sometimes degenerate into political meetings (Jansenville Agricultural Society, 2016). These debates on limits of acceptable change of senses of place can more

appropriately be addressed in strategic planning frameworks such as SEAs, Spatial Development Frameworks (SDFs) and Environmental Management Frameworks (EMFs). Unfortunately the quality of participation and the resultant frameworks (especially SDFs) are generally falling short. This results in regulatory assessments taking place in a strategic void (i.e. not giving guidance to contextualise development proposals) and not being able to address impacts related to sense of place, cumulative impacts etc.

Section 24 of the 1996 Constitution also provides some form of indirect protection to sense of place in that it stipulates that everyone has the right to an environment that is not harmful to their health or wellbeing. The State is required to respect, protect, promote and fulfil this right. One could argue in terms of this that a disruption to one's sense of place causes social disruption and thus is harmful to one's health.

However, despite the lack of direct protection, sense of place has been used to legally block developments locally and internationally. For example, the development of a shopping mall was blocked at Princess Vlei, in Cape Town in 2009, and the development of mining was blocked at St Lucia in KwaZulu-Natal in 2002 (Nicolson, 2014). Internationally, in New South Wales, Australia, the court recognised a new term solastalgia as “the pain or sickness caused by the loss or lack of solace and the sense of desolation connected to the present state of one's home and territory. It is the ‘lived experience’ of negative environmental change. It is the homesickness you have when you are still at home.” This phrase was coined by an Australian environmental philosopher Glenn Albrecht in 2003.

13.5 Key potential impacts and their mitigation

Two of the key dimensions of the variation in sense of place in the study area (Figure 13.1) are whether the economic activities that take place in the Karoo allow for extensive transformation of the physical environment or whether they advocate minimal disturbance of the natural world. Another dimension is the measure of priority which human needs are given, over and above the existence of rights or needs of the Karoo ecosystem and/or individual plant and animal species in the area. The shift from disconnected (strong) anthropocentrism to integrated (weak) anthropocentrism moves in parallel to choices for human activities or lifestyles (Karretjie People) that are less exploitative or invasive towards other species or ecosystems.

