

4.0 STUDY APPROACH / METHODOLOGY

This first phase heritage assessment is entirely based on a desktop study. No field surveys took place during this phase.

4.1 Desktop

3.1.1 Literature Survey

A survey of the literature pertinent to the region, including archaeological, anthropological and historical sources was conducted to assess the potential of heritage resources within the area. Past heritage impact assessment survey reports conducted within the general project provided useful data as well. Unfortunately these only covered a few selected parts of the project area and many gaps remain.

3.1.2 Databases

The SAHRA web portal for gazetted sites, objects and shipwrecks was consulted. The Heritage Register List of SAHRA was also used to shed light about heritage resources present in the area. The archaeological databases of the Albany Museum in Grahamstown and National Museum, Bloemfontein provided some information relating to archaeological resources in the study area. The SARADA database of rock art in Africa was also consulted. The latter is housed at the Rock Art Research Institute at the University of the Witwatersrand.

4.2 Restrictions and assumptions

- The available databases are incomplete. Large areas of the study area have never been surveyed from a heritage perspective.
- The study area has not been subject to a field survey. This is entirely a desktop based survey and no field or ground surveys were conducted. However, these will commence furthering the next phase of project.

5.0 STUDY RESULTS / BASELINE DESCRIPTION OF THE STUDY AREA

5.1 Desktop

4.1.1. Pre-colonial Archaeology

Large portions of the Northern Cape Province have been thoroughly surveyed for heritage sites by the Archaeology Department of the McGregor Museum in Kimberley (Beaumont et al., 1990). However, most of these areas occur to the north and north east of the present project area. Dr Janette Deacon, formerly of the National Monuments Council, surveyed the area to the immediate north of the Western Precinct in her research on /Xam San archaeology and symbolic use of

landscape (Deacon, 1986 and 1988; Deacon and Dowson 1996; Deacon and Foster 2005). However, the project area itself has never been surveyed for any sites. Although there is a lack of published information on the archaeology of the study area it is interesting that the Karoo in general had a relatively high carrying capacity and teemed with game before European colonisation (Skead 1980). San hunter-gatherers successfully occupied the central interior of South Africa during the last 4500 years and subsisted on the large herds of grazing animals that occurred there during that time (Sampson et al 1989). Late Stone Age archaeological sites dating to the late Holocene (the last 4000 years) are surprisingly common. The available evidence suggests that this area was part of the heartland of the /Xam San during the end of the 18th century and beginning of the 19th century. The project area is situated to the immediate south of the region inhabited by the famous /Xam informants, whom the linguist Wilhelm Bleek and his sister in law Lucy Lloyd interviewed in the 1870's and 1880's. As a result of these interviews, we now have a comprehensive understanding of southern San folklore and beliefs. In addition, the present academic understanding of San rock art is based to a large extent on the testimonies of /Xam people who lived in this area. Their testimonies have given a rare insight into the way in which the /Xam perceived their environment as well as heritage features such as rock engravings (Deacon and Foster 2005).

Although the Karoo is presently more suited to the keeping of small stock, such as sheep and goats research has shown that, at about 1200 – 1400AD, a global climatic fluctuation (known as the Little Ice Age) may well have caused an increased rainfall in the Central Karoo resulting in the area being more suitable for the grazing by cattle and occupation by Khoekhoen pastoralists. Archaeological of pastoralist occupation of vast areas in the Karoo are indicated by various stone kraal complexes of which several hundred have been recorded in the Zeekoe River Valley to the east of the study area (Sampson 1985) and the Riet River area further north (Hart 1989) (Webley & Hart 2010).

According to the SAHRA (2009) database, no large scaled archaeological surveys have been undertaken in the Western Precinct application area. This contrasts sharply with the well surveyed Cederberg range area to the immediate west of the study area which is known to harbour more than 600 San rock art and other heritage sites (Parkington 2003). Within the Western Precinct area there has been limited work around Sutherland in the south (Evans et al. 1985; Hart 2005) (the town of Sutherland is outside the application area). Evans et al. (1985) excavated a small rock shelter on the grounds of the South African Astronomical Observatory in Sutherland. It contained a Later Stone Age assembly with a relatively high proportion of small convex scrapers. The site also contained some thin-walled potshers, ostrich eggshell beads and some Nassarius kraussianus beads. Evans et al. (1985: 108) comment that the presence of the latter beads points to cultural ties with people along the Cape coast while the small scrapers can be assigned to the Wilton

industry as opposed to large elongated scrapers typically associated with the interior sites along the Orange River (Sampson et al. 1989).

Hart (2005) undertook a survey for a golf course to the south of the Sutherland urban edge. The most significant find was a complex of 13 stone enclosures which are typical of the Khoenkhoen kraals that have also been observed and recorded in the Eastern Karoo. Hart (2005) reported finding a dense stone tool scatter associated with a shallow rock shelter indicating that such material may be found in areas that were sheltered from the wind. This is important given the extreme temperature inversions in this part of the Karoo. A rock art inventory composed by the pioneer archaeologist Van Riet-Lowe (1941) indicates the presence of two rock painting sites on the farms Rietfontein and Taaibosch Kloof near Sutherland. A survey conducted by Prins (2009), in the north-eastern section of the Western Precinct near Camavron, located one colonial-era engraving site, a colonial era sheep pen and three Later Stone Age sites.

4.1.2. Colonial Archaeology

The indigenous San of the Karoo waged a bitter war against colonial expansion as they gradually lost control of their traditional land. The historian Nigel Penn (2005) noted that the most determined indigenous resistance to Trekboer expansion occurred when they entered the harsh environment of the escarpment of the interior plateau (Hantam, Roggevel and Nieuweveld Mountains). Being pastoralists themselves the Trekboers settled on the escarpment where most of the springs were found. From here they were able to exploit the grazing lands of the Onder Karoo as well as further north towards the Sak River in Bushmanland. Independent Khoekhoen kraals were located between the Trekboer farms in the Roggeveld in the 18th century whilst San groups also lived in the area. The Trekboers were highly mobile, each had a farm in the Karoo called a legplaats. Winters were very severe and the Trekboers had to move regularly. Often farms were abandoned, not only due to the San who raided them for livestock, but also due to drought and poor grazing. Disputes over farm boundaries were intense. The first recorded loan farms in the area date to 1743 and by 1750 there were 32 registrations. Most of the farms in the area were surveyed by the mid to late nineteenth century (Webley & Hart 2010).

Resistance to the Trekboer expansion from the indigenous San was particularly intense in this area. The Swedish naturalist Carl Thunberg travelled the Roggeveld in 1765 and noted that that 186 San were massacred by Trekboer commando's in the same year. The farm "Oorlogskloof" near Sutherland was most probably named after this event. Many graves consisting of piles of rock laid out in three groups have been noted in this area. Another mass grave is known from the farm "Gunsfontein" possibly dating to the rebellion of the 1770's (Adhikari 2010).

From the above it can be predicted that there may be a number of old graveyards and possibly historic buildings on various farms in the area. However, none of these have been assessed. Another notable feature is the corbelled houses that developed as a vernacular architecture of the northern Karoo and "Bushmanland" districts during the nineteenth century. These have been developed to cope with a scarcity of wood as a building resource and as a measure to combat San attacks (Oberholster 1972). Six of these, located in the general district of Williston, have been declared Provincial Heritage sites. Other declared Provincial heritage sites include:

- Three historic buildings in Fraserburg, all of them are declared provincial heritage sites.
- Thirty one listed historic buildings in Camavron of which one is a declared provincial heritage site.
- Two historic buildings and declared provincial heritage sites at Noupoot (strictly speaking Noupoot falls within the Central Precinct but the greater district includes the Western Precinct as well)
- A historic church in Sutherland, which has also been declared a provincial heritage site.

4.1.3. Cultural landscapes and sense of place

As no field surveys have been undertaken and descriptions of the receiving environment is based on published material and aerial maps it is difficult to establish whether specific areas could be described as cultural landscapes. Nevertheless, the landscape of the Western Precinct can be described as a remote arid landscape and its visual qualities linked to the undulating topography and undisturbed nature of the landscape. The only intrusions are existing transmission lines, scattered homesteads, wind pumps, and access roads. These contribute to the rural landscape. "There is a perceived sense of absence of human intervention or intrusion" (Patrick et al. 2009), the vast empty expanses exemplifying the qualities of the Karoo.

4.1.4 Discussion

As the Western Precinct has only seen limited heritage surveys and investigations in the past it would be meaningless to produce a map indicating the heritage sensitive spots in this area based on the desktop survey of available data. As indicated previously, this survey needs to be supplemented by ground surveys (subsequent to site selection) in order to provide a more comprehensive picture of heritage sites and features on the landscape. Based on the available heritage data it is possible to indicate broad patterns that may assist the site selection team in avoiding heritage sites and the potential damage thereof. These are provided in Section 8.1 below.

6.0 TECHNIAL ASSESSMENT

6.1 Exploration activities that could potentially impact the environment¹

Cultural heritage includes both tangible and intangible aspects. The tangible aspects of heritage such as archaeological sites, historical buildings, and to some extent cultural landscapes are for the most part non-renewable. Unlike natural resources tangible, cultural heritage cannot be renewed once damaged or destroyed. Land rehabilitation measures will have no effect on tangible cultural heritage once altered or destroyed. Exploration related activities which could potentially damage heritage sites or structures are outlined below.

Well site preparation

- Construction of access roads and preparation of the well site could damage heritage sites and features in the immediate environs of the well site. The generation of dust could pose a threat to rock paintings in close proximity to the site.
- Transportation of exploration equipment / vehicle movement outside of existing roads. Large areas of the Karoo are flat and it would be relatively easy to drive with a high clearance vehicle over these parts. However, stone tools scatters and other heritage features may occur in these flat areas and will be at risk, if the transportation is not limited to roads.

Exploration drilling and hydraulic fracturing

- Drilling and hydraulic fracturing could damage heritage sites and features in the near environs of the well site. Excessive dust created by drilling activities could also damage certain heritage sites such as rock paintings. *and underground*
- Explorative drilling may unearth heritage material not located during the heritage ground survey. Should any heritage site or artefacts be unearthed then all activities should stop immediately and the local heritage agencies (i.e. Western Cape Heritage and SAHRA) be contacted for further evaluation. It is recommended that a heritage awareness guide be provided to the well site preparation personnel and drilling crew to help them identify heritage resources, should they be unearthed during activities.

¹ It is assumed that geophysical data acquisition (e.g. Magneto-Telluric Surveys) will have negligible impacts on cultural heritage aspects and thus has been excluded from this assessment.

Decommissioning

- It is unlikely that decommissioning should have any potentially negative impact on heritage sites and features not previously addressed. However, land rehabilitation processes may have a negative impact on heritage sites in the immediate environs of the rehabilitation site.

6.2 Description of the technical assessment methodology

Potential significance of impacts was based on occurrence and severity, which are further sub-divided as follows:

Occurrence		Severity	
Probability of occurrence	Duration of occurrence	Magnitude (severity) of impact	Scale / extent of impact

To assess each impact, the following four ranking scales are used:

PROBABILITY		DURATION	
5 - Definite/don't know		5 - Permanent	
4 - Highly probable		4 - Long-term	
3 - Medium probability		3 - Medium-term (8-15 years)	
2 - Low probability		2 - Short-term (0-7 years) (impact ceases after the operational life of the activity)	
1 - Improbable		1 - Immediate	
0 - None			
SCALE		MAGNITUDE	
5 - International		10 - Very high/don't know	
4 - National		8 - High	
3 - Regional		6 - Moderate	
2 - Local		4 - Low	
1 - Site only		2 - Minor	
0 - None			

The significance of the two aspects, occurrence and severity, is assessed using the following formula:

$$\text{SP (significance points)} = (\text{probability} + \text{duration} + \text{scale}) \times \text{magnitude}$$

The maximum value is 150 significance points (SP). The impact significance will then be rated as follows:

SP >75	Indicates high environmental significance	An impact which could influence the decision about whether or not to proceed with the project regardless of any possible mitigation.
SP 30 – 75	Indicates moderate environmental significance	An impact or benefit which is sufficiently important to require management and which could have an influence on the decision unless it is mitigated.
SP <30	Indicates low environmental significance	Impacts with little real effect and which should not have an influence on or require modification of the project design.
+	Positive impact	An impact that is likely to result in positive consequences/effects.

6.3 Assessment

Error! Reference source not found. below summarises those impacts directly related to the proposed exploration project, and provides a significance rating for each impact before and after mitigation.

Table 2: Technical Assessment Matrix for the proposed South Western Karoo Basin Gas Exploration Application Project

POTENTIAL ENVIRONMENTAL IMPACT	ENVIRONMENTAL SIGNIFICANCE											
	Before mitigation						After mitigation					
	M	D	S	P	Total	SP	M	D	S	P	Total	SP
<i>Cultural Heritage</i>												
Construction of access roads and preparation of the well site could damage heritage sites and features in the immediate environs of the well site. The generation of dust could pose a threat to rock paintings in close proximity to the site.	6	5	2	3	60	Mod	2	5	2	1	16	Low

Construction of access roads and the well site could damage heritage sites and features in the immediate environs of the proposed well site.

Impacts of moderate significance are expected if the proposed access road is situated within the immediate environs of a heritage site (i.e. within 20 m), if the proposed well site is located within 50 m from a heritage site, and the proposed well site and/or access road are located within 100 m of rock art sites.

Should the following mitigation measures be implemented prior to site preparation and construction, impact significance will be reduced to low:

- During well site selection, no sites should be placed within 100 m of declared national and provincial heritage sites.

- Once the preliminary sites are selected, a site specific cultural heritage impact assessment will need to be conducted to identify any heritage sites and features. Based on the findings of the assessment:

- depends*
- No access roads should be constructed within 20 m of identified heritage sites and features which are rated as sites of high local significance by the South African Heritage Resources Agency (SAHRA) (see Table 1 above);
 - No well sites should be constructed within 50 m of heritage sites and features which are rated as sites of high local significance by the SAHRA; and
 - No well sites or access roads should be constructed within 100 m of rock art sites which are rated as sites of high local significance by the SAHRA.

to be discussed

The site specific cultural heritage impact assessment will therefore inform final site selection.

? Note: the SAHRA usually allows for development to commence where heritage sites or features are rated as sites of low significance (i.e. are not of any regional or local importance and/or are duplicated in many areas).

Should heritage sites rated as sites of medium to high significance be located within the above-mentioned buffer zones in relation to the selected well sites, appropriate mitigation measures will need to be implemented, in consultation with the relevant heritage agency. Mitigation could entail rescue excavation, once a permit is granted by the SAHRA.

Should any archaeological or heritage features artefacts be uncovered during exploration, all activities must be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) approached in order to determine appropriate mitigation measures for the discovered finds, if necessary. Mitigation of heritage sites will be called for when they are rated as of medium to high significance. Mitigation could entail rescue excavation of relevant heritage sites - once a permit is granted for excavation by the SAHRA. If the relevant heritage sites include graves then the protocol provided in Section 36 of the National Heritage Resources Act, 1999 (Act 25 of 1999), regarding grave exhumation, will be followed (see APPENDIX 1).

It is recommended that a heritage awareness guide be provided to the well site preparation personnel and drilling crew to help them identify heritage resources, should they be unearthed as a result of the exploration related activities.

6.4 Assumptions and knowledge gaps / limitations

- It is assumed that the vibrations caused by the proposed drilling will not have a negative impact on sites situated more than 100 m from the 1 hectare well sites.
- It is assumed that the dust caused by the proposed drilling will not have a negative impact on rock painting sites situated more than 100 m from the 1 hectare well sites.

7.0 MITIGATION AND MANAGEMENT MEASURES

The following mitigation measures have been identified for the proposed project (Table 3).

Table 3: Environmental Management Plan for proposed South Western Karoo Basin Gas Exploration Application Project

Environmental Management Plan			Timeline and frequency	Responsible party
<i>1. Cultural Heritage</i>				
1.1	Project activity:	Construction of access roads and well site preparation.	-	-
	Impact:	Damage to heritage sites and features in the immediate environs of the site.	-	-
	Mitigation measure(s):	During well site selection, no sites should be placed within 100 m of declared national and provincial heritage sites.	Site selection	Site selection team
		A site specific heritage impact assessment will need to be conducted to identify any heritage sites and features. <ul style="list-style-type: none"> ■ Areas identified for access road construction should be surveyed for heritage sites on the ground. ■ The one hectare well sites must be thoroughly surveyed (i.e. ground survey) for any heritage sites or features. 	As appropriate, before construction of access roads and well site preparation	Heritage practitioner
		Based on the findings of the assessment: <ul style="list-style-type: none"> ■ No access roads should be constructed within 20 m of identified heritage sites and features which are rated as sites of high local significance by the South African Heritage Resources Agency (SAHRA) (see Table 1); ■ No well sites should be constructed within 50 m of heritage sites and features which are rated as sites of high local significance by the SAHRA; and ■ No well sites or access roads should be constructed within 100 m of rock art sites which are rated as sites of high local significance by the SAHRA. 	As appropriate, to be determined prior to well site preparation and road construction and implemented throughout exploration	Drilling Contractor / SHEC
	Mitigation measure(s):	Should heritage sites rated as sites of medium to high significance be located within the above-mentioned buffer zones in relation to the selected well sites, appropriate mitigation measures will need to be implemented, in consultation with the relevant heritage agency. Mitigation could entail rescue excavation, once a permit is granted by the SAHRA.	As appropriate, before construction of access roads and well site preparation	Heritage practitioner

Environmental Management Plan			Timeline and frequency	Responsible party
		Should any archaeological or heritage features artefacts be uncovered during exploration, all activities must be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) approached in order to determine appropriate mitigation measures for the discovered finds, if necessary. Mitigation of heritage sites will be called for when they are rated as of medium to high significance. Mitigation could entail rescue excavation of relevant heritage sites - once a permit is granted for excavation by the SAHRA. If the relevant heritage sites include graves then the protocol provided in Section 36 of the National Heritage Resources Act, 1999 (Act 25 of 1999), regarding grave exhumation, will be followed.	If necessary, throughout exploration	Drilling Contractor / SHEC
		It is recommended that a heritage awareness guide be provided to the well site preparation personnel and drilling crew to help them identify heritage resources, should they be unearthed as a result of the exploration related activities.	As appropriate, prior to access road construction, well site preparation, drilling	SHEC

7.1 Recommended monitoring programmes

Sites situated closer than 200 m from the well sites and rated as significant and fragile should be monitored on a monthly basis until such time that exploration activities cease.

