NORTHERN CAPE PROVINCE
DEPARTMENT OF ENVIRONMENT & NATURE CONSERVATION

Porofensi Ya Kapa Bokone
LEFAPHA LA TIKOLOGO LE TSHOMARELO YA TLHAGO

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), and the Environmental Impact Assessment Regulations, 2010

FINAL BASIC ASSESSMENT REPORT

Reference: NC/BA/05/NAM/NAM/SPR1/2013 (NCP/EIA/0000205/2013)

Proposed development of a business premises on Erf 2883, Springbok

COMPILED BY: ELANIE KÜHN
PIETER BADENHORST PROFESSIONAL SERVICES
DATE: APRIL 2014

NORTHERN CAPE PROVINCE
DEPARTMENT OF ENVIRONMENT & NATURE CONSERVATION

Porofensi Ya Kapa Bokone
LEFAPHA LA TIKOLOGO LE TSHOMARELO YA TLHAGO

BASIC ASSESSMENT REPORT

Project applicant:	**Harry Viljoen Properties**		
Business reg. no./ID. no.:	**2012/006442/07**		
Contact person:	**Danie Viljoen**		
Postal address:	**P. O. Box 4715, Tyger Valley, 7536**		
Telephone:	**021 914 5881**	Cell:	
E-mail:	**danie@hvprop.co.za**	Fax:	**021 914 4763**

Prepared by:

Environmental Assessment Practitioner/Firm:	**Pieter Badenhorst Professional Services**		
Business reg. no./ID. no.:	**97/33840/23**		
Contact person:	**Elanie Kuhn**		
Postal address:	**P. O. Box 1058, Wellington, 7654**		
Telephone:	**021 873 7228**	Cell:	**076 584 0822**
E-mail:	**elaniem@iafrica.com**	Fax:	**086 672 1916**

(For official use only)

File Reference Number:	
Application Number:	
Date Received:	

Contents

BASIC ASSESSMENT REPORT

Basic Assessment Report in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2010.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.

2. The report must be typed within the spaces provided in the form. The size of the spaces provided are not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.

3. Where applicable **tick** the boxes that are applicable or **black out** the boxes that are not applicable in the report.

4. An incomplete report may be returned to the applicant for revision.

5. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.

6. This report must be handed in at offices of the relevant competent authority as determined by each authority.

7. No faxed or e-mailed reports will be accepted.

8. The report must be compiled by an independent environmental assessment practitioner.

9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.

10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?
If YES, please complete form XX for each specialist thus appointed:
Any specialist reports must be contained in Appendix D.

YES	NO

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail:

Background:
The proposed property is owned by the Municipality with existing rights to develop a business/retail related development on the property. The Municipality put out tenders for a proposed development and the tender was awarded to Harry Viljoen Properties.

Locality:
The proposed site is located within the town of Springbok in the Northern Cape. The site is located along the N7 from Cape Town towards Namibia on the right hand side. This site is bordered by the N14 and R355. See Locality in Figure 1 below.