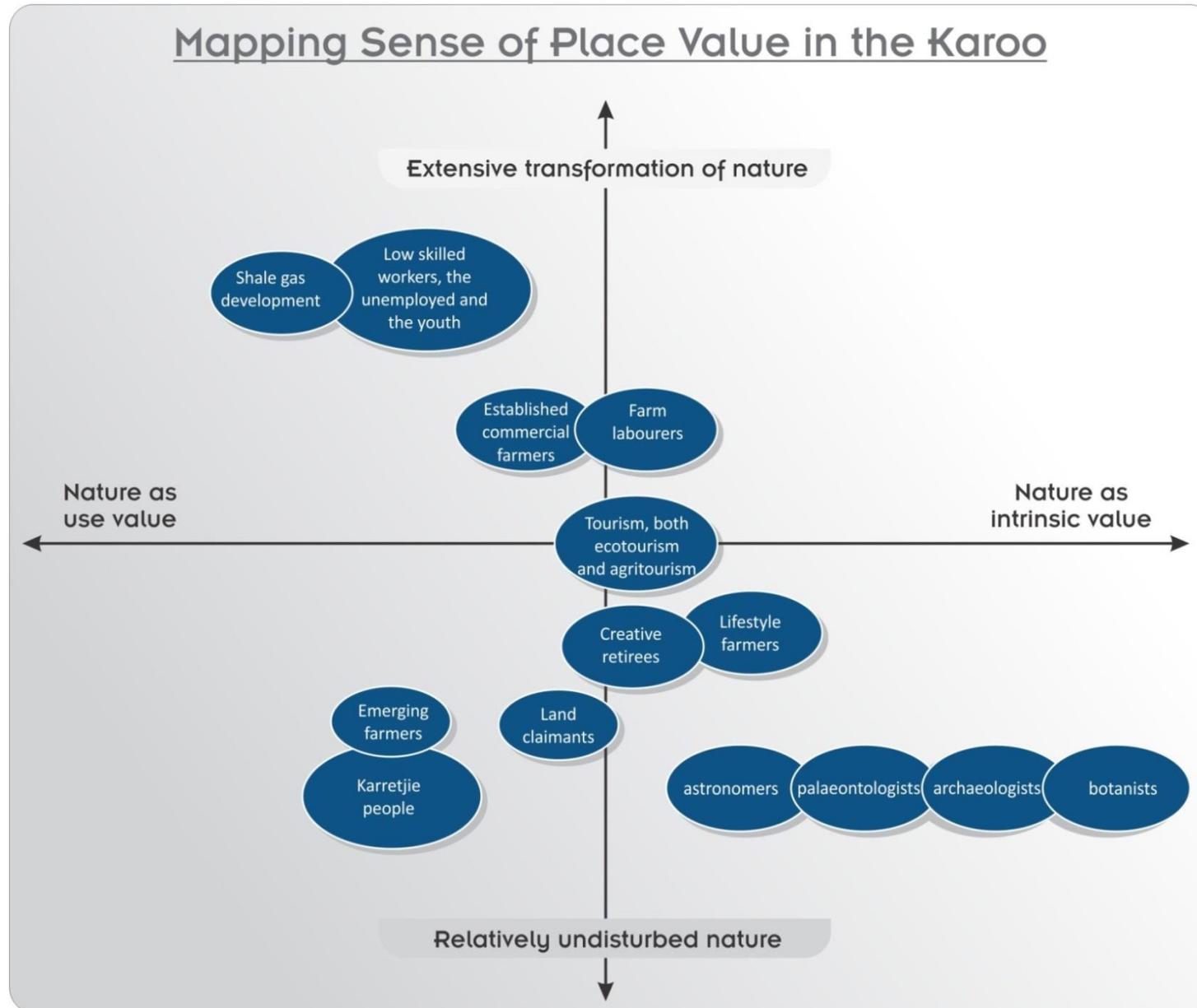


Figure 13.1: Key dimensions of the variation in sense of place in the study area.

Large-scale SGD runs the risk of severe disruption of place-based identities without mitigation because of the scale of physical transformation that occurs. These industrial activities in remote places can create psycho-social shocks for individuals and communities, sometimes far greater than the actual pollution produced by these operations. Risk assessment, that has only recently started incorporating social impact data in its analyses, is now also endeavouring to include sense of place values. This is challenging given that social impacts in risk analysis are currently largely limited to measurable data like employment and poverty rates (Jacquet and Stedman, 2014).

The concept of sense of place is difficult to define and measure and can have several different components. It could include an emotional attachment to a place, a dependence on that place for some form of livelihood or entertainment and/or the incorporation of that place into the identity of a person or community or into their traditions and mythology. These components may or may not be present in an individual or collective expression of sense of place. A local South African tourist's sense of place of the Karoo that they visited while on a once-off holiday on the way to the Garden Route, is unlikely to be as strong an identity and emotional attachment as a sheep farmer whose farm has been in the family for five generations, or a Karretjie person who has never left the Karoo. The question arises as to how to measure these different senses of place and weigh them appropriately in order to include them in a decision-making process that seeks to provide benefit to society at large.

Despite the difficulty of doing this; some brave attempts have been made. Jacquet and Stedman (2014) explain a potential methodology:

Using a Likert scale of 'extremely unlikely' to- 'extremely likely', researchers have delved to ask respondents questions like: 'if SGD occurs in the study area, how likely is it that the area will no longer be a good place to raise children?' or 'if SGD occurs in the study area, how likely is it that the area will still have wilderness qualities?' To measure magnitude of impact, respondents could be asked 'Using a scale from 'very happy' to 'very unhappy', how happy or unhappy would you be if your community was no longer a good place to raise children?' or 'how happy or unhappy would you be if your area no longer contained wilderness qualities?' Further, respondents can be asked whether and how their strength of local attachment might change due to changes in these place meanings. As with other risk perception questionnaires, these questions can be situated under certain hypothetical circumstances, including economic compensation.