8.0 RECOMMENDATIONS FOR THE DETAILED IMPACT ASSESSMENT

Following the submission of the EMP, and a site selection process for the well sites, a detailed environmental impact assessment (EIA) will be undertaken.

8.1 Recommended site selection criteria

The following areas need to be avoided during site selection:

- Declared national and provincial heritage sites. Over ten Provincial Heritage sites occur in the Western Precinct.

Prior to final site selection, a ground survey should be conducted. The following areas may contain heritage sites and should be considered during the undertaking of the ground survey:

- Rock shelters in the river valleys bisecting the mountain ranges will contain rock paintings and archaeological deposit.
- Dolerite outcrops and boulders may contain rock engravings. Karoo koppies consisting of dolerite boulders are promising candidates in this regard.
- Some rock engraving sites may occur on base rock adjacent to rivers or close to water sources.
- Scatters of Early, Middle and Later Stone age artefacts may also occur near fountains and water courses.
- Stone walling, including stone walled enclosures, related the Khoekhoen pastoralist activities in this area may also be found in the southern section of the Western Precinct.
- Old farmsteads, older than 60 years and hence of heritage significance, will occur on most farms in the area. We may anticipate that these may consist of farmhouses, sheds, outbuildings, kraals and other structures.
- The characteristic corbelled houses of the Great Karoo occur in the Williston and Carnavron areas.
- Various historical buildings will occur in the small towns in the area. These consist of houses, churches, and market areas.

- Graves belonging to both the indigenous San as well as colonial graveyards will occur on various farms and small towns in the area. These are typically indicated by stone heaps (as in the case with San graves) or formal and informal grave stones.
- Pans and watercourses were a foci of human activity in the past and prehistoric and colonial-era heritage sites may be found near its environs.

8.2 Key questions to be addressed in the EIA

The following key questions will need to be addressed in the EIA:

- Are there any heritage resources or features located within or nearby (i.e. within 200 m) selected well sites and new access road alignments?
- If so, what is the significance of the heritage resource or feature (according to SAHRA rating and grading of sites)?
- Should heritage resources or features be rated as medium or high significance, what mitigation measures need to be implemented?

9.0 CONCLUSION

This preliminary Heritage Assessment is based on a desktop survey of available literature and heritage databases. Only a few heritage surveys have been conducted in the Western Precinct and the available data is incomplete. Nevertheless, the available data indicates that heritage resources are varied and widely distributed in the study area. These include rock art sites, Stone Age sites and tool scatters, historical buildings associated with villages and farmsteads, graveyards, and potential cultural landscapes.

Unfortunately the exact coordinates of the majority of these sites are not given in the existing data bases and a site specific ground survey will be required for those areas earmarked for gas drilling, once they have been identified.

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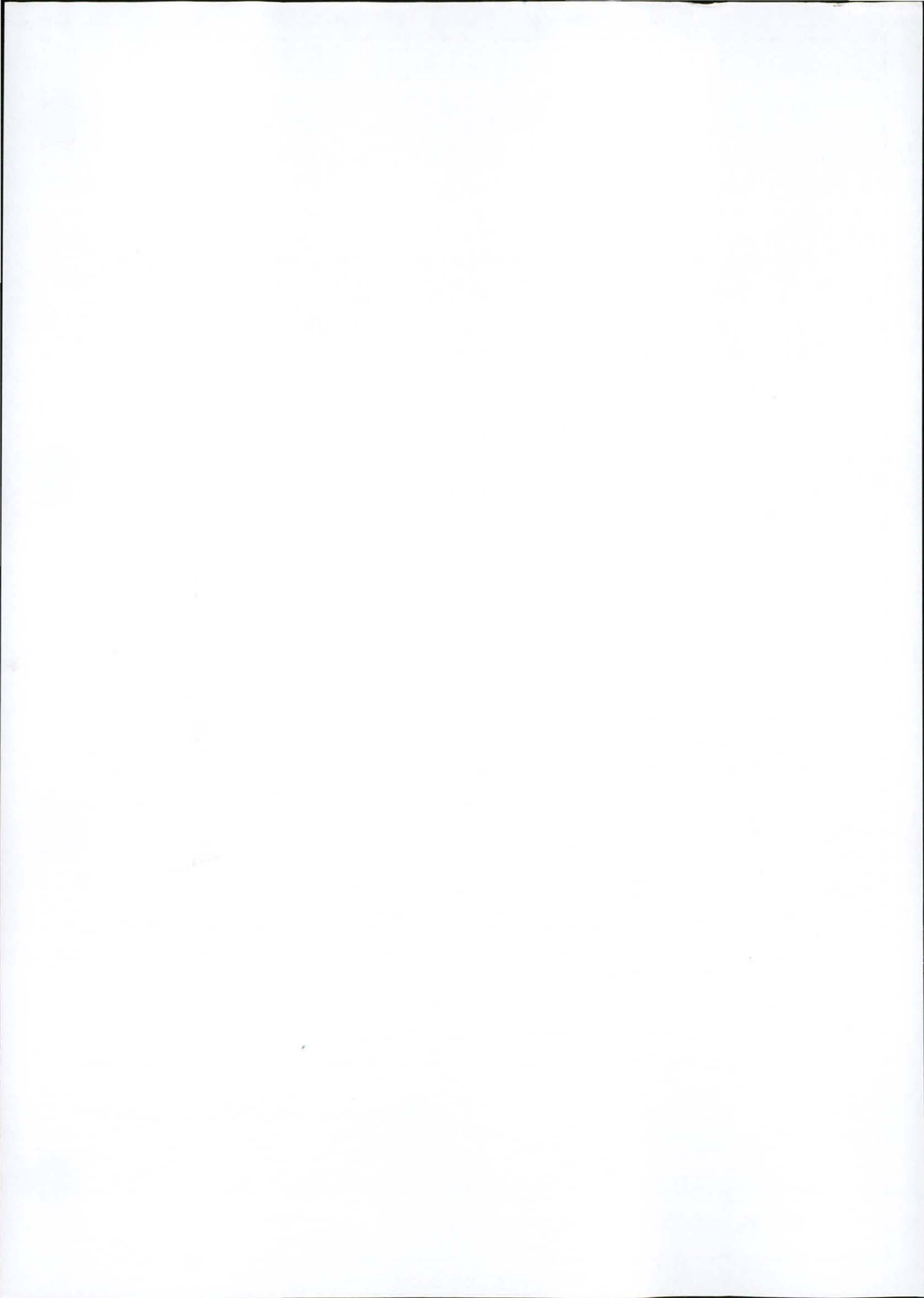
APPENDIX 1 RELOCATION OF GRAVES

Burial grounds and graves are dealt with in Article 36 of the NHR Act, no 25 of 1999. Below follows a broad summary of how to deal with grave in the event of proposed development.

- If the graves are younger than 60 years, an undertaker can be contracted to deal with the exhumation and reburial. This will include public participation, organising cemeteries, coffins, etc. They need permits and have their own requirements that must be adhered to.
- If the graves are older than 60 years old or of undetermined age, an archaeologist must be in attendance to assist with the exhumation and documentation of the graves. This is a requirement by law.

Once it has been decided to relocate particular graves, the following steps should be taken:

- Notices of the intention to relocate the graves need to be put up at the burial site for a period of 60 days. This should contain information where communities and family members can contact the developer/archaeologist/public-relations officer/undertaker. All information pertaining to the identification of the graves needs to be documented for the application of a SAHRA permit. The notices need to be in at least 3 languages, English, and two other languages. This is a requirement by law.
- Notices of the intention needs to be placed in at least two local newspapers and have the same information as the above point. This is a requirement by law.
- Local radio stations can also be used to try contact family members. This is not required by law, but is helpful in trying to contact family members.
- During this time (60 days) a suitable cemetery need to be identified close to the development area or otherwise one specified by the family of the deceased.
- An open day for family members should be arranged after the period of 60 days so that they can gather to discuss the way forward, and to sort out any problems. The developer needs to take the families requirements into account. This is a requirement by law.
- Once the 60 days has passed and all the information from the family members have been received, a permit can be requested from SAHRA. This is a requirement by law.
- Once the permit has been received, the graves may be exhumed and relocated.
- All headstones must be relocated with the graves as well as any items found in the grave





February 2011

SOCIAL TECHNICAL REPORT

**South Western Karoo Basin
Gas Exploration Application
Project: Western Precinct**

DRAFT REPORT



Golder Report Number: 12800-10392-16



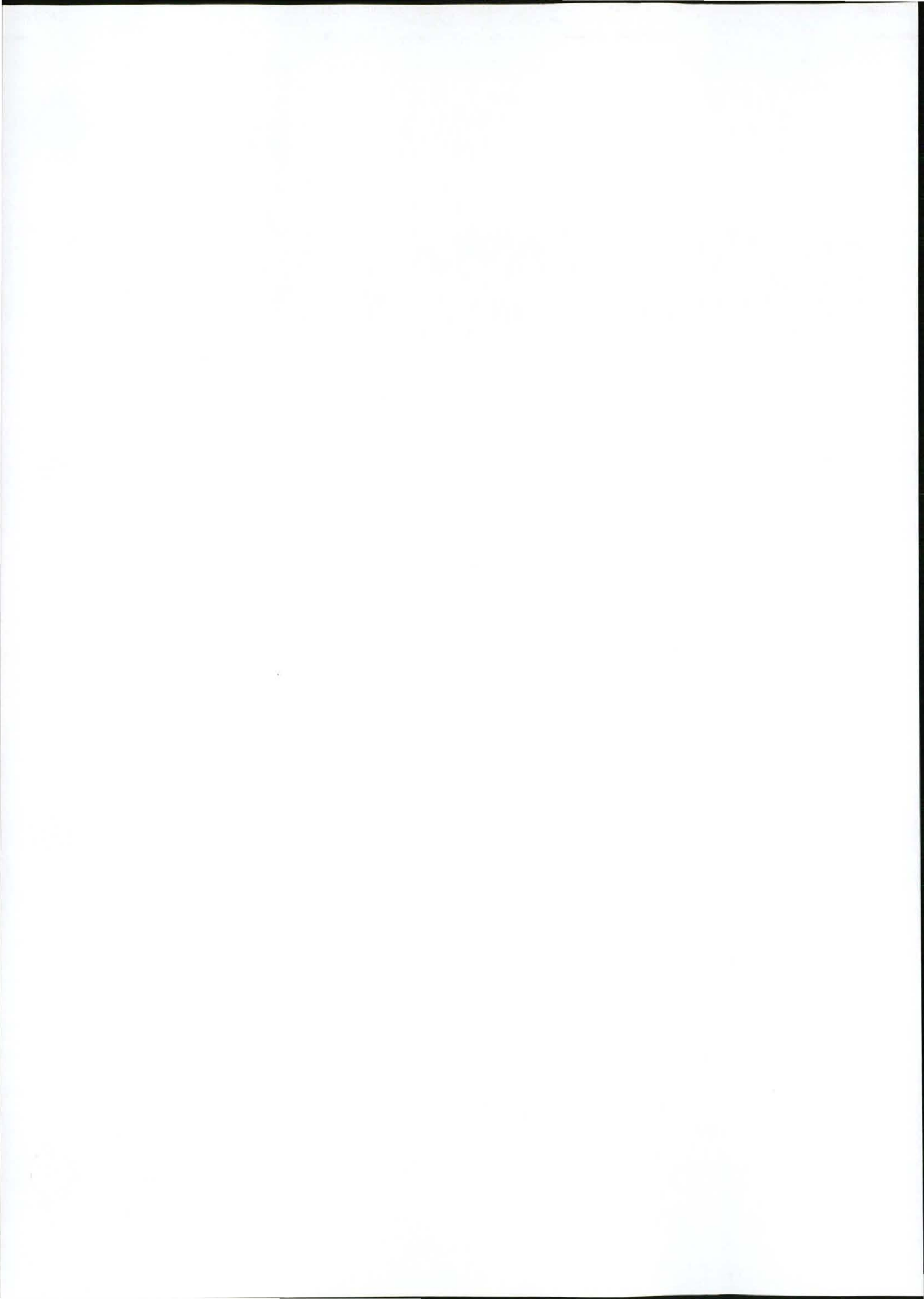




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SOUTH WESTERN KAROO BASIN GAS EXPLORATION: WESTERN PRECINCT

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1.0 INTRODUCTION

Golder Associates Africa (Pty) Ltd. (Golder) has been appointed by Shell Exploration Company B.V. (Shell), a registered company of Royal Dutch Shell, to undertake a socio-economic assessment as part of the Environmental Management Plan (EMP) for the South Western Karoo Basin gas exploration application.

DRAFT



2.0 OBJECTIVES AND AIMS OF STUDY

The purpose of the assessment is to describe the social context of the proposed project and to predict potential project impacts and benefits. Specific objectives include the following:

- Describe the social conditions and trends in the area that could potentially be affected by the project; and
- Compile a high-level scope of potential social impacts.

The socio-economic assessment has been compiled based on a literature review of available documents pertaining to local planning and development; analysis of statistical data (Quantec and the Community Survey (CS) of 2007), and interview records and comments gathered during public consultations with stakeholders (the stakeholder engagement process is described in detail in a separate report).



SOUTH WESTERN KAROO BASIN GAS EXPLORATION: WESTERN PRECINCT

3.0 BASELINE OF LOCAL STUDY AREA

The western precinct is the local study area (LSA) and intersects both the Western Cape and Northern Cape Provinces, and falls predominantly within the Namakwa District Municipality (DM) as shown in (Figure 3-1) and Table 3-1.

Table 3-1: Western Precinct in relation to municipal boundaries

Precinct	District Municipality	Local Municipality
Western	Namakwa, Cape Winelands, Central Karoo and Pixley ka Seme	Karoo Hoogland; Ubuntu, Beaufort West, Kareeberg and Hantam

Despite indications in municipal planning documents that there is significant potential for tourism in the area, the Northern Cape attracted the lowest number of visitors (2%) according to the Domestic Tourism Survey (2009)¹ and only 35% were in the category leisure/vacation/holiday. A typical description of the LSA appears on the Karoo Hoogland municipal website and includes the following:

The people who live here are mostly farmers. The people who visit us are usually in search of an undisturbed, simple lifestyle; eager to indulge in stargazing, fossil-searching, hiking, taking on difficult but beautiful 4x4 trails, and finding rare animals and plants. People who take to the Karoo Hoogland love nature and enjoy eating cultural food and experiencing local cultures.

Loxton, one of three towns in Ubuntu municipality and which falls inside the western precinct is described on the municipal website as a tranquil and arboreal Karoo village, "one of the prettiest villages in the Karoo".

Population

The LSA falls almost entirely within the Karoo Hoogland LM² with overlaps into Ubuntu LM (including Loxton), Beaufort West LM, Kareeberg LM (only marginally) and Hantam LM. The Karoo Hoogland LM has a population of less than 12,000 (2,982 urban households and an average household size of 3.8, and a rural population of about 3,200) and is spread across a large geographical area and a population density of less than 0.5 people per km² (Table 3-2).

Table 3-2: Western Precinct Population Distribution³

Description	Population		Designation			
	Total	Per km ²	Black	Coloured	Asian	White
Northern Cape	1,147,600	3	40%	50%	0%	10%
Namakwa DM	138,200	1	3%	88%	1%	9%
Karoo Hoogland LM	11,800	0.4	1%	82%	0%	17%
Pixley ka Seme DM	179,500	2	23%	67%	0%	10%
Ubuntu LM	17,600	1	13%	80%	0%	6%

The Capacity Assessment report (2008) (an annual assessment by Government of municipal capacity to perform the municipal powers and functions for which it is authorised) compiled annually by the Municipal Demarcation Board (MDB)⁴ indicated a negative population growth rate of 0.9% and 1.4% in Karoo Hoogland and Ubuntu respectively between 2001 and 2007.

¹ Domestic Tourism Survey, 2009, Quantec, 2011 Quantec Research South Africa, sourced at <http://www.quantec.co.za> on 11.02.2011

² Hoogland an Afrikaans word meaning "highland" and Karoo is a Khoi word meaning "hard" or "dry". The name reflects the area which has dry, arid and desert-like conditions.

³ Community Survey 2007, Statistics South Africa 2007, sourced at www.statssa.gov.za on 11.02.2011

⁴ Namakwa District Municipality (DC6), Northern Cape, Assessment of Capacity for the 2008/9 Period, Municipal Demarcation Board, November 2008



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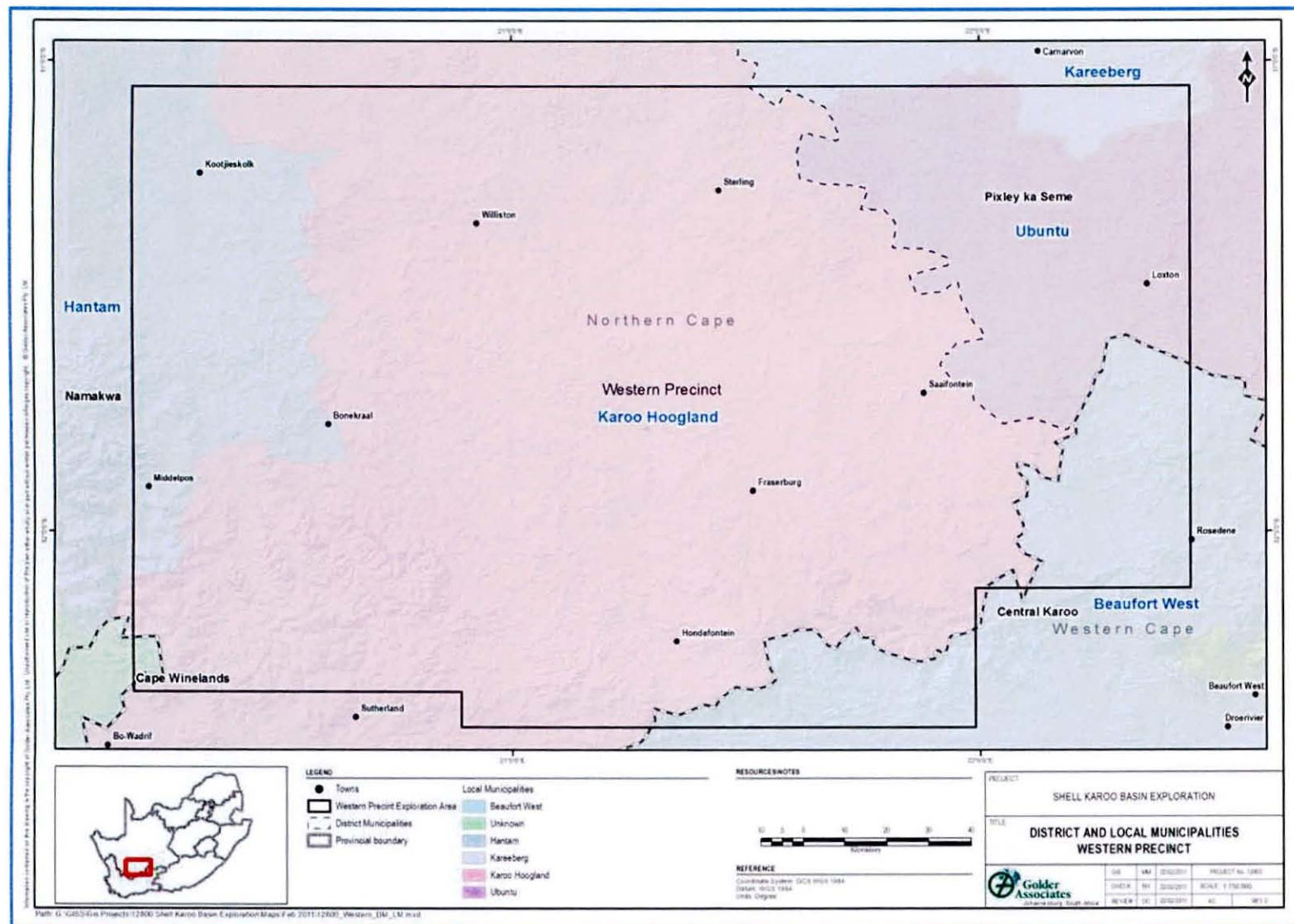


Figure 3-1: District and Local Municipalities in the Western Precinct



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The western section of Ubuntu LM is included in the western precinct, including the town of Loxton. While the municipality has a larger population than Karoo Hoogland, the population profile is very similar except that there are about as many whites living in Karoo Hoogland as there are blacks living in Ubuntu. More than 80% of the local population in both municipalities is Afrikaans-speaking and designated Coloured⁵.

Social Services and Infrastructure

There are 9 schools, 1 hospital and 4 clinics in the Karoo Hoogland municipal area and 12 schools, 2 hospitals and 3 clinics in Ubuntu. The Water Services Development Plan (WSDP) (a municipal planning document compiled annually for municipal water and sanitation services) for Ubuntu states that the municipality has three urban settlements (Victoria West, Richmond and Loxton) and 123 homesteads 'scattered' in the rural region of the municipality. Municipal services in the Karoo Hoogland municipality are primarily delivered to three urban settlements: Sutherland (which falls outside the LSA), Williston and Fraserburg; approximately 28% of the population live on farms.

Water services are supplied solely from groundwater sources: Karoo Hoogland supplies water from 14 groundwater sources while Ubuntu supplies water through reticulated systems from 17 groundwater sources.

Tourism

In the Karoo Hoogland municipality, Sutherland is home to the largest telescope in the Southern Hemisphere, namely SALT (Southern African Largest Telescope). The Observatory is located approximately 20 km from the town centre. According to municipal reports, the town has benefitted from increased tourism in the last 5 years created by the attraction of star-gazing. Tourism is expected to increase significantly over the coming years due to continuing investment in the sector. Archaeological attractions, such as the fossil finds around Fraserburg, are promoted tourist attractions. Loxton, in the Ubuntu municipal area, has a very small population (65 inhabitants) and is a wool-producing centre in the municipality and also known for garlic production.

Economy and Employment

The water services development plan (Karoo Hoogland WSDP, 2010)⁶ for Karoo Hoogland calculated employment in the agricultural sector at 47% and unemployment at 34%. Agriculture is perceived in municipal planning documents to be the backbone of the local economy. However, official statistics (see Figure 3-2) suggest that the agricultural sector is the second largest employer (23%), while community, social and personal services employ 26% of the workforce. Local employment opportunities are limited and only 31% of the economically active population is in formal or informal employment while 59% are not economically active (including those who have given up on actively seeking employment⁷).

In the Ubuntu municipality, agriculture and government services are the largest contributors to the economy (Table 3-3) and employ the largest number of people (Figure 3-2).

⁵ In South African context, the term Coloured (also known as *Bruinmense*, *Kleurlinge* or *Bruin Afrikaners* in Afrikaans) refers or referred to an ethnic group of mixed-race people who possess some sub-Saharan African ancestry, but not enough to be considered Black under the former law of South Africa. They are mixed race and often possess substantial ancestry from Europe, Indonesia, Madagascar, Malaya, Mozambique, Mauritius, Saint Helena and Southern Africa. The extensive combining of these diverse heritages in the Western Cape developed into a distinctive 'Cape Coloured' and affiliated Cape Malay culture.

⁶ Water Services Development Plan (WSDP), Karoo Hoogland Local Municipality 2010, sourced at www.dwa.gov.za/dir_ws/WSDP on 12.02.2011

⁷ RSA Regional Indicators, Quantec, 2011 Quantec Research South Africa, sourced at <http://www.quantec.co.za> on 11.02.2011



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Table 3-3: GVA per Sector, 2009⁸

Sector	Northern Cape	Namakwa DM	Karoo Hoogland LM	Pixley ka Seme DM	Ubuntu LM
Agriculture, forestry and fishing	6%	5%	13%	15%	21%
Mining and quarrying	24%	35%	0%	5%	0%
Manufacturing	4%	2%	6%	3%	4%
Electricity, gas and water	2%	1%	0%	3%	2%
Construction	2%	2%	1%	2%	7%
Wholesale and retail trade, catering and accommodation	12%	9%	14%	14%	11%
Transport, storage and communication	10%	11%	15%	10%	5%
Finance, insurance, real estate and business services	15%	11%	9%	18%	17%
Community, social and personal services	11%	12%	26%	12%	12%
General government	15%	12%	17%	18%	21%

Table 3-3 indicates that agriculture contributes 13% of the local Gross Value Added (GVA) in Karoo Hoogland and is the 5th largest contributor; the four higher contributors are community and personal services (26%), government and administration (17%), transport and communication (15%) and trade and retail services (14%), which includes the tourism subsector. Therefore, while the agricultural sector provides a livelihood for many households, its actual economic contribution in the area is significantly smaller compared to the different services sectors including government services. Sheep farming is the main agricultural activity in the Karoo, with other forms of agriculture established in areas where irrigation is possible, e.g. lucerne. Game farms and tourism have also started to make an economic impact.

Mining and industrial activities are absent in the western precinct and the introduction of exploration activities will be a new development in the area. However, mining has made a significant contribution (35%) to the economy in Namakwa DM.

Considering its geographic scale, it is to be expected that a number of development projects are planned in the proposed exploration application area, including wind farms and associated linear infrastructure. The cumulative impact of the proposed exploration activities on existing development projects may have to be considered when exploration sites have been defined.

⁸ RSA Regional Indicators, Quantec, 2011 Quantec Research South Africa, sourced at <http://www.quantec.co.za> on 11.02.2011



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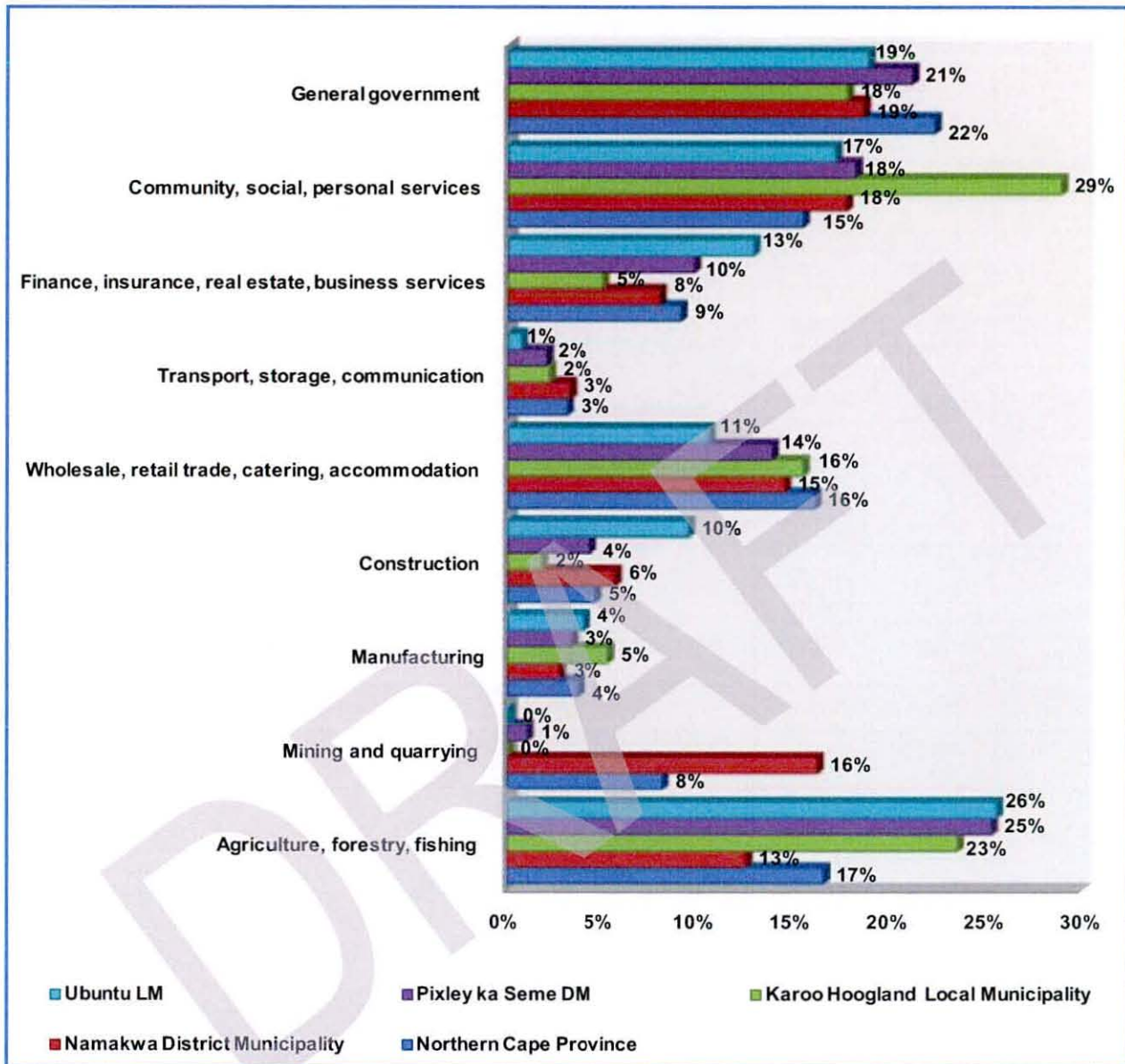


Figure 3-2: Western Precinct Employment Contribution by Sector, 2009⁹

Community Health and Safety

Community safety is measured by the number of incidents reported at local police stations. Crimes are typically categorised into violent and non-violent crimes, under the following headings: contact crimes (including murder and grievous bodily harm (GBH)); contact related crime (arson); property related (theft and burglary); firearms and drug related crime; other serious crime and other unspecified crime (Table 3-4).

The total number of crimes reported in the reporting period (2009) for the affected towns in Karoo Hoogland (Fraserburg, Williston and Sutherland) and Ubuntu (Loxton) were 563 incidents; 1 incident for every 24 persons in Karoo Hoogland. In Sutherland and Loxton the incidence of crime appears to have increased while elsewhere there was a decrease in reported incidents.

⁹ RSA Regional Indicators, Quantec, 2011 Quantec Research South Africa, sourced at <http://www.quantec.co.za> on 11.02.2011



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Table 3-4: Western Precinct Crime Statistics, 2009

Town		Total crimes	Contact crimes against person (murder, GBH)	Contact related crime (arson)	Property related (burglary, theft)	Firearms, drug related crime	Other serious crime	Other
Fraserburg (Karoo Hoogland LM)	Total crimes	182	81	7	47	22	21	4
	Change since 2005	-3%	+4%	0%	+34%	-48%	+11%	-43%
	Crime distribution		45%	4%	26%	12%	12%	2%
Sutherland (Karoo Hoogland LM)	Total crimes	150	54	6	39	20	23	7
	Change since 2005	+35%	+20%	-	+30%	+11%	+77%	+40%
	Crime distribution		36%	4%	26%	13%	15%	5%
Williston (Karoo Hoogland LM)	Total crimes	158	98	6	23	14	12	5
	Change since 2005	-10%	+11%	-60%	-15%	+133%	-50%	-67%
	Crime distribution		62%	4%	15%	9%	8%	3%
Loxton (Ubuntu LM)	Total crimes	73	30	4	17	11	11	-
	Change since 2005	+70%	+76%	+300%	+113%	+10%	+120%	-
	Crime distribution		41%	5%	23%	15%	15%	-

Table 3-5 refers specifically to the HIV/Aids status of the local populations in the LSA. It is evident that the percentage Aids-related deaths is significant against an infection rate of between 3-6% of the population in the range 15 and 49 years. In light of the current negative population growth rate in the Karoo Hoogland and Ubuntu municipalities, an increase in Aids-related deaths would further diminish the local population and reduce the ability of the local communities to reproduce their productive capacity.

Table 3-5: Western Precinct HIV/Aids Prevalence, 2010

Municipality	Population HIV Positive	AIDS Deaths	Other Deaths	Percentage of Deaths related to AIDS
Namakwa DM	6%	0.2%	1.0%	17%
Hantam LM	5%	0.2%	1.0%	14%
Karoo Hoogland LM	5%	0.2%	1.2%	13%
Central Karoo DM	3%	0.1%	0.9%	13%
Beaufort West LM	3%	0.1%	0.9%	14%
Pixley ka Seme DM	6%	0.3%	0.9%	26%
Ubuntu LM	6%	0.2%	0.9%	22%
Kareeberg LM	5%	0.2%	1.1%	15%



4.0 SOCIO-ECONOMIC IMPACTS

4.1 Potential Impacts

A social assessment typically considers the anticipated change in the social environment and how this will impact on the people. Change in itself is not considered an impact. Change occurs constantly and where people have control over the process, they would want to direct it towards positive change. But not all receptors will perceive change necessarily in the same way. Where change is experienced in corporeal (material) or perceptual terms, we speak of impact.

In context of an exploration project that covers an area of about 30,000km² in a predominantly agricultural area with a relatively small population, limited resources and significant levels of unemployment, the proposed 'change' could perhaps be described as the introduction of a diversification of economic activity into a closely knit community. The community tends to be united around the socio-ecological challenges of semi-desert environments and that values the harshness of the environment and considers their 'survival' as part of their heritage. The change that will be introduced by the exploration of shale gas is perceived by landowners as the scarring of their heritage, and by the poor and unemployed as the advent of economic development and the associated prospect of employment and improved quality of life. Survival in the Karoo, which is a delicate balance between limited ecological resources and basic human needs, is contrasted in the minds of stakeholders with 'intrusive' exploration activities of a magnitude not known in the area. The project has thus received a significant amount of public interest.

Against this descriptive background, the impact assessment is based on the review of documentation and the issues that were raised during the public consultations held across the three precincts from the end of January to early February 2011 (the stakeholder engagement process is described in detail in a separate report). Key social impacts raised during the meetings are the following:

- Disturbance of an ecological area that is associated with the local heritage;
- Water quality and quantity;
- Loss of land;
- Presence of (temporary) construction workers;
- Employment;
- Community health and safety;
- Air quality, noise and vibration; and
- Increase in traffic.

Various technical studies have been completed for the EMP, including groundwater, ecological, noise, air quality, and heritage and archaeological studies.

4.1.1 Disturbance of ecology associated with local heritage

The results from the Ecology and Heritage studies are presented in separate technical reports.

Local people have expressed their attachment to the local environment in various ways. The Karoo is often depicted as a scenic environment with a unique character that is sensitive to disturbances. This typical landscape is also traded as a tourism attraction (natural beauty, tranquillity, remoteness) and presented as cultural heritage – a way of life that is different from urban living. It was emphasised in several public meetings that disturbance of the environment due to exploration related activities could occur. For example reference was made to vehicle tyre prints in undisturbed 'veld' taking several decades to disappear. Apart from the ecological impacts, a disturbance of the environment is perceived as a cultural intrusion.



In this context, local knowledge of the environment (with specific reference to the ecology and ground water resources) was presented with a degree of caution and respectfully qualified by a farmer in Graaff-Reinet: "our family has lived here for more than 80 years and we still do not understand the Karoo". People's lives are intricately connected with the ecological sensitivity and harsh and dry climate to the extent that the relationship between the environment and their livelihoods is presented as a constant and delicate balance. A complacent attitude to the environment (stakeholders perceive exploration to be incongruent with the ecological character of the environment) would have implications for their livelihoods.

This subjective impact of the proposed exploration activities was often expressed emotively and amplified with reference to various social risks, e.g. water contamination, danger of spills and environmental catastrophes. This impact is regional in scale, high in probability and moderate in magnitude.

4.1.2 Impacts to quality and quantity of water

The results from the Groundwater study are presented in a separate technical report.

It is common knowledge that water in the Karoo is a scarce resource. Drilling activities require smaller quantities of water than the hydraulic fracturing process. Nonetheless, the use of local sources of water for exploration related activities was raised during public consultations as a possible negative impact on the water supply to the local population and livestock on farms. Furthermore, the fear of contamination of water sources as a result of the hydraulic fracturing process has also been raised consistently by local communities throughout the regional study area as a potential negative impact on their livelihood. Associated with the perception that exploration activities potentially pose a threat to water resource security was the sense of disempowerment should an exploration incident cause the disruption of scarce water resources – the key question that was asked in several public consultation meetings was whether Shell will (be able to) repair and compensate environmental damage. Exploration activities could potentially compromise the quality and quantity of local water supply systems which will have an impact on the sustainability of local communities. If an impact occurs, the impact is local in scale but could reach regional proportion, with a low probability and moderate in magnitude.