If accompanied by more qualitative ethnographic work that has traditionally been used to explore sense of place, there is great value in this. This would be most valuable at a local, EIA level, possibly through the inclusion of sense of place indicators that had been arrived at in SDFs and EMFs. At a

SEA level, sense of place indicators could provide some red-flags as to where significant social disruption and loss is likely to occur. This scientific assessment has attempted to do this by examining the values underpinning the different senses of place as they have been expressed in the public domain, in the media and various other internet sources. By comparing different senses of place according to how people value the environment in a particular context we have created a meaningful scale of comparison between more industrial senses of place in the Karoo and essentially conservationist, preservationist and spiritual senses of place. It has enabled us to reduce the 14 different groups that were identified in Section 13.3 to four general categories: a broad spectrum of farmers who would like to continue farming in the Karoo and increase productivity; the creatives and researchers who would like to preserve the Karoo in its wilderness format; the marginalised communities of the Karoo like the Karretjie People; and the SGD developers and unemployed who are in favour of significant physical transformation of the Karoo.

Established commercial farmers, emerging farmers and farm labourers are largely anti-SGD because it competes with their current source of livelihood in the Karoo. This grouping could be described as adopting a conservationist approach to valuing the natural world. They are of the opinion that small-scale and gradual transformation of the natural environment, that is sustainable for future generations and that does not threaten the existing water resources in the Karoo, is a better way of uplifting the community and providing jobs for locals. Commercial farmers especially are arguing that their industry is centuries old and has proved itself to be sustainable, whereas the benefits of SGD are uncertain and have proven to have very negative consequences in the US, where SGD has been underway for some time. Provided farming remains within the limits of the water and grazing resources of the land and does not overexploit them and leaves them intact for future generations, farmers' and farm workers' sense of place will be sustained. SGD runs the risk of tipping this fine balance, especially with regard to its use of considerable water resources.

A subgroup of this group, the land claimants, are unique in that their sense of place embraces the idea of transformation of existing ownership of land in the Karoo to include formerly displaced people and so are making an argument for broader socio-economic upliftment, but they are not in support of the physical transformation of the land. They are instead asking for a transformation of social and economic relations in the area. They too, like large-scale farmers, farm labourers and emerging farmers, fear the loss of farming land. They do not see SGD as a way of improving their social and economic standing. They too are a vulnerable group but because of the land they might be able to lay claim to, and be compensated for, are perhaps not as vulnerable as farm labourers who might not have this option. Like commercial farmers, they too are concerned that their identity as Karoo families might be at stake should SGD go ahead.

Moreover, this farming grouping is also threatened by the heritage value that SGD runs the risk of losing. They see themselves as losing part of themselves when the Karoo is exploited for shale gas as their families have lived in the area for generations and have identified themselves with farming as part of their livelihood. A threat to farming could also result in a threat to their identity and way of life. The most vulnerable components of this grouping are the emerging farmers and the farm labourers who do not have access to financial resources or skills should farming no longer be able to continue unhindered.

The second broad group: lifestyle farmers, tourists, creatives, retirees, property developers, botanists, astronomers, palaeontologists, archaeologists and tourists have largely adopted a resource preservationist approach to their understanding of the Karoo as a place. They would like the Karoo to remain as rustic, quiet, blue sky and untouched as possible. The Karoo is of great value to them in its most pristine state. They are accommodated in the preservationist approach because they sanction minimum disruption to the environment. They have come to the Karoo for “Die Niks”, for a simple and for a less hurried way of life. Progress in the form of more vehicles, more business and more pollution is precisely what they want to avoid. They have relocated to this quiet, creative, simple life or they come regularly to visit it for academic research interests or tourist/adventure pursuits. While SGD might not cripple them financially it will certainly affect their sense of place and possibly could force them to move to another place of solitude or recreational or research interest. They are not as vulnerable as emerging farmers and labourers because of their social networks and possible access to other resources or investments but nevertheless a part of their identity could be at risk.

A third group, the Karretjie People (and other marginalised individuals or communities that are mostly landless), are difficult to place on the spectrum of sense of place values because their views are not easily available in the public domain and also because it is not clear whether their symbolic and/ or spiritual/emotional connection with the Karoo is sustainable regardless of whether SGD takes place or not. They currently live a marginal existence in the Karoo that is largely linked to seasonal shearing on sheep farms and ad hoc jobs that they obtain in and around towns. Their low-skill base and minimum level of schooling makes them the most likely to be unable to access the socio-economic transformation and job opportunities that shale gas is expected to bring to the Karoo. Moreover, already on the interstices of society, their identities could also be at risk as increased numbers of people, vehicles and livelihood sources might further alienate them from their fragile connection to existing towns and farms. It is not possible in SEAs, without detailed research, to ascertain what their viewpoint would be on the SGD in the Karoo. However, it is also not clear that if SGD did not go ahead whether their present connection with the Karoo would continue unchanged because their existence is already precarious given changes in the agricultural economy in the region.

Finally, there are shale gas developers, the unemployed and the low-skilled workers that are calling for full-scale SGD. They are valuing the environment in a strong anthropocentric way that advocates extensive transformation of the environment for the benefit of society at large. Their argument is that by tapping into this resource the country will provide jobs, energy security and general socio-economic upliftment not only to people living in the Karoo, but also to South Africa in general. They justify the radical transformation of parts of the physical environment and loss of sense of place for several Karoo inhabitants on the grounds that it will ultimately be better for more South Africans. Their argument is that it is acceptable to trade the loss of a few people's sense of place when it will so greatly benefit so many more people. The extent of this benefit to the greater South Africa is disputed with some economists arguing that it is overstated (see Van Zyl et al. (2016) on the Economic Impacts of SGD).

The grouping of the above-mentioned stakeholders in the shale gas debate, on the basis of their environmental values expressed in their sense of place, gives one a broad sense of potential conflict areas. There is conflict between SGD's strong anthropocentric approach to resource use in the Karoo, and the farming communities, creatives and tourists desire to ensure sustainable utilisation and conservation of Karoo resource in a way that does not put the existing livelihoods at risk. If SGD goes ahead then one runs the risk of water resource contamination and this could affect farming in some areas. As discussed above some sub-groupings within this conservation orientated cluster would be more vulnerable than others should SGD go ahead and threaten farming. All members of this conservation grouping are likely to suffer a sense of loss of identity and increased anxiety as their social roles in the small towns and community are altered by experts and skilled work-forces from outside.

The mitigation of such losses should SGD go ahead is challenging. In theory, farmland that is affected by SGD could be compensated for in a monetary sense. However, this is difficult in practice because available and suitable alternative land needs to be bought by the farmers (Jansenville Agricultural Society, 2016). Moreover, the loss of identity and community among farmers, farm labourers, landless claimants and the lifestyle farmers, retirees, Karretjie People and creatives is difficult to compensate for within a generation. It can lead to a significant loss of self. It could be argued that this closely guarded identity and heritage is hampering the progress of South Africans at large who will benefit greatly from the energy security of shale gas and jobs that it will generate. Unemployed Karoo residents, low-skilled workers and youth are suffering because the Karoo is not being exploited to its full economic potential. The counter argument is that the risk associated with SGD is too high and there is no guarantee that it will result in the projected socio-economic gain proposed.

In Scenario 0: Reference Case; where SGD does not go ahead and the status quo remains, one could argue that the low-skilled, unemployed and the youth might be forced to leave the Karoo if new employment opportunities are not created for them by the existing farming sector, tourism industries and renewable energy sector. They might suffer a loss of identity and socio-economic status on account of this that they might not have had to if SGD had been allowed to proceed. They would then continue to experience the Karoo as a place of hardship. It could be argued, however, that if the tourism and farming industry grew and renewable energy was pursued in the Karoo, then new opportunities might arise for the previously unemployed. Moreover, if skills' training is intensified in renewable energies, more land claims are processed and the tourism industry continues to grow, this could further boost socio-economic development in the area. The only mitigation required in such a scenario is a concerted attempt to lower unemployment rates, increase skills training and improve the marketing of farming and tourism products.