In context of water scarcity, the identification of new groundwater sources suitable for human and livestock consumption, as part of preparatory work for the exploration activities could yield positive benefits if these were made available upon closure of exploration activities and site decommissioning.

4.1.3 Loss of land and impact on livelihood

Shell's exploration activities, starting with magneto-telluric testing, will initially require access to land and limited (menial) excavation works for the magneto-telluric testing equipment, and eventually clearing of well-pads (measuring approximately 1 ha). Access to exploration sites may be via an existing (upgraded) or new access road. Landowners will lose temporary access to these areas during exploration activities. However, if initial exploration test results indicate a feasible shale gas resource, further exploration activities may be conducted. If this leads to gas production activities under a production right, the well will be secured for future development and production. Any non-viable exploration wells will be decommissioned.

Loss of access as a result of exploration activities and associated health and safety requirements (including no-go zones) may require mitigating measures such as alternative access ways. Loss of income due to loss of production and economic resources will need to be compensated. Compensation may be provided through lease agreements.

Site selection must take cognisance of current land use in order to minimise economic displacement. The scale of impact is local with a definite probability and moderate magnitude.

4.1.4 Presence of (temporary) construction workers

Exploration is regarded as a skilled technical process that requires adherence to industry-regulated and corporate health and safety standards. During the initial exploratory drilling, it is likely that certain technologies and equipment will need to be imported and highly specialised expertise or personnel to be required. Shell will establish a team that will include international staff and contractors. During site



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preparation, the team size will be 30 to 50 staff. Accommodation of teams may be in a purpose built temporary accommodation camp or in accommodation facilities in nearby urban centres.

Site preparation teams could be considered as business travellers and may stimulate the local tourism industry, especially the hospitality sector, for short periods during exploration activities. This may have an associated impact on general business in the local economy. The scale of this positive impact is local, with medium probability and moderate magnitude. No long-term housing requirements are anticipated.

In contrast, the presence of foreign exploration teams may lead to social conflict due to cultural and language differences. This impact is local in scale, low in probability and rated moderate to low in magnitude.

4.1.5 Employment

Due to the technical nature and regulated health and safety requirements, opportunities for local employment are limited to short-term positions. Influx of job-seekers and the associated increase in crime and social ills is not expected to occur due to the isolated character of the LSA and controlled access to private property in the area. At a regional scale, transportation and security requirements may lead to a limited increase (low magnitude) in employment for the duration of exploration preparation activities. The local hospitality sector may benefit from a low increase in employment opportunities.

4.1.6 Community health and safety

Exploration activities *per se* are restricted to fenced construction sites and pose no immediate risk to community health and safety. Furthermore, present controlled access to farm properties will limit the potential entry of job-seekers onto private property and no significant increase in crime associated with exploration activities is expected to occur. However, risk of contamination of water sources as a result of accidental spillage of process fluids and liquid waste are present and may have a significant impact on the health of the local population. This impact is rated under 4.1.2.

The influx of workers (including foreign teams) from outside the LSA may lead to casual, transactional and temporary sexual engagements which will increase the risk of HIV infection.

4.1.7 Air quality, noise and vibration and impact on livelihood

Air quality, noise and vibration impacts may impact indirectly on the livelihoods of affected landowners or parties. The results from the air quality and noise assessment studies are presented in separate technical reports. Increased noise levels may impact current land uses, such as game farms. With regard to air quality, dust settling on plant material can reduce the amount of light reaching the chlorophyll in the leaves, thereby reducing photosynthesis, which in turn reduces plant productivity and growth.

4.1.8 Traffic increase

The drilling rig will be transported by standard prime mover and trailer trucks, and will be assembled on site. The construction of the temporary drilling rig typically takes between 3 and 4 weeks. Additional trailer(s) will be required to bring other portable equipment, a site office, etc. for temporary use on site. Typical traffic associated with "rig up" operations requires approximately 50 to 70 truckloads, which includes portable accommodation units and rig site offices. The frequency with which additional vehicle traffic visits a site will depend upon the phase of drilling operations. For example, on average a standard re-supply to a rig will require 2 to 4 trucks loads per day, although when pipe casing strings and mud supplies are required this may require up to 10 truckloads per day for a short period of time. Dependent upon the distance to available infrastructure, for example, a supply base or airport, additional may be required traffic once per week, plus ad hoc travel of employees to/from the site on a daily basis.

Additional traffic will increase wear and tear on the roads, increase risk of accidents, and increase noise and fugitive dust levels. Due to the number truck loads required, impact magnitude is rate moderate. In addition, since impacts could be regional. Impact significance is therefore considered to be moderate. The significance of this impact will, however, need to be confirmed subsequent to site selection, as part of the detailed environmental impact assessment.



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Enforcement of Shell's corporate health and safety requirements on all contractor operations, locating well sites in close proximity to supply base or airport and, existing towns will, however, mitigate this risk.

In addition, information will be provided to local residents and police on traffic movements.

4.2 Description of the Technical Assessment Methodology

Potential significance of impacts was based on occurrence and severity, which are further sub-divided as follows:

Occurrence		Severity	
Probability of occurrence	Duration of occurrence	Magnitude (severity) of impact	Scale / extent of impact

To assess each impact, the following four ranking scales are used:

PROBABILITY		DURATION	
5 - Definite/don't know		5 - Permanent	
4 - Highly probable		4 - Long-term	
3 - Medium probability		3 - Medium-term (8-15 years)	
2 - Low probability		2 - Short-term (0-7 years) (impact ceases after the operational life of the activity)	
1 - Improbable		1 - Immediate	
0 - None			
SCALE		MAGNITUDE	
5 - International		10 - Very high/don't know	
4 - National		8 - High	
3 - Regional		6 - Moderate	
2 - Local		4 - Low	
1 - Site only		2 - Minor	
0 - None			



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The significance of the two aspects, occurrence and severity, is assessed using the following formula:

$$\text{SP (significance points)} = (\text{probability} + \text{duration} + \text{scale}) \times \text{magnitude}$$

The maximum value is 150 significance points (SP). The impact significance will then be rated as follows:

SP >75	Indicates high environmental significance	An impact which could influence the decision about whether or not to proceed with the project regardless of any possible mitigation.
SP 30 – 75	Indicates moderate environmental significance	An impact or benefit which is sufficiently important to require management and which could have an influence on the decision unless it is mitigated.
SP <30	Indicates low environmental significance	Impacts with little real effect and which should not have an influence on or require modification of the project design.
+	Positive impact	An impact that is likely to result in positive consequences/effects.

4.3 Technical Assessment

Table 4-1: Technical Assessment Rating

POTENTIAL ENVIRONMENTAL IMPACT	ENVIRONMENTAL SIGNIFICANCE											
	Before mitigation						After mitigation					
	M	D	S	P	Total	SP	M	D	S	P	Total	SP
Disturbance of ecology and heritage	6	2	3	4	54	Moderate	4	2	2	3	28	Low
Impact to quality and quantity of water	8	2	2	2	48	Moderate	4	2	2	2	24	Low
Loss of land and impact on livelihood	4	2	1	4	28	Low	2	2	1	4	14	Low
Temporary workers	2	2	2	5	18	Low	2	2	1	5	16	Low
Employment	2	2	2	1	12	Low	2	2	1	2	10	Low
Community health and safety	Same as water quality above					Moderate	Same as water quality above					Low
Air quality, noise, vibration	4	2	1	4	28	Low	2	2	1	3	12	Low
Road and traffic impacts	6	2	3	4	56	Mod	4	2	2	4	32	Mod



5.0 MITIGATION AND MANAGEMENT MEASURES

5.1 Disturbance of ecology associated with local heritage

Mitigation measures proposed in the ecology assessment report must be communicated to landowners and interested and affected parties. Where possible, engagements with local stakeholders should be held to understand wildlife patterns and local heritage sites– these aspects need to be taken into account during final selection of the well sites. A local monitoring committee should be established to participate with observation status in site monitoring activities.

5.2 Water quality and quantity

Mitigation measures proposed in the Groundwater study report must be implemented.

Landowners in particular and the affected population in general must be informed of any chemical substance used during the exploration process and potential environmental, health and safety risks must be communicated to affected communities prior to its use. Efforts to maintain open and honest communication will reduce the risk of social mobilisation and amplification of risk beyond known potential impacts.

5.3 Loss of land and impact on livelihood

Land compensation and lease agreements should be entered into independently with each affected landowner or party. Where possible, engagements with local stakeholders should be held to understand grazing schedules – these aspects need to be taken into account during final selection of the well sites.

5.4 Presence of (temporary) workers

Teams will work under a strict code of conduct which requires, for example, prior permission for access, alcohol and drug polices, non-disturbance of farm activities and restoring any damages they may inadvertently cause. On-site construction camps will have controlled access and all staff will carry personal identification.

5.5 Employment

Where possible, employment opportunities should be offered to local communities before others are considered. Opportunities for skills development and training should be explored in order to maximise long-term benefits of employment.

5.6 Community health and safety

A risk communication strategy must be developed for the duration of the exploration programme (construction and operation phases) and regular stakeholder forum meetings must be held to report on health and safety monitoring and communicate health and safety risks timeously.

5.7 Air quality, noise and vibration

Mitigation measures proposed in the air quality and noise assessment studies must be implemented.

5.8 Traffic increase

Shell corporate traffic safety and operational health and safety procedures must be implemented by all staff and contractors. The implementation of safety measures such as speed limits, drivers' education, public education, and scheduling and maintenance of vehicles will reduce the impacts on all of roads used by heavy duty vehicles. In addition, information should be provided to local residents and police on traffic movements.

A traffic impact assessment should also be conducted in the detailed environmental impact assessment to follow. This assessment will identify traffic and road safety risks to local residents and users.



6.0 CONCLUSION

This assessment has considered the potential impacts of the proposed exploration activities in the Western Precinct on the social environment. Key impacts that have been considered are the disturbance of the ecology which is associated with the local heritage, the effects on water quality (fear of contamination) and quantity (depletion of groundwater sources) and community health and safety. The latter is a cross-cutting impact linked to water quality concerns and the perceived risk of uncontrolled spills and incidents. The overall social impact of the proposed exploration project is considered moderate to low and, with appropriate mitigation measures, could be changed to low.

A site specific social impact assessment and traffic impact assessment will be undertaken subsequent to well site selection, as part of the detailed environmental impact assessment (EIA). As part of the EIA, the following key questions will need to be addressed:

- What will the impact be of loss of land and impact on livelihood as a result of access restrictions, changes to grazing patterns, etc. on each affected landowner or party?
- What will the impact be on roads and traffic as a result of increased traffic in the vicinity of selected well sites? Traffic and road safety risks to local residents and users?
- What suitable measures can be put in place to manage/mitigate these impacts?



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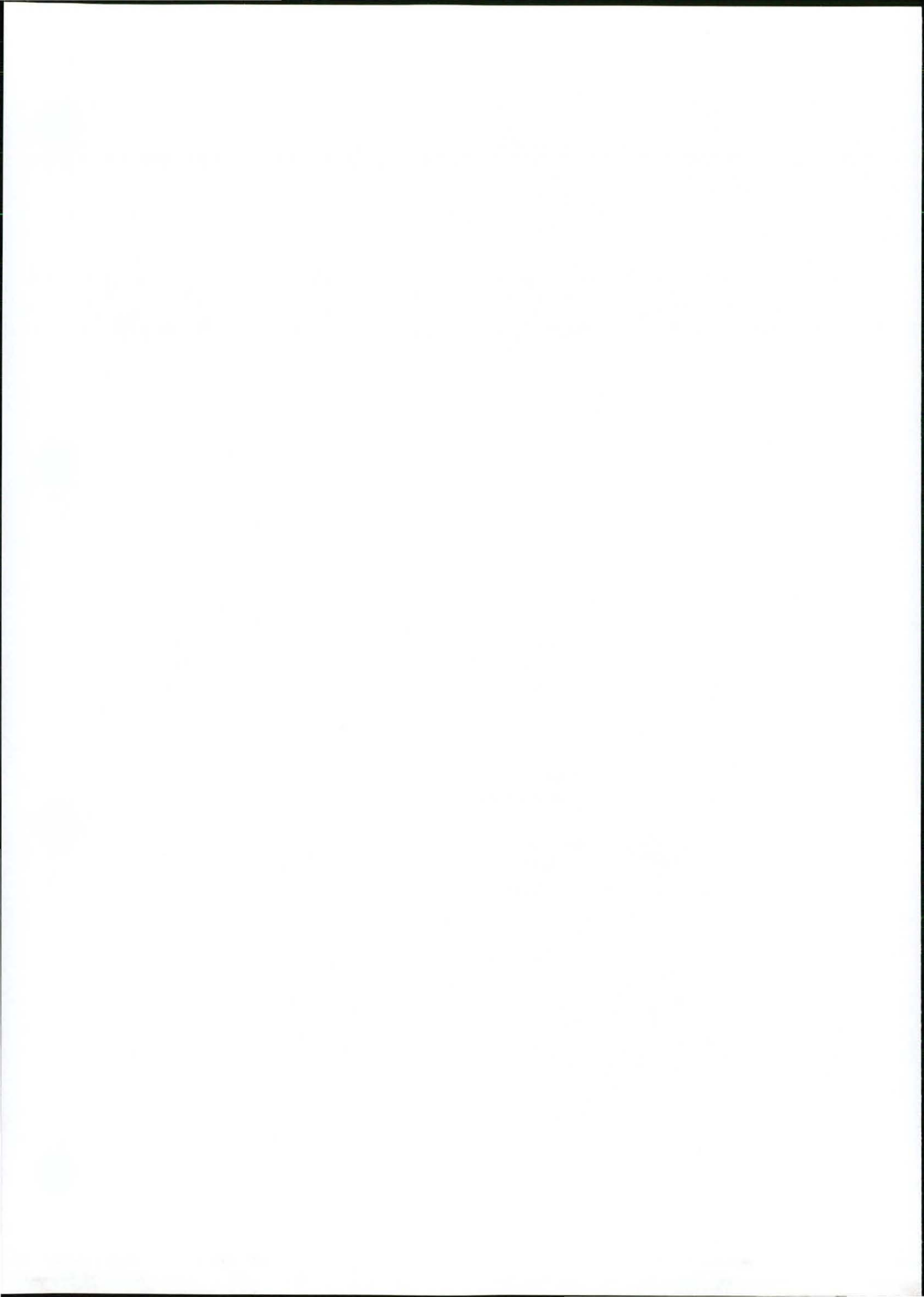
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March 2011

**TECHNICAL REPORT: PUBLIC
CONSULTATION PROCESS - WESTERN
PRECINCT**

**SOUTH WESTERN KAROO
BASIN GAS EXPLORATION
APPLICATION BY SHELL
EXPLORATION COMPANY
B.V.**

DRAFT REPORT



Golder Report No. 12800-10448-23







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Initial list of identified affected landowners and I&APs within the Western Precinct

APPENDIX B

Information pack notifying affected landowners and I&APs about the proposed project

APPENDIX C

Copies of the media advertisements published in the print media, Western Precinct

APPENDIX D

Copies of posters and presentations made available at the open houses

APPENDIX E

Lists of meeting participants

DRAFT



ACRONYMS

DEA&DP: Department of Environmental Affairs and Development Planning

DEA: Department of Environmental Affairs

DMR: Department of Mineral Resources

DWA: Department of Water Affairs

EMP: Environmental Management Plan

EIA: Environmental Impact Assessment

MPRDA: Mineral and Petroleum Resources Development Act (Act 28 of 2002)

NEMA: National Environment Management Act (Act 107 of 1998)

PASA: Petroleum Agency of South Africa

PCP: Public Consultation Process



1.0 PUBLIC CONSULTATION PROCESS

The MPRDA and the MPRDA Regulations 527¹ are brief in terms of what is required during the stakeholder engagement process towards the development of an EMP.

These requirements are given in section 79 (4) of the Act, which deals with an application for an exploration right, stating:

"(4) If the designated agency accepts the application, the designated agency must, within 14 days from the date of acceptance, notify the applicant in writing –

- (a) To notify and consult with any affected party; and*
- (b) To submit an Environmental Management Plan in terms of section 39 within a period of 120 days from the date of the notice."*

However, good practice principles reflected in the NEMA guide consultation, and these were applied.

1.1 Objectives of public consultation during the EMP process

Public participation is the involvement of all parties who potentially have an interest in a development or project, or may be affected by it, directly or indirectly. It is a process leading to a joint effort by stakeholders, technical specialists, the authorities and the proponent/developer who all work together to produce better decisions than if they had acted independently.

The objectives of public consultation in an EMP are to provide sufficient and accessible information to stakeholders in an objective manner to assist them to:

- raise issues of concern and suggestions for enhanced benefits;
- verify that their issues have been recorded and considered in the EMP;
- assist in commenting on reasonable alternatives;
- contribute relevant local information and traditional knowledge to verify existing baseline information; and
- comment on the findings of the environmental assessments.



2.0 PUBLIC CONSULTATION PROCESS TO DATE

The public consultation process followed towards the development of the EMP for the Western Precinct is illustrated in Figure 2-1.