In Scenario 1: Exploration Only; compensation would have to be paid in the areas where wellpads were drilled and where local tourism and farming businesses were affected. The extent of this mitigation would need to be researched by means of an EIA process where both quantitative and qualitative evaluations of community responses to the particular area of activity were completed. As the operation would be small in scale and only exploratory, mitigation could arguably take the form of monetary compensation to those directly affected by the exploration/exploitation activity. Very limited identity loss or social disruption due to loss of sense of place is likely to occur. Very little impact on the tourism and farming industries is expected.

In Scenarios 2 (Small Gas) and 3 (Big Gas), it is likely that the tourism industry and the farming community would find reduced operational profits in the areas that are close to SGD activity. Visual screening might be able to mitigate some of the risks to sense of place values here. Moreover, the branding of the Karoo as a region and its farming and tourism products as environmentally friendly and pristine could be tainted with perceptions that water was contaminated even if this in reality this was not the case. The increased industrial activity, trucks and new arrivals from elsewhere are likely to affect the tourism industry hardest in areas close to SGD as people lose "Die Niks" that the Karoo is known for. While guest houses might initially benefit from the new arrivals for the industrial activity, they run the risk of losing longer-term customers that visited the area for the peace and quiet.

The Small and Big Gas scenarios are likely to still allow the farming industry to continue as a viable form of livelihood, provided water tables are not affected. Similarly, tourism is likely to continue successfully in areas that are not major routes for trucks. The market-related monetary compensation

of farmers is theoretically possible in both scenarios where they are directly affected by SGD operations. However, this process is likely to be challenging for farmers who wish to continue farming. They will need to find and purchase both available and suitable alternative farmland. At risk, should full-scale SGD occur, is the “Die Niks” of the Karoo especially in areas in sight and sound of drilling. Scientific tourists, however, might still visit the area despite the lack of peace and quiet for the remaining botanical, astrological, paleontological and archaeological finds.

13.6 Limits of acceptable change

It has been suggested that the limits of acceptable change to sense of place values in the Karoo be set for the purposes of the scientific assessment by existing land uses, biophysical limitations (like water availability) and cultural and natural heritage sites. It is proposed that all these sites and land uses be red-flagged and a negotiated buffer placed around them to prevent the risk of their being affected by SGD. SGD would therefore theoretically only take place in underutilised areas that did not pose a threat to any existing sense of place values.

It is recommended, however, that in future SEAs and especially EIAs that sense of place indicators be developed through existing development processes like EMFs and SDFs and used as limits of acceptable change to sense of place. It is important to distinguish sense of place indicators as different from biophysical, cultural and natural indicators. This is because sense of place indicators are essentially relational indicators that are about the significance a particular community places on a natural or cultural artefact or space at a point in time.

Sense of place values are not static but influenced by new technologies, alternative forms of energy generation, political opportunism, social movements and changes in small and multi-national business interests. The constructed nature of sense of place values means they are dynamic and open to change. They shift as individuals and communities needs and interests change. Exactly what is understood as acceptable change is in theory open to negotiation with the stakeholders involved. For example, some farmers may be willing to sell their farms to shale gas developers for the right price and relocate to other parts of the country. Other farmers on the other hand, might regard this as an irrevocable loss of cultural heritage and identity.

This brings one to the point of trying to ascertain the limits of acceptable change in sense of place values in an area. Proponents of the latest SGD technology might argue that there is a very low risk of water contamination in the industry. The South African government could argue that the tax revenue and energy security that shale gas promises could radically alter the country’s sense of place in the world economy and is therefore strongly justifiable in most cases. For the purposes of the hypothetical

risk analysis in **this** scientific assessment with regard to sense of place values, we will argue that limits to acceptable change are determined by existing land uses, biophysical limitations and natural and cultural heritage sites (sense of place indicators have not yet been developed).