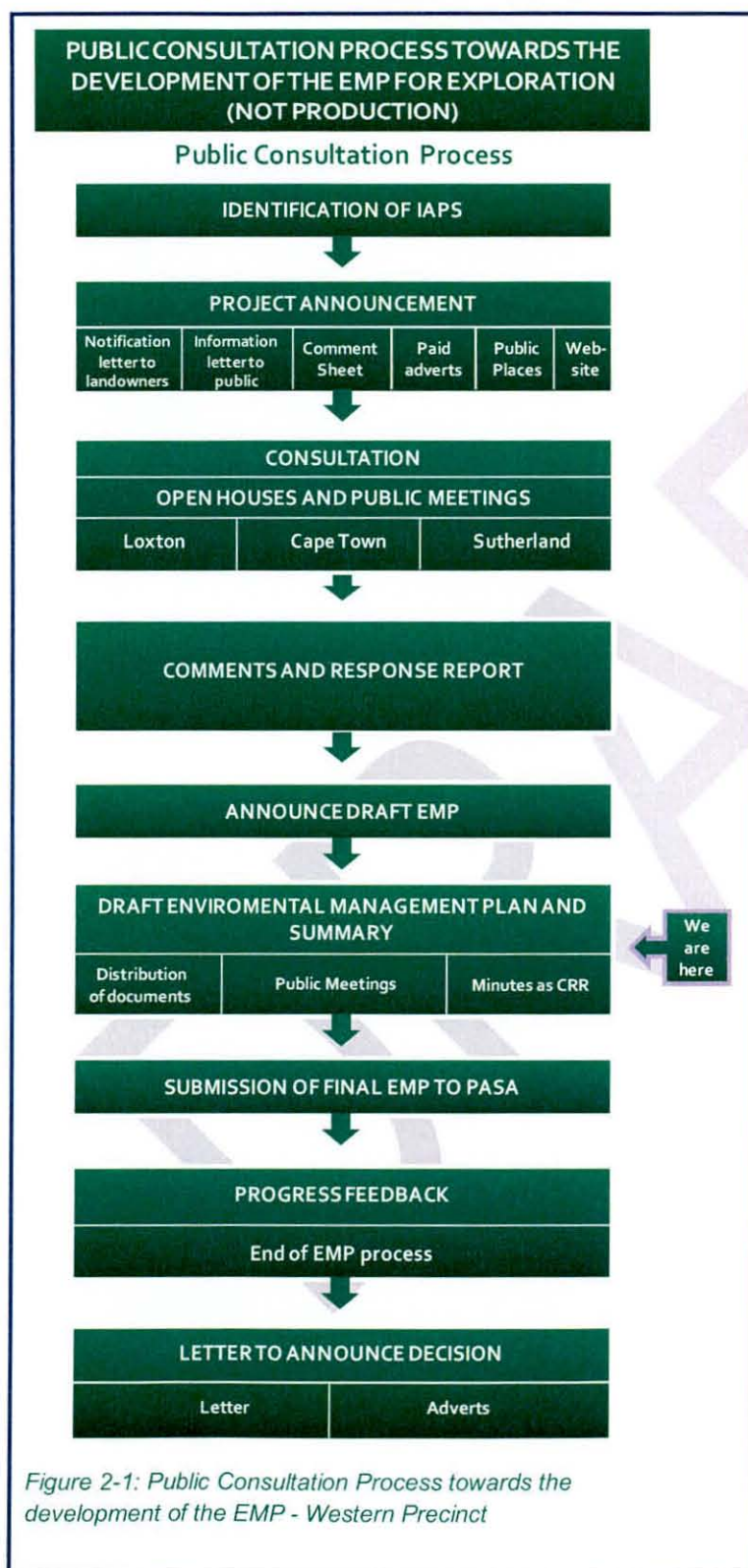


Figure 2-1: Public Consultation Process towards the development of the EMP - Western Precinct

2.1 Identification of interested and affected parties

This section provides information on how landowners and other interested and affected parties (I&APs) were identified.

■ Affected landowners within the application area

Within the Western Precinct, directly affected landowners (private and state landowners) were identified by means of the Surveyor General's title deeds database. Based on available information obtained from the Surveyor General, a total of 628 private and state landowners and companies/trusts were identified of whom 348 individual landowners' contact details were provided. The contact details of landowners were verified by selecting every 25th entry and contacting those landowners whose contact details were available.

The title deeds search within the Western Precinct did not provide any contact details for affected land portions that are registered as Trusts or Companies.

The letter of notification was accompanied by a Registration and Comment Sheet requesting identified landowners and other I&APs to inform the Public Participation Office of friends/colleagues who would be interested in the project. Advertisements in national, regional and local print and broadcast media, as well as public events were used as part of the notification process. Contact details of landowners who registered as I&APs in response to the advertisements and at the public events were captured on the I&AP database. A total of 348 landowners within the Western Precinct registered in response to the media advertisements and open houses.

■ Other I&APs

I&APs representing various sectors of society were identified as follows:

- Using existing information on the Golder database;
- Networking and referral;



- Print and broadcast media (section 2.2);
- Responses to calls in the notification information for people to inform Golder of potentially interested and affected parties; and
- Public events (see section 2.2).

Between 10 January and 18 February 2011, a total of 2,213 I&APs have registered as I&APs across all three of Shell's exploration application processes, of which 1,280 I&APs (including 348 landowners) registered for the Western Precinct EMP process. The I&APs represent a broad spectrum of sectors of society (see Table 2-1) and include the three spheres of government.

A list of I&APs identified in the Western Precinct is attached as Appendix A.

Table 2-1: Sectors of society entered onto the database during the call for registration as I&APs

SECTORS OF SOCIETY	
■ National government	■ Research
■ Provincial government	■ Water bodies (e.g, Water User Associations)
■ Local government (District and Local Municipalities across the three application areas)	■ Business / Commerce
■ Agricultural bodies (e.g, relevant Agri-SA branches)	■ Labour
■ Directly affected landowners (private and state landowners, e.g., national parks)	■ Petrochemical sector
■ Non-Governmental Organisations	■ Tourism
■ Community Based Organisations	■ Mining / Industry
■ Conservation bodies	■ Other

2.2 Notification of I&APs and announcement of proposed project

Notification of I&APs and announcement of the proposed project in the Western Precinct included the following:

- Telephone calls to various organisations and other bodies alerting them to documents for comment being mailed;
- Distributing by mail a Background Information Document (BID) (accompanied by a letter and Registration and Comment Sheet) notifying identified affected landowners and interested parties of the proposed project (see Appendix B for copies of the information pack). The BID also provided a list of public places (see Table 2-2) where copies of the BIDs could be obtained and a list of names of the affected farms could be viewed. I&APs were invited to indicate their language of preference and documents were available in English, Afrikaans and Xhosa;
- Making available the list of affected properties on Golder's website (www.golder.com), at 15 public places in the Western Precinct (see Table 2-2), the open houses and public meetings that were convened and sending the lists by email upon request to I&APs;
- Paid advertisements, in English and Afrikaans, in two national, two regional and four local newspapers within the Western Precinct (see Appendix C for copies of the advertisements and Table 2-3 for a list of papers);
- Announcements were broadcast on two national and three community radio stations within the Western Precinct (Table 2-4);
- Distributing the above by email to those I&APs with email addresses;



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- Distributing further copies by mail and email upon request from I&APs in response to advertisements and word of mouth.
- Making the above available on the Golder website (www.golder.com) and announcing this website in the media advertisements mentioned above;
- In cases where spokespersons of communities/bodies registered I&APs by providing the Public Participation Office with the names of these I&APs, these I&APs were personally contacted to inform them that they have been registered by a spokesperson and to obtain I&APs' permission that they may be registered (Table 2-5);
- Developing a series of full-colour posters and verbal/visual presentations for display at open houses and public meetings conducted in February 2011 (see Appendix D); and
- Making additional colour copies of the BID and electronic copies on CD available at the open houses and public meetings (see below).

A total of 1,736 hard copies and more than 500 electronic copies of the BID were distributed in total and 14 copies of lists of landowners/properties.

I&APs were requested to indicate their language of preference and documents produced were available in English, Afrikaans and Xhosa.

■ Land claimants

- Golder is in the process of identifying, through the Northern Cape Department of Rural Development and Land Reform, whether there are registered land claims on any of the land parcels within the Western Precinct application area. The information was not yet available at the time of printing the draft EMP report.

Table 2-2: Public places in the Western Precinct at which the BID and Registration and Comment Sheet were made available

PUBLIC PLACES	
Central Library, Cape Town (The Central Library distributed documents to nine key branches in Cape Town)	Loxton Public Library
Fraserburg Public Library	Springbok Public Library
Karoo Hoogland Local Municipality, Williston	Sutherland Public Library



Figure 2-2: Nomthi Mnisi shows the announcements documents that were available at public places, e.g., Ultra City, Three Sisters.



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Table 2-3: Newspapers used in the Western Precinct to notify I&APs of the proposed project

NAME OF NEWSPAPER	AREA	DATE OF PUBLICATION
National newspapers		
Rapport	National	16 January 2011
Sunday Times	National	16 January 2011
Regional newspapers		
Cape Argus	Regional	10 January 2011
Burger Wes	Regional	14 January 2011
Community newspapers		
Courier	Beaufort West	21 January 2011
Tygerburger Kraaifontein	Kraaifontein	12 January 2011
Paarl Post	Paarl	13 January 2011
Stellenbosch Gazette	Stellenbosch	11 January 2011

Table 2-4: Radio stations used in the Western Precinct to notify I&APs of the proposed project from 10 – 16 January 2011

RADIO STATION	MONDAY 10/01/2011	TUESDAY 11/01/2011	WEDNESDAY 12/01/2011	THURSDAY 13/01/2011	FRIDAY 14/01/2011	SATURDAY 15/01/2011	SUNDAY 16/01/2011
National radio stations							
RSG	17h00-19h00	17h00-19h00	15h00-17h00	17h00-19h00	17h00-19h00	10h00-13h00	13h00-18h00
SA FM	9h00-12h00	9h00-12h00	9h00-12h00	9h00-12h00	9h00-12h00	12h00-21h00	12h00-21h00
	16h00-19h00	16h00-19h00	19h00-21h00	19h00-21h00	12h00-16h00		
	19h00-21h00	19h00-21h00			21h00-24h00		
Community radio stations							
Bush Radio	6h00-9h00	6h00-9h00	6h00-9h00	6h00-9h00	6h00-9h00	9h00-18h00	12h00-16h00
	12h00-14h00	12h00-14h00	12h00-14h00	12h00-14h00	12h00-14h00		
	16h00-18h00	16h00-18h00	16h00-18h00	16h00-18h00	16h00-18h00		
Radio Tygerberg	6h00-9h00	6h00-9h00	6h00-9h00	6h00-9h00	6h00-9h00	9h00-18h00	
	12h00-14h00	12h00-14h00	12h00-14h00	12h00-14h00	12h00-14h00		
	16h00-18h00	16h00-18h00	16h00-18h00	16h00-18h00	16h00-18h00		
		18h00-20h00		18h00-20h00			
Radio Zibonele	6h00-9h00	6h00-9h00	6h00-9h00	6h00-9h00	6h00-9h00	9h00-18h00	12h00-16h00
	12h00-14h00	12h00-14h00	12h00-14h00	12h00-14h00	12h00-14h00		
	16h00-18h00	16h00-18h00	16h00-18h00	16h00-18h00	16h00-18h00		



TECHNICAL ASSESSMENT REPORT - EMP FOR THE SW KAROO BASIN GAS EXPLORATION APPLICATION PROJECT

Table 2-5: Data on number of I&APs that were registered by third parties

PRECINCT	NO. OF I&APs TO BE REGISTERED	NO OF I&APs CONTACTED TO CONFIRM REGISTRATION	NO. OF I&APs ADDED TO I&AP DATABASE	FOLLOW-UP ACTION
Western Precinct	NA			
Central Precinct	NA			
Eastern Precinct	137	118	118	I&APs that were registered by a third party received a letter to confirm their consent to being registered as an I&AP

■ **Obtaining comments as follows:**

- On comment sheets returned by I&APs after having read the BID or having attended open houses and public meetings;
- By email from I&APs;
- Telephone calls either to or from I&APs, capturing their verbal comments;
- Telephone calls to key I&APs, e.g., farmer's unions, local communities, NGOs, CBOs to confirm their attendance at the open houses and public meetings;
- Convening three open houses and public meetings (Table 2-6) within the Western Precinct in Loxton, Sutherland and Cape Town, where small meetings with groups of I&APs or individuals took place (see Figure 2-3 to Figure 2-12), and where some open houses were run as public meetings in which the proposed exploration project was presented and there was collective discussion (see Figure 2-7); and
- Convening meetings with three national and three provincial authorities.

Table 2-6: Open houses and public meetings convened in the Western Precinct as part of the consultation process

VENUE	DATE	TIME	NO OF ATTENDEES	NO OF COMMENTS RAISED AT MEETINGS
1. Loxton: Community Hall, Sport grounds, Vygie Street, Loxton	Wednesday 26 January 2011	10:00 – 13:00	52	149
2. Cape Town: Edgemoor Community Hall, Edgemoor, Cape Town	Tuesday 1 February 2011	17:00 – 20:00	71	158
3. Sutherland: Church Hall, Dutch Reformed Church, Piet Retief Road, Sutherland	Wednesday 2 February 2011	14:00 – 17:00	66	193



TECHNICAL ASSESSMENT REPORT - EMP FOR THE SW KAROO BASIN GAS EXPLORATION APPLICATION PROJECT



Figure 2-3: Toni Pietersen from Golder explains the EMP process to a Ward Councillor in Loxton from the local municipality



Figure 2-4: Dr Adam Dodson from Shell responds to technical questions by farmers from in Loxton



Figure 2-5: Assisting landowners during open houses to identify their properties on 1:25 000 maps; this photo was taken at the Cape Town meeting on Tuesday, 1 February 2011



Figure 2-6: Meeting participants posed many questions at the public meeting in Cape Town, in particular whether the EMP will consider the impacts of the proposed project on the fragile ecosystems in the Karoo



Figure 2-7: Dr Dodson presents an overview of the proposed project at the public meeting in Cape Town on Tuesday 1 February 2011.



Figure 2-8: Signage showing the venue of the open house in Sutherland



Figure 2-9: Take away copies of the information documents and reference materials displayed at the Sutherland open house and public meeting



Figure 2-10: Posters and tables with map books for landowners to verify the names of their farms. This photo was taken at the meeting in Sutherland on Wednesday, 2 February 2011



Figure 2-11: Small-group discussions at the open house in Sutherland held on Wednesday, 2 February 2011



Figure 2-12: Landowners consider information prior to the start of the presentations in Sutherland.

2.2.1 Next steps in the public consultation process

The next steps in the public consultation process are:

- Announcement of the availability of the Draft EMP, its summary and accompanying specialist reports, the public review period of the Draft EMP and the dates of the next round of public meetings. The announcement will be made by sending letters by registered mail and email to 1,280 registered I&APs,



and paid advertisements in two national, two regional and three local newspapers within the Western Precinct;

- Public review of the Draft EMP from Monday 07 March 2011 to Tuesday 05 April 2011;
- Convene focus group meetings with key I&APs in the Western Precinct between 07 March and 11 March 2011;
- Convene the second round of public meetings from Tuesday 15 March to Friday 25 March 2011;
- Issues, comments and concerns raised on the Draft EMP will be compiled for submission to the PASA; and
- Distribution of a letter by registered mail and email to registered I&APs to notify them of the PASA's decision on whether or not it has approved the gas exploration licence application for the Western Precinct, as well as publication of this decision in two national, two regional and three local newspapers.

2.3 Key issues raised by landowners and other I&APs

Interested and affected parties raised many issues during the process to date (see Appendix E for lists of participants that attended the public meetings and open houses). A total of 2,796 issues were raised across all three precincts of which 1,989 issues were raised by 122 of the 1,280 registered I&APs in the Western Precinct (the Comment and Response Report is available as a separate report to the Draft EMP).

The Comments and Response Report captures all issues raised by I&APs up to 18 February 2011, which was the due date for comment on the Background Information Document, and responds to each issue. Issues received after 18 February 2011 and before 7 March 2011, when a new Comments and Response Report will be started to reflect comments on the draft EMP, will not be discarded. They will be captured in a supplement to the Comments and Response Report and submitted to the PASA together with the other reports. The consultants invite stakeholders to verify that all their issues were captured.

Appreciation for contribution by I&APs

Many I&APs have participated actively during the EMP process to date by attending meetings and by taking the time to prepare written submissions.

Many landowners hosted members of the EMP team in their homes or offices, or showed them around their properties.

The EMP team wishes to express its sincere appreciation for these contributions.

A summary of the key issues that were raised by I&APs in the Western Precinct are listed below.

■ Aesthetics

- Many stakeholders said the Karoo is a special and treasured environment due to its landscape quality, quietness, heritage, and sense of place. They were concerned about a range of possible impacts that would bring industrialised activity.

■ Air quality

- Farmers asked whether the release of gas, either in a raw state or by flaring it, would cause air pollution and dust. If vegetation which sustains livestock is affected, the economic viability of farming would be affected.

■ Astronomy

- The Karoo Hoogland Local Municipality and others expressed concern that gas exploration may impact on Project MeerKAT and emphasised that the requirements of the Astronomy Geographic Advantage Act (Act 21 of 2007) should be considered.



■ Biodiversity and rehabilitation

- Given the low ecological resilience of Karoo ecosystems, and the presence of Red Data Book species, landowners, conservation bodies and other stakeholders were concerned about potential impacts to biodiversity. Farmers said there is little research on the rehabilitation of disturbed veld and that it could take up to 30 to 40 years for a disturbed habitat to recover, if at all.

■ EMP process and EMP Report

- NGOs, representatives from research institutions and landowners were concerned about the limited time available to develop the EMP, and that the authority decision will be based on a report lacking critical information on the potential impacts of gas exploration. They asked that the process of developing the EMP comply with regulations, compare valid alternatives, and receive a proper independent review.
- People asked whether the assessment would include a thorough assessment of environmental risks arising from the exploration, and what risk management measures will accompany this. They wanted to know how the assessment can be sufficiently thorough when the project description is not yet firm.

■ Financial provision

- There was concern that the statutes and regulations governing the proposed development are not adequate to protect the public interest, and/or that the regulations and conditions of approval will not be properly enforced. Fearing an event like the one which happened recently in the Gulf of Mexico, stakeholders asked that Shell prove that exploration in the Karoo will be safe, and asked for examples of similar work the company has undertaken. They wanted Shell to provide a financial guarantee in the event of environmental harm.

■ Human health

- Concerns were expressed about impacts on community and human health, including cancer risk, arising from air pollution, water pollution and potentially from radio-activity. Stakeholders wanted to know if the assessment will identify and evaluate the potential sources and impacts of radio-activity, including uranium.

■ Landowner and property rights and values

- Many farmers and landowners wanted to know whether they had the right to refuse Shell and environmental specialists access to their land and what process will be followed to gain access to land once the drill sites have been identified.
- Landowners were concerned about their property rights, and that adverse public perception will have an impact on the market value of their properties. They wanted to know if property owners will receive compensation in case of loss or liability arising from the proposed exploration and its impacts.

■ Local and regional development

- Stakeholders said the EMP must address the potential knock-on effects of the proposed project on local and regional development planning, including land use planning

■ Transport

- Landowners said that provincial, regional and local roads are in poor condition and will deteriorate with additional traffic as a result of the transport of heavy equipment and materials, and that traffic hazards will increase due to additional vehicles on the roads.