13.7 Risk assessment

13.7.1 *How the risks are measured?*

In the absence of any baseline data on sense of place values in the Karoo it is impossible to discuss a risk assessment in a meaningful way, except conceptually. If any actual risk assessment was to be completed and be regarded as empirically or scientifically valid, it would have to make use of both quantitative and qualitative methods conducted by independent researchers with people actually living in particular areas of the Karoo that have specific natural and cultural attributes, land uses and biophysical limitations. The definition of very low risk, low risk, moderate risk, high risk and very high risk would in this case be best defined by the participants of the surveys, comprising local inhabitants as well as ‘outsiders’ such as international tourists and scientists who had an interest in the area.

Conceptually, this scientific assessment has inferred sense of place values from various occupational groups by virtue of the kind of activities they are currently involved in, or plan to do in the Karoo and that they would hope to continue to do in the future. The justification for this rests on the fact that land use or symbolic association creates and sustains a sense of place. In most cases, these sense of place values have been inferred from actual opinions that have been quoted from texts or from art works, poetry, photographic material and documentaries made available in the public domain or from conversations with these interest groups at scientific assessment workshops. Where these have not been available in the public domain, like for example in the case of the Karretjie People, they have been inferred from anthropological expert opinion.

Theoretically, a slight consequence to sense of place values in the Karoo could therefore be defined as a consequence that would not significantly alter the livelihood activities, community spirit, cultural/spiritual practices or appreciation of a particular area. For example, it is unlikely that sense of place values of Beaufort West residents living near the industrial area of the town would be negatively altered if shale gas developers decided to build a trucking depot there. Noise risks could typically be mitigated in this area by merely making some kind of logistical or technical change to their operation to it within acceptable limits of the existing industries in the area.

A moderate consequence to sense of place values in the Karoo would be where an existing form of livelihood, community spirit, cultural practice, identity or appreciation would be slightly altered by SGD. For example, if shale gas trucks made use of Graaff-Reinet's main street to access a drill site about 20 km from this heritage town, they would only slightly alter the sense of place of the Graaff-Reinet town centre. Moreover, the truck route might be welcomed by overnight accommodation venues and petrol garages even though it might make the town centre more vibrant than it has been before.

A substantial consequence would be where SGD led to a significant loss of a livelihood, community spirit, cultural or spiritual practice, group identity or appreciation of the Karoo. For example, if a SGD was located within 10 km of cultural heritage site in the Karoo. This might destroy the business of a single sector of tourism establishments, i.e. bed and breakfast businesses in that area, requiring these venues to relocate. Farming, however, would continue unabated and water resources would remain pristine.

A severe consequence would be if SGD destroyed most forms of nature tourism in the area with only a few research scientists visiting the area. Farming would be significantly affected with a loss in productivity and subsequent job losses. The area might encounter increased air, noise and water pollution with the rural character of the Karoo transformed into an increasingly industrial zone.

An extreme consequence would be if SGD resulted in the all forms of tourism, farming and alternative lifestyles and creative occupations being irrevocably destroyed. The livelihoods, community identities and cultural practices of the people of the Karoo would be completely changed. The identities of the Karretjie People and other marginal groups would no longer be distinguishable and a new industrial centre would have been created with new identities emerging.

13.7.2 Risk assessment table

As discussed earlier, this table represents a conceptual or hypothetical risk analysis. It cannot do otherwise because no baseline data exist for sense of place values for the whole of the study area. Moreover, even if these baseline data did exist it would only be a temporary risk analysis for sense of place values at a point in time because as social contexts and opportunities change, so would individuals and a community's senses of place. However, this does not mean that including sense of place values in risk analysis is without value. It does add a great deal of value. As discussed previously in the section on SGD in the US, ignoring sense of place can result in social disruption within a community.