■ Waste management

- Stakeholders asked that the nature and consequences of waste generation, including acid mine drainage, during exploration, should be quantified and compared with the limited waste disposal capacity in the Karoo region.
- Some stakeholders suggested assistance to the local municipalities to ensure waste site permits are in place prior to the commencement of exploration activities.
- The Karoo Hoogland Municipality invited the EMP team to discuss waste management options with them.

■ Safety and security

- Landowners were concerned that the exploration project will increase traffic and access to their properties by unknown persons, thus compromising security

■ Sustainable development

- Stakeholders said the perspective of sustainable development and cumulative impacts should be assessed. A comparative life-cycle assessment of natural gas development as opposed to alternative energy source development should be provided through proper cost benefit analysis. The question was asked about whether this type of development should be allowed in a water-stressed environment.

■ Seismicity

- Some stakeholders pointed out that the depth of proposed drilling could potentially have effects on seismicity in the Karoo.

■ Socio-economic issues

- The impacts on local and regional socio-economic factors, including impacts on employment, migration and urbanization, on tourism, export products, food security, on road access, and the sharing of benefits from the project, were raised as issues.

■ Water resources and waste water management

- The regional representative of the Department of Water Affairs in the Northern Cape, other local authorities and landowners asked what volumes of water will be required for drilling and hydraulic fracturing, where the water will be obtained from and if obtained from a farmer, how the farmer will be compensated.
- Questions were asked about the management of excess and waste water from hydraulic fracturing and how monitoring will be conducted to measure potential impacts to groundwater and the environment.
- Concerns were expressed about horizontal drilling below wetlands and surface water courses
- **Groundwater:** The Western Cape Department of Environmental Affairs and Planning, landowners and other stakeholders said that all livelihoods in the Karoo depend on groundwater. Others indicated that limited information existed on Karoo geohydrology (groundwater).
- Since hydraulic fracturing is a new technology in South Africa, there is little information available on its potential impacts locally. Stakeholders were concerned about the potential impacts of hydraulic fracturing when the hazards of deep and shallow drilling are unknown, and in the knowledge that the US EPA has placed a two-year moratorium on this type of exploration. They also questioned why Shell and the consultants did not disclose which chemicals would be used in hydraulic fracturing.



- Stakeholders asked that the potential impacts on groundwater resources, including disturbance of the aquifers, pollution of groundwater by chemicals used in fracturing, and increased abstraction, be properly assessed. They feared that if one aquifer were to be contaminated, all others will be affected too because the aquifers are likely to be connected.
- Conservation organisations, NGOs and academia asked that the precautionary principle be applied and that the exploration rights application be rejected until the consequences of hydraulic fracturing are better understood and until there is demonstrated proof that hydraulic fracturing is not harmful to human health and the environment.

GOLDER ASSOCIATES AFRICA (PTY) LTD.

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APPENDIX A

**Initial list of identified affected landowners and I&APs within
the Western Precinct**

PROPOSED SOUTH WESTERN KAROO BASIN GAS EXPLORATION PROJECT

Initial list of identified affected landowners and I&APs within the Western Precinct

Name	Organization	City
Ables, Janeke	Shell	Bryanston
Ackerman, Hendrik		
Adolf, Daantjie	Gristelike Gemeente	Loxton
Adonis, Elliot	Private	
Afrikaner, Linda	Gemeenskaplid	
AgriSA, The Director: Natural Resources		Centurion
Ah Shene-Verdoorn, Carolyn	Birdlife South Africa	Randburg
Ahmed, Mehmood	Industrial Development Corporation (IDC) - Northern Cape	Kimberley
Alheit, Johan	Private	Newlands
Amid	Zhauns Business Opportunity & Engineering Group	Cape Town
Anderson, Tania	WESSA : NC	Kimberely
Andreas, Lillian	NAFCOC	Sandton
Antrobus, Michael		Cradock
Archer, Emma	CSIR	Emmarentia
Ashwell, Alice	EnviroEds	Marina De Gama
Atkins, Margaret	Private	East London
Atkins, Stephan	Sustainable Rural Development in the Eastern Cape (SURUDEK)	East London
Atkinson, Doreen	Karoo Development Foundation	Philippolis
Atkinson, Doreen	Karoo Development Foundation	Philippolis
Augustyn, Alheit	Farmer	Kuilsrivier
Avenant, Fanie	Private/Victoria West Museum Board of Trustees	Victoria West
Avenant, Julie	Karoo Anti Hydraulic Fracturing Action Network	Woodstock
Avenant, Willem	Karoo Anti Hydraulic Fracturing Action Network	Woodstock
Baard, Erenst	Cape Nature Conservation (cape nature)	Gatesville
Baartman, Ursula	Karoo Citizen	Graaff-Reinet
Baird, Melissa	Ogilvy Earth	
Balantyne, Jenny	Private	Cape Town
Ball, Rod	Golder Associates	Cape Town
Ballantyne, Jenny	Private	Cape Town
Bambisa, Mpilo	Chris Hani District Municipality	Queenstown
Bani, Nonwabini	Tsolwane Local Municipality - Public Library	Tarkastad
Bani, Nonwabini	Tsolwane Local Municipality - Steinsburg	Tarkastad
Bantom, Dinah	Pearston Public Library	Pearston

Name	Organization	City
Barkhuizen, Natasja	Agri Oos-Kaap	Newtonpark
Barnes, A.P	Breede Overberg Catchment Management Agency (BOCMA)	Worster
Barnes, Tony	Department of Environmental Affairs and Development Planning (Western Cape)	Cape Town
Barnett, Mandy	Succulent Karoo Ecosystem Programme	Claremont
Baron, Jane	Department of Water Affairs	Port Elizabeth
Barry, Ghishma	Eastern Cape Provincial Government	Bisho
Bassier, Achmad	DEAP	
Bassier, Ahmed	Compliance Enforcement	
Basson, Elias		
Basson, Elias Nel	Sutherland Landbou Unie	Sutherland
Basson, Elsje	Sutherland Landbou-unie	Sutherland
Batis, Ros	Old Parsonage Museum	Somerset East
Baumgartner, Megan	Clean Stream Environmental Consultants	Glenstantia
Baxter, Brent	Golder Associates	Halfway House
Beal, Marina	Nama Karoo Foundation	Richmond
Beech, Craig	Peace Parks Foundation	Stellenbosch
Bega, Sheree	Saturday Star	
Bekebeke, J.	Northern Cape Provincial Government	Kimberley
Bekker, Fritz		
Benzon, Tana	Private	
Bester, Hendrik	Eienaar	Swellendam
Bezedenhout, Cathy	Cradock Public Library	Cradock
Bhe, Floretta	Jansenville Community Library	Jansenville
Biggs, Linda	Private	
Biggs, W.	Garstland Farms cc	Murraysburg
Birch, Aleck	Conservancy	Dana Bay
Blaisse, Derk	La Grange de Cabriere/ Sneeuberg Nature Reserve	Franschoek
Blignaut, Wynand	Private	Moreleta Park
Blignaut, Wynand	Sasol Petroleum International	Johannesburg
Blom, Jan-Pieter	Private	Middelburg
Bodlani, Lorna	Local Government Communication and Information Systems (GCIS)	Burgersdorp
Boniface, Antony	Private	
Booyesen, Hester	Gamtkwa Khoisan Council	Hankey
Bosman, Carin	Global	Gezina
Botes, Lucius	Institute for Groundwater Studies	
Botha, Andre	AgriSA	Centurion
Botha, Erina	Private	Table View
Botha, J.J.	Bo Treintjies Fees	Sutherland
Botha, JP	NG Kerk	Sutherland
Botha, Louisa		Sasolburg
Botha, Mark	World Wildlife Fund	
Botha, Michael		Golden Valley

Name	Organization	City
Botha, Sunette	Farmer	Burgersdorp
Bouwer, Johan	L'Ormarins (pty) Ltd	Franschoek
Bragg, Christy	Private	Nieuwoudtville
Bramley, Julius	True Karoo Crafts	Hanover
Brandt, Madelaine	Springbok Municipal Offices	Springbok
Bredell, Anton	Department of Environmental Affairs and Development Planning	Cape Town
Bremierie, Jan	Verenigde Gereformeerde Kerk	
Brendan, Creaven	E+PC< Engineering & Projects Company Ltd	Rivonia
Briers, Jan	DMR	
Brink, Andrew	StratAfrica	
Broodryk, John	Birdlife of South Africa	Nelspruit
Brown, Alex	Verenigde Gereformeerde Kerk	Loxton
Brunings, Ron	TPS Consulting Land Use Planners & EIA Practitioners	Montagu
Brunings, Ron	TPS Consulting Land Use Planners & EIA Practitioners	Montagu
Bryan, Sean	Agricultural Business Chamber	Sterkstroom
Brynard, Benjamin	Privaat KLAWERVLEI	Calvinia
Brynard, Quintin	Wynland Water Users Association (WUA)	Stellenbosch
Buchanan, Hilary	Percy FitzPatrick Institute of African Ornithology: University of Cape Town	Rondebosch
Buisman, Elizabeth	Graaff-Reinet Heritage Society	Graaff Reinet
Burdett, Peter	SANPARKS	Graaff-Reinet
Burger, J. H.	Brandekraal	Middelpos
Burger, M.P	Brandekraal	Sutherland
Burger, Vicus	Agri Oos-Kaap	Newtonpark
Buthelezi, Dumisani	Department of Trade and Industry (DTI)	Sunnyside
Buthelezi, Pakamani	Breede Overberg Catchment Management Agency (BOCMA)	Worster
Butterworth, Judi	Private	
Bye Bruun, kim	Shell South Africa Energy (Pty) Ltd	Bryanston
Bye-Bruun, Kim	Shell	Bryanston
Campbell, Megan	Overstrand Conservation Foundation	Hermanus
Campbell, Peter	Hopeful Farm	Fort Beaufort
Chadow, Albertus	Rebeskop Opkomende Boere Verenigings	Sutherland
Chadow, Maria	Venus Sisters	Sutherland
Chancellor, David	Shell Photographer	
Chapman, Olivia	Golder Associates	Halfway House
Charles, Phil	S A A O	Observatory
Charlie, Thenjiwe	Buffalo City Municipal Civic Centre	King Williams Town
Chetty, K		
Chomse, Kevin	Private	United Kingdom
Chonga, Audrey		
Chris		Paarl
Cindy	AP vd Merwe Trustees	

Name	Organization	City
Clack, Graham		
Clarke, M		Lanseria
Clayton, Merrick	Pineapple Growers Association	Bathurst
Cloete, C	Wool South Africa	Dordrecht
Cloete, H C G	Loxton Landbouvereniging	Carnavron
Cloete, Jaco	Steynsburg Boere-unie	Steynsburg
Cloete, Jan	Boer	Carnarvon
Cluett, Alan	Alan Cluett Consulting	Juskei Park
Clutter, Ronel	Sutherland Public Library	Sutherland
Coetzee, Ken	Conservation Management services	
Coetzee, Chris	South African Large Telescope (SALT)	Sutherland
Coetzee, Dene	Riverdene Farm	Graaff-Reinet
Coetzee, F J	Coetzee & Venter Attorneys, Notaries, Auctioneers, Appraisers and Conveyancers	Cradock
Coetzee, Johannes	Landowner	
Coetzee, Letsie	South African National Parks Tankwa NP	Calvinia
Coetzee, Rynette	Endangered Wildlife Trust	Parkview
Coetzee, Trudie	SANPARKS	Century City
Coetzer, Faan		Menlopark
Cole, Deidre	Northern Cape Provincial Government	Kimberley
Cole, Doug	Council for Geoscience	Bellville
Cole, Fransa	Private	Lanseria
Cole, Steward	Middleton Hotel	Middleton
Cole, Stuart	Middleton Hotel	Middleton
Collair, Ivan	Shell	Cape Town
Collings, Chantal		
Conradie, B.J.	CF Conradie Trust	Murraysburg
Conradie, Bennie		
Costanza, Madeliene	International Institute for Energy Conservation (IIEC-Africa)	Johannesburg
Coulter, Edwin & Gerda		
Courtoreille, Jessica	PetroSA	Parow
Couve, Lindsay		
Cowell, Carly	South African National Parks	Steenberg
Cowling, Richard	Nelson Mandela Metropolitan University (NMMU)	Summerstrand
Crewe-Broun, Geoff	Full Marks	Graaf-Reinet
Crookes, Kathryn	J.J Adamstein Trust	Nuweland
Crouse, K	Agricultural Business Chamber	The Fig Tree
Cull, Patrick	Weekend Post	Walmer
Cunningham, Dale	East Cape and Karoo Safaris	Grahams Town
Cunningham, Dale	Wild life Ranching South Africa (WRSA)	Pretoria
Curran, Patrick	South East African Climate Consortium Student Forum (SEACC SF)	Grahamstown
Dabrowski, Frank	Tasman Pacific Limited	Randpark Ridge
Damonse, Ralph	Mainstream Renewable Power South Africa	Claremont

Name	Organization	City
Daniels, Evani	Camdeboo Local Municipality - Nieu Bethesda	Graaff Reinet
Daniels, M	Grahamstown Community Library	Grahamstown
Danyela, Nomapelo	Chris Hani District Municipality	Queenstown
Datta, Sreejeeta	Shell	Bryanston
Dauids, Jeremy	Community Police Forum (CPF)	Sutherland
Dauids, Voghan	Jakhalsdans	Loxton
Davis, Rob	Department of Trade and Industry	Sunnyside
de Beer, Elna	Golder Associates	Halfway House
de Beer, Willie	Electricity Distribution Industry (EDI) Holdings	Pretoria
de Beer, Willie	Regional Electricity Distributors	Pretoria
de Bruyn, Marthen	Verenigde Gereformeerde Kerk	Loxton
de Jager, Arnoldus Johannes		
De Klerk, Carina	Agri Fraserburg	Fraserburg
de Klerk, J.	OG de Klerk	
De Klerk, Jan		
De Klerk, Simey	Agter-Hantam Landbouvereniging	Calvinia
de Lange, Berend	BJ de Lange Family Trust	Cradock
de Lange, Lynn-Marie	Kyle Business Projects	
de Pontes, Mike	South African Gas Development Company (Pty) Ltd (iGas)	Sandton
de Villiers, Maria Annandale	Eastern Cape Provincial Government	Bisho
de Wee, Jannie	Karoo Hoogland Munisipaliteit	Williston
de Wee, Rodney	Verenigde Gereformeerde Kerk	Loxton
De Wet, Andrew		
Deal, Jonathan	Gecko Rock Private Nature Reserve	D'Urbanvale
Deal, Jonathan	Treasure the Karoo Action Group	D'Urbanvale
Deal, Sharon	Gecko Rock	D'Urbanvale
Degenaar, Katherine	Windlab Developments South Africa Pty Ltd	
Dercksen, Victor		Graaf-Reinet
Dhever, Sushila	Legal Resource Centre (LRC)	Johannesburg
Dikana, Hombisa	Inxuba Yethemba Municipality	Cradock
Dingile, Zolile	Kareeberg Municipality	Carnarvon
Dini, John	Working For Wetlands	Pretoria
Diokpala, Sam	Pixley ka Seme District Municipality	De Aar
Dlamini, Sibusiso	Private	
Dobson, RT	Stellenbosch University, CRSES	Stellenbosh
Dodson, Adam	Shell	Bryanston
Donde, Margie	The Greater Kyalami Conservancy	
Donnelly, Thomas		Waterfront
Douglas, Sandra	Adelaide Public Library	Adelaide
Dreyer, Patrick	Blue Crane Route Local Municipality	Summerset East
du Plessis,	Gariep Local Municipality	Burgersdorp

Name	Organization	City
Du Plessis, Jan Abraham	Eensaamheid Sutherland	Sutherland
du Plessis, Jannie		Sutherland
du Plessis, Kalla	Landowner	Hennenman
du Plessis, Morne	WWF South Africa	
du Plessis, Nicolas	Owner of Property	
du Plessis, Righardt	JCI South Africa	Isando
du Preez, F.J.		
du Preez, Gerhard	DU PREEZ,POTGIETER	
du Rand, A.F.		
Du Rand, Wayne	Ogilvy Earth	
du Toit, A. Grobler.		
du Toit, Christina	Private	Sutherland
du Toit, Hendrik	Retired	Loxton
du Toit, Jan Gabriel	Private	Stellenbosch
du Toit, Jennie	Retired	Loxton
du Toit, Johan Christaan	Towerberg Farming Trust	Graaff Reinet
du Toit, M	Du Toit Familie Trust	Murraysburg
du Toit, Rene	Hofmeyer Public Library	Hofmeyer
du Toit, W H		Steynsburg
Dube, Joe	JCT Training Consultants	Ormonde
Dudley, Warren	PetroSA	Parrow
Dugmore, Heather	Rooihoopte Farmers Association	Middelburg
Duicy, Greg	Cacadu District Municipality	Port Elizabeth
Duigan, Helen	Rhenosterspruit Nature Conservancy	
Dukana, Mendo	Eastern Cape Provincial Government	Bisho
Dullaart, Heinz	Privae	
Dustan, Ian	Wildlife and Environment Society of South Africa (WESSA)	Benoni
Eaton, Michael John Herbert		
Edge, David	Lepidopterists' Society of Africa	Knysna
Ehrlich, Pippa	Carte Blanche	Mowbray
Elizabeth	Springvalley Public Library	King Williamstown
Engelbrecht, Debbie	Private	Platteklouf Glen
Ephraim, Neville	iGas (Pty) Ltd	Bellville
Erasmus, Adie	Clean Stream Environmental Services	Witbank
Erasmus, Caster		Richmond
Erasmus, Ryno	EWT - RRP	Loxton
Erasmus, Suzanne	Wildlife Environment Society of SA	Kimberley
Esterhuizen, Adriaan	Wilgebeskloof Boerdery	Sutherland
Esterhuizen, Adriaan	The Business model design company	
Esterhuizen, Piet	Piet Esterhuizen Eiendomme (Edms) Bpk	George
Esterhuyse, Hannes	Williston Landbou Unie	Loxton
Esterhuyse, Hannes (Rooikat)	Williston Landbou-Unie	Williston
Esterhuyse, W J	Onder-Vis Landbouveringing	Calvinia

Name	Organization	City
Esterhuyse, Willem	MeerKAT Project	Pinelands
Evans, Steven		
Evered, Simon	Wildlife and Environment Society of South Africa (WESSA)	White River
Faber, Marina	Peace Parks Foundation	Stellenbosch
Ferguson, Jennifer	Private	Troyeville
Ferreira, Barry		Sutherland
Ferreira, M I L	RPO	Willowmore
Ferreira, P C	Hanover Karoo Conservancy	
Ferreira, P C	Seekoei River Restaurant Hanover	
Fillis, Martin	Ubuntu Local Municipality	Victoria West
Fillis, Martin Francois	Ubuntu Municipality	Victoria West
Fish, Liz	Carte Blanche	Mowbray
Fortuin, Veronica	Riebeeck East Public Library	Riebeeck East
Foster, April	Loxton Public Library	Loxton
Fourie, Danelle	SRK Consulting	Rondebosch
Fourie, Mellissa	Centre for Environmental Rights	Cape Town
Fourie, Stoffel	Tshwane University of Technology	Pretoria
Franke, Ursula	Endangered Wildlife Trust	Ermelo
Fraser, Ian	Zoom Adverstising	
Friedman, Yolanda	Endangered Wildlife Trust	Parkview
Fryer, Rob	Overstrand Conservation Foundation	Hermanus
Gaika, Elrien		Victoria West
Gaisford, Barry		
Galimberti , Mariagrazia	South African Heritage Resources Agency	Cape Town
Gand, Gad	Belongo Kelesa	
Gasnolar, Andrew	Bowman Gilfillan Attorneys	Waterfront
Gcobana, Sicelo	Eastern Cape Provincial Government	Bisho
Geach, Bev	Eastern Cape Parks and Tourism Agency (ECPTA)	East London
Gerber, Gerhard	Department of Environmental Affairs and Development Planning	Cape Town
Gerber, Hanlie	Karoo Citizen	Graaff-Reinet
Gerrits, Theo	chase SHELL OIL out of the Karoo!	Oudtshoorn
Geswind, Jan	Gemeente	Loxton
Gibbons, Allistar	Karoo Hoogland Municipality	Sutherland
Gird, Warwick	Ogilvy Earth	Cape Town
Gobodo, Nomfundo	Legal Resources Centre	Johannesburg
Gosling, Melonie	Cape Times	Cape Town
Gous, Lock	Rolo Verfprodukte	
Govender, Terence	Eskom	Cleveland
Graham, Dallis	Aberdeen Heritage Archive and Tourism	Aberdeen
Grant, Michelle	Lammermoor Conservancy	
Grebe, D	Kamnandi Trust	
Grewar, Andy		

Name	Organization	City
Greyling, Anique	Endangered Wildlife Trust	Parkview
Greyling, Loddie	Chicory Producers Association	Alexandra
Greyling, Lorraine	Agri Oos-Kaap	Newtonpark
Greyling, Tisha	Golder Associates	Halfway House
Grobler, D.F.	A Grobler du Toit	Murraysburg
Gweyi, Martha	De Aar Public Library	De Aar
Gxilishe, Bongani	Eastern Cape Provincial Government	Bisho
Haasbroek, Jaco	Goldpot Boerdery	Burgersdorp
Harms, Geneé		Bloubergstrand
Heiberg, Bambie	Dreamworld Investments	
Heine, Johan	Working on Fire	
Hendricks, Denver	Public	Panorma
Herbert, Willem	Uraan Dynamics Western Cape	Strand
Herold, Gielie	Kruidfontein Trust	Beaufort Wes
Hitge, Garth	Karoo Citizen	Graaff-Reinet
Hobson, Alan	Angler and Antelope Guesthouse and Fly-fishing	Somerset-East
Hobson, Annebelle	Angler and Antelope Guesthouse and Fly-fishing	Somerset-East
Hockey, Phil	Percy FitzPatrick Institute of African Ornithology: University of Cape Town	Rondebosch
Hocking, Elaine	Goldern Valley Hotel/new girls drug rehab	Golden Valley
Hocking, Jeremy	Goldern Valley Hotel	Golden Valley
Hodgson, Nicholas		Williston
Hoffman, Tim	UCT	
Hohne, Danita	Department of Water Affairs	
Hollander, Godfrey	Private	
Holness, Stephen	SANParks	Nmmu
Hoogenvorst, Arend	Eagle Environmental	Kloof
Hoogervorst, Arend	Eagle Environmental	Kloof
Hoon, Jasper	Agri Fraserburg	Fraserburg
Hoorn, Sheriff	Ubunto Municipality	Loxton
Hoosan, Bashir	Eastern Cape Provincial Government	Bisho
Hoskins, Kim	Hydrex (Pty) Ltd	
Hounscome, Rob	Golder Associates	Halfway House
Hugo, Daniel Petrus		Graaf-Reinet
Hugo, Rosanne		Beaufort West
Hulme, Bill		
Hunt, Darryl	Dynamic Energy Consultants	Melkbosstrand
Huxham, Hozae	Babcock International Group	Beacon Bay
Ingledew, Norman		
Jabbie, Hope	Khula Enterprise Finance Ltd	Kimberley
Jack, Machollen	Pixley ka Seme District Municipality	De Aar
Jack, Michael	Emthanjeni Local Municipality	De Aar
Jacobs, Alice	Horse Shoe Public Library	Graaff Reinet
Jacobs, Hendrik	Arbeider	Loxton

Name	Organization	City
Jacobs, Linda	Inventive Ways 149 cc	Villiersdorp
Jacobs, Neil	Bester Feed & Grain (Pty) Ltd	Somerset Mall
Jafta, Sabriena	Gemeente	Loxton
Jager, Pieter	Grondeienaar	Middelburg
James, Jan	Verenigde Gereformeerde Kerk	Loxton
Janes, Annaline		Loxton
Janine	Nossel Group	
Jansen van Rensburg, Nic	Private	Colesberg
Jansen, Tania	DST/ NRF Centre of Excellence in Birds as Keys to Biodiversity Conservation at	Rondebosch
Jantjies, Cheryl	Verenigde Gereformeerde Kerk	Loxton
Johnson, Peter		King Williams Town
Jojiyasi, Lulamile	Inxuba Yethemba Municipality	Cradock
Jonas, Mcebisi	Eastern Cape Provincial Government	Bisho
Jongie, M	Department of Environmental Affairs and Development Planning	Cape Town
Jooste, Martin		
Jooste, Raymond	Verenigde Gereformeerde Kerk	Loxton
Jooste, Stephanus	Sentrale Karoo Distriksmunisipaliteit	Beaufort West
Jordaan, Karen	Buffelsfontein Lodge and Nyala Oxwagon Camp	Somerset East
Jordaan, Tollie	Buffelsfontein Lodge and Oxwagon Camp	Somerset East
Joubert, M	Middelburg Public Library	Middleburg
Jubelius, L L	Graan SA	Amazimtoti
Kajee, Alia	Eskom	Nkondeni
Kalam, Phaldie	Shell	Bryanston
Kalimashe, Qanda	Eastern Cape Provincial Government	Bisho
Kam, Suede	Ogilvy Earth	
Kay, Pierre	Bergstan SA	Cape Town
Kellerman Sr, Frans		
Kemp, Graham		Edgemead
Ketchen, Iris	Ikwezi Local Municipality	Jansenville
Kgosi, Dineo	Department of Environmental Affairs and Nature Reserves (Northern Cape)	Kimberley
Khanyile, Stanley	Eastern Cape Provincial Government	Bisho
Khoza, Margaret	Department of Energy	Arcadia
King, Nick	Endangered Wildlife Trust	Parkview
King, Nick	Global Biodiversity Information Facility	Copenhagen
Kingwill, Justin	Sneeuberg Farmers Association	Graaff Reinet
Kingwill, P.E.	Rietpoort Trust	Murraysburg
Kiviet, Noxolo	Eastern Cape Provincial Government	Bisho
Klaas, Thabiso	Makana Local Municipality	Grahamstown
Kleinbooi, Martin		
Klinkhamer, Marischka	Private	
Klopper, Jacobus	Private	
Knecht, TJ	Private	

Name	Organization	City
Koegelenberg, Madelein	Franschhoek Public Library	Stellenbosch
Koela, Cindy	Inxuba Yethemba Local Municipality	Cradock
Kohly, Nicky	ESTATES DIVISION: Rhodes University	Grahamstown
Konstabel, Johncal	New Apostolic Church	Loxton
Koopman, Nicolene	Gemeenskap	Sutherland
Koopman, Venessa	New Apostolic Church	Loxton
Kopeledi, Winston	Khula Enterprise Finance Ltd	Kimberley
Korff, Adele	Media Works- Adult Basic Education and Training	
Kotze, Eslin	Dasfontein	Huguenot
Kreet, J	Department of Environmental Affairs	Cape Town
Kriel, Mandy	Private	Tulbagh
Kritzinger, Wayman	AgriSA (Western Cape)	Somerset-West
Kroon, Geoffrey Brian		
Kruger, Erhard	HGK Raadgewend BK	Menlo Park
Kruger, Willem		Sutherland
Kunneke, Marle	Clean Catchment Concepts	Kuilsrivier
Kweleta, Eric	Victoria West Youth Development Forum	Victoria West
Lackay, Maureen	Alicedale Library	Alicedale
Laidler, Dennis	Department of Environmental Affairs and Development Planning (Western Cape)	Cape Town
Laishley, Kathleen	Cape Town: Central Library	Capetown
Langner, Karl	Boer	Williston
Lategan, D.S		
Le Roux, Annelize	Succulent Karoo Knowledge Centre	
Le Roux, J	Eastern Cape Game Management	Moselville
Learner, Joy		
Lehmberg, Bill	U.S. Consulate – Cape Town	Tokai
Lephoto, Solomon	Private	
Liddel, Murette	Castel Lager East Cape Biltong Festival	Somerset East
Liddelle, Murette	Castle Lager East Cape Biltong Festival	Somerset East
Liebenberg, Sybert	Eastern Cape Parks and Tourism Agency (ECPTA)	East London
Liefferink, Mariette	Federation for a Sustainable Environment (FSE)	Rivonia
Light, Derek	Derek Light Attorneys & Conveyancers	Graaff-Reinet
Linde, Frik	Private	Laingsburg
Lipschitz, David	MyPowerStation	
Lolwana, John	Pixley ka Seme District Municipality	De Aar
Lombard, Neels		
Lotter, Frannie	Karoo Hoogland Munisipaliteit	Williston
Louw, Chris		
Louw, Christelle	Karoo Hoogland Munisipaliteit	Williston
Louw, Elisbet	Verenigde Gereformeerde Kerk	Loxton
Louw, Karel	Kleinboere	Loxton
Lovemore, Annette	Home Affairs: DA Shadow Minister	Cape Town

Name	Organization	City
Lovemore, C P	Milk Producers Organisation	Paterson
Lowson, Rob		
Loxton, Liezl		Murraysburg
Lungisa, Andile	National Youth Development Agency	
Luphondwana, Nomfundo	Eastern Cape Provincial Government	Bisho
Maans, Jacob	Ubunto Municipality	Loxton
Mabunda, Makhegu	Department of Environmental Affairs and Development Planning (Spatial Planning - Region A)	Cape Town
Macanda, Lulama	Department of Economic Affairs, Environment and Tourism	Bisho
Macdonals, Ian		
Machena, Wadzi		
Madyo, Sindisile	Pixley ka Seme District Municipality	De Aar
Magubane, Nelly	Department of Energy	Arcadia
Majiba, Noluthando	Inxuba Yethemba Municipality	Cradock
Majodina, Penny	Eastern Cape Provincial Government	Bisho
Majolobe, Nolizwe	Amathole District Municipality	East London
Makana, Muziwendoda	Nkonkobe Local Municipality	Fort Beaufort
Makhonofane, Masego	Northern Cape Provincial Government	Kimberley
Makhubela, Kingsley	Department of Tourism	Pretoria
Makok, Eddie	Verenigde Gereformeerde Kerk	Loxton
Makok, Karel	Verenigde Gereformeerde Kerk	Loxton
Malan, Antonio	Historical Archaeology Laboratory	Rondebosch
Malindi, Precious		
Maliti,	Colesberg Public Library	Colesberg
Mandondo, Shelton Kaba	Western Cape Provincial Development Council	Cape Town
Maneli, Khanyile	Nkonkobe Local Municipality	Fort Beaufort
Mans, J.	J&D Trust	
Mans, Johan	J & JM Trust	Rustenburg
Marais, Andries	Grondeenaar	Durbanville
Marais, Chantelle	Camdeboo Cottages	Graaff Reinet
Marais, Chris	Main Line Media	Craddock
Marais, D.B.	DB Marais	
Marais, H.S.		
Marais, Johann	Johann Marais & Genote	Stellenbosch
Marais, Julianne	Main Line Media	Craddock
Maree, Dawie	Agri SA	Centurion
Marell, Matt	Beestekuil Holiday Farm	Middleburg
Markman, Kenneth	Emthanjeni Local Municipality	De Aar
Maspero, Wayne	Bergplaas Nature Reserve	Graaff-Reinet
Masualle, Phumla	Eastern Cape Provincial Government	Bisho
Mathews, Andries	Verenigde Gereformeerde Kerk	Loxton
Mathews, Sharlene	Agri Oos-Kaap	Newtonpark

Name	Organization	City
Matiwane, Lizo	Nkonkobe Local Municipality	Fort Beaufort
Matthews, Sharlene	AgriSA (Eastern Cape)	Port Elizabeth
May, Helen	Pamper Touring Enterprises cc	
Mbanjwa, Sibonelo	Department of Environmental Affairs and Nature Reserves (Northern Cape)	Kimberley
Mbonambi, Mfano		
Mboya, Buyelwa	Private	Luzuko Park
Mbulawa, Vuyo	Camdeboo National Park	Graaf-Rienet
McAdam, Mark	Private	Colesberg
McBride, Robert	Private	
McEwan, Karen		
McHardy, Neil	Engen Petroleum Limited	Cape Town
McHardy, Neil	PVT	Cape Town
Mcloen, Koba	Plakkers - Kamp	Loxton
Mdlalo, Luthando	Amatole District Municipality	East London
Mdluli, Sibongile	Terra Power Solutions	Bryanston
Meintjies, John	Loxton Boere Vereniging	Loxton
Meintjies, Bob	Loxton Boere Vereniging	Loxton
Meintjies, Curtis	Eskom	Johannesburg
Mene, Moppo	Blue Crane Route Local Municipality	Summerset East
Mentzel, Christine	Endangered Wildlife Trust	Parkview
Menzies, Peter	SAAO Salt Seekers of Truth	Sutherland
Merryweather, Frank	Cintsa East	
Meswatu, Julie	South African Astronomical Observatory	Sutherland
Mev E van Heerden,	van Heerden Johannes Lodewikus	
Mev W Grobler,	Grobler Winifred Marguerite	
Meyer, Carola	SAFCEI (Southern African Faith Communities' Environment Institute)	Kalk Bay
Mfenyana, Bubele	Eastern Cape Provincial Government	Bisho
Middleton, Elaine (Tiny)	Private	Beaufort West
Miggels, Suzette	Blue Crane Route Tourism	Somerset-East
Miggels, Suzette	Blue Crane Route Local Municipality	Somerset-East
Mitchell, Ashley	Beaufort West Municipality	Beaufort West
Mitton, Danny	Private	Loxton
Mlokoti, Vuyo	Amatole District Municipality	East London
Mnisi, Nomth	Golder Associates	Halfway House
Mnisi, Nomthi	Golder Associates	Halfway House
Modise, Daniel	Department of Energy	
Mohamed, Ajub	DEA&DP: Region A	
Mohamed, Ayub	Department of Environmental Affairs and Development Planning	Cape Town
Mohudi, Jacob	SANPARKS	Pretoria
Mokoto, Mpho	Main Library	Kimberley
Money, Kevin	Positive Psychology Forum	
Monsingen, Jan		Loxton

Name	Organization	City
Monsinger, Bejonever	Nuwe Apostel Kerk	Loxton
Moodley, Karen	Grahamstown Community Library	Grahamstown
Moore, Vic		Sutherland
Morafo, Nompilo	Private	
Moraile, Dineo	Department of Energy	Arcadia
Morgan, Gareth	Member of Parliament (Portfolio Committee of Water and Environmental Affairs)	Cape Town
Morgan, Gareth	Transnet Capital Projects	Mayville
Morkel, Debbi	Fraserburg Resident	Fraserburg
Morris, Sarchen		Constantia
Morrison, Kerryyn	Endangered Wildlife Trust	Parkview
Moseley, Steve	Private Journalist	Loxton
Mosomane, Maphela		
Mothobi, Sithole		
Mtsweni, Nosiphiwo	Earthlife Africa	Cape Town
Mtubu, Mzamo	Pixley ka Seme Library - Biesiespoort	Petrusville
Muller, David	Farmer	Sutherland
Muller, Ian	Ian Muller Farm Trust	Wellington
Müller, Ian	Boer	Wellington
Muller, Mike		
Mungroo, Sanjith	GDF SUEZ Energy Southern Africa	Rivonia
Munz, Karin	Daily Sun	
Muthwa, Sibongile	Eastern Cape Provincial Government	Bisho
Mvona, Nonkosi	Eastern Cape Provincial Government	Bisho
Myburg, Werner	Peace Parks Foundation	Stellenbosch
Naude, Francios	DEA George	
Naude, Francois	Departement Omgewingsake & Ontwikkelingsbeplanning	George
Naysons, Beverley	Blue Crane Route Municipality	Sommerset East
Ndlhovu, Patience	Pixley ka Seme Local Municipality - Noupoot	Petrusville
Nel, Leticia	Barrington-Mndi Public Library (Ezibeleni)	Queenstown
Nel, Letitia	Queenstown Public Library	Queenstown
Nel, Vicky	EWT	Loxton
Nell, Piet	ISCW	Newlands
Nelson, Peter	Petro SA	
Nengwekhulu, Harry	Eastern Cape Provincial Government	Bisho
Newborn, Ryan		Stellenbosch
Newmarch, Phillip	Private	Cape Town
Ngabase, Pamela	Amatole District Municipality	
Ngwane, Lee-Ann	National Youth Development Agency (NYDA-East London)	East London
Nicol, Ellen	Legal Resource Centre	Prince Albert
Niemand, Andries	Kamedeboo Municipality	Graaf Reinette
Nieuwenhyzen, Gladwin	Thembelihle Local Municipality	Hopetown
Nkanunu, Zodwa	Camdeboo National Park	Graaff-Reinet