While any form of development can affect any individuals or groups sense of place, this does not mean that all senses of place are equally valid. It merely implies that a community's sense of place needs to be negotiated and adjusted continuously as new individuals and groups emerge and as new challenges arise. By making use of desktop expressions of sense of place values in the public domain and grouping them in the four categories below we illustrate the sense of place sensitivities that SGD could unlock in the Karoo. This attempt to represent sense of place values is a first step towards getting it recognised as an important factor to be considered by communities, shale gas developers and governments.

The first category of people addressed in the risk assessment table is the farming community (Table 13.1). The Reference Case scenario where no SGD occurs means that no threat to sense of place will occur for this group. In the Exploration Only scenario where widespread seismic surveys and stratigraphic drilling take place, but no further development, there might be a slight risk to sense of place of the farming community, even though it is temporary, because perceptions of water contamination and noise levels will play a role. Mitigatory measures that involve regular feedback to the community on the quality of water sources are likely to be adequate.

In the Small Gas scenario where exploration and limited development occurs, SGD is expected to pose moderate risk without mitigation, especially in areas less than 10 km away from the site, and a low risk with mitigation. Mitigation in the form of substantial monetary compensation for farmland is likely to be necessary to encourage farmers to continue farming. This is because those who receive the monetary compensation would still have to purchase another farm and finding suitable land takes time, as does building up knowledge of the new area. Moreover, the farmer might have built significant infrastructure on their current farm that would take time to replace elsewhere. It is also however, not clear how farm labourers, would be compensated if a farm was sold, this would need to be part of any mitigation plan. Regular feedback to farmers by SGD developers regarding water contamination threats and air pollution would be also be necessary if they chose to stay on in the area and relinquish only a part of their farm.

The Big Gas scenario, where extensive SGD occurs, poses a high risk to sense of place values if no mitigation is offered and a moderate risk if substantial mitigation in the form of monetary compensation and regularly feedback on water and air pollution is offered.

The second group of people whose sense of place values are assessed are the Karretjie People (Table 13.1). We have assumed that in the Reference Case, where no SGD occurs, their sense of place will largely continue unaltered. Without actual investigation it is difficult to ascertain if this is true but it is

a conservative assumption that their precarious livelihoods will continue. The Exploration Only scenario, where widespread seismic surveys and stratigraphic drilling takes place, but no further development; they are likely to have an altered sense of place but with mitigation in the form of alternative roads for trucks so as not to disturb their migrations; risk could be removed. However, in the Small- and Big Gas scenarios, where there is limited and then extensive SGD that affects farming; their sense of place is expected to be moderately at risk and then highly at risk, respectively, if no compensation is offered. If substantial monetary compensation as well as jobs are offered; their identities and sense of place would remain at risk but they might not find this a negative option, given their current marginal existence. It is for this reason that risk to sense of place is considered low to moderate when mitigation is offered.

Lifestyle farmers, creatives, retirees, tourists and scientists are, by and large, (Table 13.1) the most likely to have their sense of place offended by SGD. They are interested in the Karoo because of its remoteness and uniqueness and the value they place on the Karoo in its pristine state. The Reference Case, where nothing changes, is first prize to them. In the Exploration Only scenario where exploration occurs but no development takes place, they will experience moderate risk, if they are not compensated. Mitigation in this instance would require continual SGD developer feedback on water contamination, noise and air pollution. Moreover, mitigation would need to address the visual aspects of SGD so that it had very limited visibility. Monetary compensation might satisfy some of the people in this category who are in need of supplementary income; others might simply decide to relocate because they can afford to move away.

Shale gas developers, low-skilled workers, and unemployed youth value the Karoo in its transformed state (Table 13.1). They are in favour of an industrial sense of place in the Karoo because it has the potential to bring about the most jobs or revenue. The unemployed and low-skilled workers do not necessarily see the Karoo positively if they cannot find employment. While they may see the area as their historical home, their future existence here is at risk without access to work. The current existing land uses as well as natural and cultural sites do not provide this group with sufficient access to jobs. The Reference Case scenario, where it is business as usual in the Karoo and no SGD takes place, is unacceptable to them. Mitigation in this instance is a job or an alternative cost effective site to conduct SGD. If they are not compensated for this wasted opportunity for revenue and/or jobs; their sense of place will be negatively affected.