Name	Organization	City
Noncembu, Brian	Department of Environmental Affairs (Eastern Cape)	East London
Nondwangu, Xolani	Amathole District Municipality	East London
Nongwana, Thozama	Grahamstown Public Library	Grahamstown
Nontshongwana, Thandi	Fingo Village Library	Grahamstown
Nothnagel, Lious	Karoo Hoogland Local Municipality	Williston
Notnagel, Louis	Karoo Hoogland Munisipaliteit	Williston
November, David	Sutherland Community	Sutherland
Nsubuga - Mukasa, Charlotte	MTN Group Marketing	
Ntomba, Elias	Nelson Mandela Bay Municipality	Port Elizabeth
Ntombela, Linda	Shell	Bryanston
Ntsangani, Anele	Nkonkobe Local Municipality	Fort Beaufort
Ntshangani, Nontunthuzelo	Municipal Civic Centre	King Williamstown
Ntshudu, Andile	Blue Crane Route Local Municipality	Summerset East
Ntsila, Milton		Port Elizabeth
Ntuthu, Brenda	Cacadu District Municipality	Port Elizabeth
Nwendamutswu, Nthangeni	PASA	
Nyondo, Amon	Eastern Cape Provincial Government	Bisho
Nzwane, Vincent	Venterstad Public Library	Vensterstad
Oberholzer, Lizel	Bauman Gilfillon Prokureurs	Cape Town
Obermeyer, Hester	Sutherland Landbou Unie	
Obermeyer, Willem	Merino and Hebron	Sutherland
Oelofse, Jaco	SA Mohair Growers Association	Klipplaat
Olifant, Rocco	Community Development - Worker	Loxton
Oliphant, Christine	Gemeente	Loxton
Oliphant, L	Thembelihle Local Municipality	Hopetown
Oliphant, Steven	Verenigde Gereformeerde Kerk	Loxton
Oliphant, Willem	Christen Vrede Makers	Loxton
Olivier, Theo	Swaelfontein Boerevereniging	
Oosthuizen, W	Small Enterprise Development Agency (SEDA-Eastern Cape)	Tecoma
Opperman, Carl	AgriSA (Western Cape)	Somerset-West
Opperman, Nic	Agri SA	Centurion
Opperman, Vincent	Karoo Hoogland Munisipaliteit	Williston
Overstrand Conservation Foundation		Hermanus
Owen, Philip	GeaSphere	Nelspruit
Paris, Tyrone	Cape Town Civic Centre	Capetown
Parks, Ivan	National Association of Conservancy of SA (Gauteng Conservancy Association)	Walkerville
Patel, Ahmed		Fordsburg
Patel, Ben	SALGA	Pretoria
Pauw, Johan	Private	

Name	Organization	City
Peddie, Nigel	Fraserburg Landbouvereniging	Fraserburg
Perrin, Ian	www.fractual.co.za	Knysna
Peters, Elizabeth	Department of Energy	Arcadia
Phumeza, Kalashe	Duna Library	Grahamstown
Phumzile,	Eastern Cape Provincial Government	Bisho
Pienaar, J.A.		Murraysburg
Pieterse, Barend	Verenigde Gereformeerde Kerk	
Pietersen,	Agri Oos-Kaap	Newtonpark
Pietersen, Toni	Golder	
Pieterse, Toni	Golder Associates	Halfway House
Pillay, Ted	Cacadu District Municipality	Port Elizabeth
Plaatjies, Bertram	ANC	Murraysburg
Plaatjies, Sharon	Pixley ka Seme District Municipality	De Aar
Playdon, R.W	Avon Heights Guest Farm	Somerset East
Playdon, Reginold	Avon Heights Guest Farm	Somerset East
Player, Gary		Colesberg
Pretorius, Koos	Federation for a Sustainable Environment and Escarpment Environmental Protection	Belfast
Prince, Hendrik	Sentrale Karoo Distriksmunisipaliteit	Beaufort West
Proctor-Sims, Mike	SABC TV News	
Prytz, Dion	PetroSA	Parow
Puzi, Nolundi	CapeNature Conservation	Gatesville
Quintin	Wynland Water Users Association (WUA)	Stellenbosch
Qwase, Mahlubondile	Eastern Cape Provincial Government	Bisho
Raaff, Annette	Hartebeestfontein Conservancy	
Rabaney, Zaitoon	Botanical Society of South Africa	Claremont
Rademeyer, C E	VLV/ AEO	Sunridge Park
Rafferty, Peter	Future Soft	
Raine, Peter		
Ramsden, Howard	Terra Power Solutions	Bryanston
Ramuhulu, Nditshemi	Department of Environmental Affairs and Nature Reserves (Northern Cape)	Kimberley
Ranoszek, Merek	General Manager - Pioneer Natural Resources SA	
Ras, Andre	Transnet	Point
Retief, D.C.		
Retief, Ernst	Birdlife South Africa	Randburg
Retief, J.L.		Murraysburg
Retief, Louw	Private	Murraysburg
Retief, Neil	Murraysburg DLU	Graaff Reinet
Retief, P.	Retief Familie Trust	Murraysburg
Reyneke, Hendrik	Mainstream Renewable Power South Africa	Claremont
Reynolds, L.P.G.	Grootdriefontein Boerdery Trust	Murraysburg
Rich, Guy	Eastern Cape Provincial Government	Bisho
Riegert, Drieka		
Riegert, Katrina	Ubunto Municipality	

Name	Organization	City
Riegert, Lena	Christen Gemeente	Loxton
Riverine Rabbit Programme Endangered Wildlife Trust		Loxton
Robbertze, Deon		
Robert, Matongo		Constantia
Robson, Marisa	Private	
Rodgers, Megan	Bowman Crillfillan Attorneys	Cape Town
Roets, Wietsche	DEA&DP Western Cape	
ROHWER, Michael	AREVA RESOURCES SOUTHERN AFRICA	Rivonia
Roman, Emma	Capemedia	
Rosi, Bless	Nxuba Municipality	Adelaide
Rossouw, Daniel Johannes		
Rossouw, Daniel Johannes		
Rossouw, W.	Rossouw Wynand Frederik	Murraysburg
Rossouw, Wynand Frederik		
Roux, Andre	Departement van Landbou: Wes-Kaap	Elsenburg
Ruddock, Grevile	Personal and Natural Resource Management cc	Die Boord
Ryan, Shealagh	Private Farmer	Mowbray
Schade, Bert	Kriegershoek Naure Reserve	Aberdeen
Scheepers, Sandra	Langenhoven Public Library	Somerset East
Scheffers, Andrew	Loxton Gemeenskap	Loxton
Schimmel, Karen		
Schoevers, A.G.T	Boer	Victoria West
Schoonbee, E. A	Rietfontein Boerdery Trust	Somerset-Oos
Schoonraad, Johan	Technical Director (Treatment and Disposal Solutions: EnviroServ)	
Schut, Gert	Self	Durbanville
Schut, Julian	Canvas Concepts	Durbanville
Scott, Nontutuselo	Blue Crane Route Local Municipality	Summerset East
Scott, Susan		Graaf-Reinet
Seboko, P.M	Northern Cape Provincial Government	Kimberley
Sheard, Howard	Weltevreden Farm	Graaff Reinet
Shearing, David	Simon van der Stel Foundation (Southern Cape Branch)	Mossel Bay
Shepherd	Dutch Reform Church	Sutherland
Sieberhagen, Antionette	Fraserburg Public Library	Fraserburg
Sieberhagen, Antoinette	Fraserburg Public Library	Fraserburg
Sieraha, George	Greater Cape Town Civic Alliance	Grassy Park
Sikhanyiso wana, Xholani	Eskom Holdings Southern Region	
Sinclair, Graham	SinCo	
Sinclair, Kennett	Parliament NCP Division	

Name	Organization	City
Sithole, Jabu	National Association for Clear Air	Meadowlands
Siweza, Howard	Cacadu District Municipality	Port Elizabeth
Siyabonga,	Cacadu Town Planner	Port Elizabeth
Slabbert, Derick	DIE PONDOKKIE GASTEHUIS	Hofmeyr
Slabbert, Teresa	Agri Oos-Kaap	Newtonpark
Slambee, Burnette	Kareeberg Municipality	Carnarvon
Smallie, John	Endangered Wildlife Trust	Parkview
Smart, Mike	DWA - Western Cape (Groundwater)	
Smit, Michiel	Peace Parks	Techno
Smit, Rynard	Hantam Landbouvereniging	Calvinia
Smith, Wentzel	Sutherland Community	Sutherland
Smith-Symms, Stephen	Private	Loxton
Snyders, Donovan	Murraysburg Public Library	Murraysburg
Sogoni, Mbulelo	Eastern Cape Provincial Government	Bisho
Solomon, Nomvula	Amathole District Municipality	East London
Somyo, Sakhumzi	Amathole District Municipality	East London
Southey, James	Fair Acres Boerdery	Worecster
Southwood, Alan	Environmental Scientist Department of Economic Development and Environmental Affairs	Greenacres
Stauth, Roy B.	Granaat Committee	
Steemkamp, Gert		
Steenkamp, Hennie and Floris		Sutherland
Steenkamp, P J	Shell Ultra City Three Sisters	Beaufort West
Stern, Maryke		Graaf-Reinet
Steyn, Gys	G.M. Steyn Trust	Stellenbosch
Strauss, Conrad	South African National Parks Tankwa NP	Calvinia
Strubbel, Willie	Karoo veld management	
Strümpfer, Francois	SAAO SALT Seekers of Truth	Sutherland
Struys, Sammy	Gemeenskap	Sutherland
Strydom, John	Orania Beweging	Orania
Sunter, Clem	Independent Scenario Planning Consultant	
Swart, Marna	KookGIS Omgewings- en GIS-kundige	Orania
Symington, Loraine	Sirkel Suid Karoo Vroue Landbou Unie President	Sutherland
Symington, Nelis	Boer	Sutherland
Tacon, Carrie		Cape Town
Taljaard, F	Municipal Civic Centre	De Aar
Taljaard, Francias	Emthanjeni Local Municipality	De Aar
Tanaka, Nobuo	International Energy Agency (IEA)	
Tantsi, Mzwandile	Inxuba Yethemba Municipality	Cradock
Tawse, P.	Jos Joubert cc	Murraysburg
Taylor, Tristan	Earthlife Africa Jhb	
Taylor, Tristen	Earthlife Africa Jhb	

Name	Organization	City
Terry, Beverley	National Association for Clean Air	Halfway House
Theron, Stefan	Dept. of Agriculture	
Theron, G.	Lombardskraal Ondernemings cc	Beaufort West
Theron, Huibrey	Suid Roggeveld Landbou Vereniging	Middelpos
Theron, J.P.	Loskop Boerdery Trust	Murraysburg
Theron, J.P.	RJE Theron	Murraysburg
Theron, Johan	Loskop Boerdery Trust	Murraysburg
Theron, Johannes Frederik		Murraysburg
Theron, R.J.E.		
Theron, Stewie	Agri Fraserburg	Fraserburg
Theunis, Margaret	Radio Sonder Grense (RSG)	Port Elizabeth
Thomas, Kevin	Private	Harfield Village
Thompson, Theresa	Emthanjeni Local Municipality	De Aar
Thompson, Viv	National Association for Clean Air	Klip River
Thousand, Sanie	Victoria West Public Library	Victoria West
Thovhakale, Michael	Petroleum Agency SA	
Tieties, Dimitré	New Apostolic Church	Loxton
Tilsley, Craig	Data Source	Somerset West
Tilsley, Craig	Private	Somerset West
Tiplady, Adrian	SKA South Africa	
Tom, Xoliswa	Eastern Cape Provincial Government	Bisho
Tomlison, Dalene	Tourist Guide (Birding)	Swellendam
Tracey, Geoffrey		
Tresdder, Derek	Hogsback Information Centre	Hogsback
Tripp, Mel		
Turner, Ros	Blue Crane Route Tourism	Somerset-East
Valitu, Ricard	Transnet Rail Engineering (TRE)	Lynn East
van Biljon, Louw	Private	Clarens
Van de Spuy, C	RPO	Alliwal Noord
van den Heever, Johann Willem	Farmer	Richmond
van den Heever, Melt	Loxton Boere Vereniging	Loxton
van der Ahee, F.M.		
van der Merwe, Cecilia	SKA South Africa	Rosebank
van der Merwe, Elsje	Main Library	Kimberley
van der Merwe, F J	Calvinia-Karoo Landbouvereniging	Calvinia
van der Merwe, Fanus	Private Boer	Murraysburg
van der Merwe, Hendrik Petrus		Beaufort West
van der Merwe, I	Kunna Familie Trust	
van der Merwe, I.J.	Badsfontein Trust	Murraysburg
van der Merwe, J.H.		
van der Merwe, Jacobus	Boer	Sutherland
van der Merwe, Schalk	Tweerivier	Sutherland
van der Merwe, Willem	Agri - Noord Kaap	Sutherland

Name	Organization	City
van der Rensburg, Jan	AgriSA (Northern Cape)	Kimberley
Van der Ryst, Riaan	Agri Oos-Kaap	Newtonpark
van der Spuy, Andre	AVDS ENVIRONMENTAL CONSULTANTS	Cape Town
van der Walt, George	Geo-Consult International (Pty) Ltd	Randpark Ridge
van der Walt, Kobus	NWU	Potchefstroom
van der Westhuizen, Jonan	Loxton Boere Vereniging	Loxton
van Greuning, Annie	GDF SUEZ Energy Southern Africa	
van Heerden, J.	Toverwater Boerdery cc	
van Heerden, J.	van Heerden Johannes Lodewicus	
van Heerden, J.C.R.		Graaff-Reinet
van Heerden, K.	De Hoop Trust	Murraysburg
van Heerden, Louis		
van Heerden, Louis B.	Ceres Karoo Farm Trust	
van Heerden, M.P.	MP van Heerden	Murraysburg
van Heerden, M.P.		
van Heerden, Z		
van Hoogstraten, Mark	Melissa's	Stellenbosch
van Lippe, Irene	Bergplaas Nature Reserve	Graaff-Reinet
van Niekerk, Alta	Beaufort West Public Library	Beaufort West
van Niekerk, Cornelis	Ratelfontein Calvinia	Calvinia
van Niekerk, Wikus	Centre for Renewable and Sustainable Energy Studies (CRSES)	Matieland
Van Niekerk, Wikus	Stellenbosch University	Matieland
van Rensburg, Corine	Agri Noord-Kaap	Kimberley
van Rensburg, Daan	Privaat	Greenhills
Van Rensburg, Johan	AgriSA (Northern Cape)	Kimberley
van Rooyen, Chris	Endangered Wildlife Trust	Parkview
van Rooyen, Marcelene	Calvinia Landbou-Unie	Calvinia
van Scalkwyk, S.J	Karoo Hoogland Munisipaliteit	Williston
van Schalkwyk, Christian	Privaat	Paarl
van Schalkwyk, Ian	Private	Tyger Valley
van Staden, Jan	Breede Overberg Catchment Management Agency (BOCMA)	Worster
Van Tubbergh, Marc	Private	Howard Place
van Tubburgh, Marc	The Wyabird Studio	
van Wyk, ABRA		Sutherland
van Wyk, Bet	Verenigde Gereformeerde Kerk	Loxton
Van Wyk, Christo	CoGHSTA Department Co-operative Governance Human Settlements and Traditional Affairs	Sutherland
van Wyk, Conrad & Mariet	Quaggasfontein	Beaufort Wes
van Wyk, Conrad	Agri Fraserburg Privaat/Eienaar	Fraserburg
van Wyk, Eddy	Department of Water Affairs	
van Wyk, Elsabe		Middelpos

Name	Organization	City
van Wyk, Frans	Suid - Roggeveld Landbou Unie	Middelpos
van Wyk, Frede	Synergistics Environmental Services	River Crescent
van Wyk, Jackie	S A Police	Sutherland
Van Wyk, Jan	Agri Fraserburg	Fraserburg
van Wyk, Johannes	Boer	Loxton
van Wyk, Marie		Middelpos
van Wyk, Nickey		Middelpos
van Wyk, Nicolaas		Middelpos
Van Wyk, Pieter	Agri Fraserburg	Fraserburg
Van Wyk, Zalu	SAPD	Sutherland
van Zijl, Jan	CSIR (Retired)	Onrusrivier
Van Zyl, B	NWGA	Cradock
Van Zyl, Eldri	Boer	Sutherland
van Zyl, Gerrit	Sentrale Karoo Distriksmunisipaliteit	Beaufort West
Vanrooy, Ebrahim	Verenigde Gereformeerde Kerk	Loxton
Venter, Elaine		
Venter, Garth	Garth's Plumbing	Edgemead
Vermaak, Nasie		Hofmeyr
Vermaas, Peter	NRC Handelsblad	Broadway
Victor, Sarie	Springbok Public Library	Springbok
Viljoen, Zureta	Blue Crane Route Local Municipality - Brintjieshoogte	Somerset East
Visagie, C G	Celeryfontein Landbouvereniging	Fraserburg
Visagie, Dirk	Vis-Rhenoster Landbouvereniging	Calvinia
Visagie, Schalk	Giosma	Loevenstein
Visagie, Thomas	Boer	Calvinia
Visagie, Willem	Calvinia Sakekamer	Calvinia
Visser, Adie	Silvercross Helicopter Charters	Waterfront
Visser, Gerrit	Fraserburg	
Visser, Isak	Emthanjeni Local Municipality	De Aar
Visser, Johan	Visser Boerdery	Sutherland
Visser, Mareli		Stellenbosch
Vivier, G	GJ Vivier Boerdery Trust	
Vlok, Abraham	Boer	Sutherland
Vlok, Anie		Sutherland
Vlok, Braam	Vlok Familie Trust	Sutherland
Wallace, Bruce	SKA South Africa	
Wallis, Alistair	Springfontein Trust	
Wallis, Mandy	Kamala Game Reserve	Newton Park
Wallis, Mandy	Kamala Game Reserve	Port Elizabeth
Walton, Benjamin	Cape Nature - Scientific Services	George
Wana, Xholani Sikhanyiso	ESKOM Holdings: Southern Region	
Webb, Denver	Eastern Cape Provincial Government	Bisho
Webb, Glynnis	SANBI Cape Town Office	Claremont