However, with mitigation in the form of other jobs or other possible areas to prospect for shale gas they are likely to be easily satisfied. In the Exploration Only scenario they would be satisfied if other

opportunities were made available in the form of jobs or other sites. The Small and Big Gas scenarios would be second and first prize to them, respectively.

Table 13.1: Risk assessment table

Impact	Scenario	Location	Without mitigation			With mitigation		
			Consequence	Likelihood	Risk	Consequence	Likelihood	Risk
Loss of sense of place to farmers, farm labourers, emerging farmers and land claimants	Reference Case	The Karoo as a Region	Slight	Extremely unlikely	Very low	Slight	Extremely unlikely	Very low
	Exploration Only		Slight	Likely	Very low	Slight	Very unlikely	Very Low
	Small Gas		Moderate	Very likely	Moderate	Moderate	Not likely	Low
	Big Gas		Severe	Very likely	High	Severe	Not Likely	Moderate
Loss of sense of place to Karretjie People	Reference Case	The Karoo as a Region	Slight	Extremely unlikely	Very low	Slight	Extremely unlikely	Very low
	Exploration Only		Moderate	Likely	Low	Moderate	Not Likely	Low
	Small Gas		Substantial	Likely	Moderate	Substantial	Very Unlikely	Low
	Big Gas		Severe	Likely	High	Substantial	Not Likely	Moderate
Loss of sense of place to lifestyle farmers, creatives, retirees, tourists and scientists	Reference Case	The Karoo as a Region	Slight	Extremely unlikely	Very low	Slight	Extremely unlikely	Very low
	Exploration Only		Substantial	Likely	Moderate	Moderate	Likely	Low
	Small Gas		Severe	Likely	High	Substantial	Likely	Moderate
	Big Gas		Extreme	Very likely	Very high	Severe	Likely	High
Loss of sense of place to SGD, low-skilled workers, unemployed youth	Reference Case	Places within sight or sound of wellfields or other facilities	Extreme	Very Likely	Very High	Substantial	Likely	Moderate
	Exploration Only		Substantial	Likely	Moderate	Moderate	Likely	Low
	Small Gas		Slight	Extremely unlikely	Very low	Slight	Extremely unlikely	Very low
	Big Gas		Slight	Extremely unlikely	Very low	Slight	Extremely unlikely	Very low

13.8 Best practice guidelines and monitoring requirements

No best practice guidelines exist to measure or monitor the full range of sense of place values. As mentioned earlier; sense of place values are only beginning to be introduced into risk analysis. It is also true that South Africa’s EIA and development planning practices inadequately address sense of place issues. More research is required into how these processes can be better informed by sense of place values.

It is suggested that Likert scale quantitative research surveys where sense of place values of affected communities are empirically researched and made public should be mandatory in public participation processes - as should further ethnographic research and other qualitative methods, where individuals were found to be at moderate and extreme risk. Cases of potential extreme displacement of people and communities where no compensation would suffice should be highlighted and addressed in these public meetings.

Moreover, it is proposed in cases where no acceptable compensation is feasible with regard to loss of sense of place, that the prevention of any form of development be considered.

13.9 Gaps in knowledge

Sense of place values within SGD are only beginning to be researched. There is therefore inadequate literature and research on how it can be meaningfully included in risk analysis. Moreover, the information on sense of place values provided for this scientific assessment cannot be regarded as conclusive. Without empirical research into sense of place values at specific sites with specific communities and individuals, it is impossible to be definitive and can only be really conceptual and hypothetical. By conducting a value analysis of sense of place values of groups whose views were available on the internet, we were, however, able to provide red flags of possible areas of conflict. For a more definitive risk analysis to inform decision-making an empirical baseline study of sense of place values would need to be done in the affected regions of the Karoo.

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