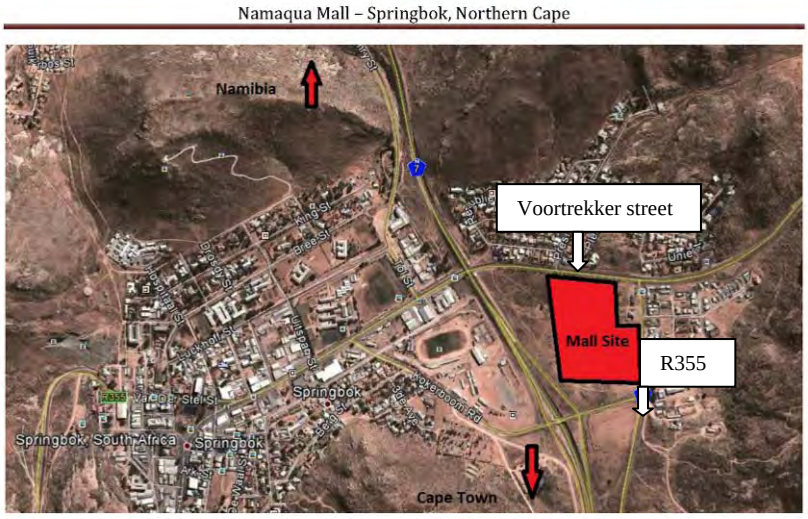


Figure 1: Locality

Activities applied for:
Listing Notice 1, Activity 23 – as per 1 proposed construction of the Namakwa Mall (business/retail shops).
Listing Notice 3, Activity 12 and 13 – As per the Baseline Botanical report in 4 it is at this stage still unknown if these activities are triggered. This will be determined in the Final Basic Assessment Report.

1. Proposed development proposal (preferred layout alternative 3 included in Appendix B2:
Erf 2883, Springbok is 76 722m² in extent and the proposed development footprint is 65 002m² in size. A small access will be constructed over Erf 931, Springbok. Erf 931 is approximately 42 000m² in extent.
The proposed site a business premises with retail related development proposed on site consisting of:

- **41 shops, ranging in sizes between 36m² - 4014m², single storey building with a maximum height of 21m, Building area will be 27730m² in extent.**
- **1185 parking bays, covering an area of 37272m²,**
- **With roads infrastructure and accesses.**

2. Services infrastructure (As per the services report included in Appendix D2, find attached in Appendix A4 the services infrastructure:
Water
The demand for portable water for the proposed development is estimated at 93.5 kl/day with a peak demand of 4.37 l/s. Water to the development can be supplied from the existing 160mm dia. water mains in Voortrekker Street. A 110mm dia. connection will be adequate to provide for the domestic needs.
The existing reservoir storage capacity is inadequate to accommodate the new shopping centre development and a 187kl on-site storage facility will have to be provided by the developer to provide 48 hour storage capacity.
Sewer
The average daily sewer run-off from the proposed development is estimated at 74.8 kl/day, with a peak flow

of 3.5 l/s. The internal sewer network will connect to the existing sewer running along Voortrekker Street to the north of the site.
Storm water:
The site drains towards the existing culverts underneath the N7 National Road in the northwestern corner of the Erf. Due to the topography of the terrain, the site is receiving storm water from higher laying properties adjacent to the eastern boundary of the site.
This storm water running through the northern part of the site will be formalized and diverted along the northern boundary of the site into the existing culvert underneath the N7 National Road.
Solid waste:
Approximately 2.5m³ of solid waste per day will be collected by the Nama-Khoi Municipality on a weekly basis and taken to the Bergsig Waste disposal site.

3. Traffic (As per Appendix D3):
The following conclusion and recommendation as made by the Traffic Impact Assessment:
"Access is proposed via two accesses, i.e. main access off Voortrekker Street at the President Street intersection with a secondary access off the link road (R355) between Voortrekker Street and Kokerboom Road spaced approximately 120 metres to the north of the Kokerboom Road intersection. Dedicated eastbound and westbound right-turn lanes are recommended along Voortrekker Street at the main access intersection.
The Namakwa Mall development is expected to generate approximately 1 030 vehicular trips (515 in/ 515 out) during the typical Friday p.m. peak hour and approximately 1 183 vehicular trips (556 in/ 627 out) during the typical Saturday peak hour.
All the study intersections will operate at acceptable levels-of-service during both the Friday p.m. and Saturday peak hours and the surrounding road network has sufficient spare capacity to accommodate the additional trips associated with the proposed Namakwa Mall.
Sidewalks should be provided along the site frontages with Voortrekker Street and the link road (R355) between Voortrekker Street and the Kokerboom Road intersection. Well-defined walkways should also be provided on site.
Minibus taxi lay-bys should be provided along both sides of Voortrekker Street downstream of the main access intersection."

4. Botanical (Appendix D1.2: Final Botanical Assessment):
The following is a summary according to the Final Assessment conducted:
"The Springbok site is highly disturbed with many footpaths, soil heaps, rubbish and soil erosion evident. Site investigations in autumn (April 2013) and spring (end August 2013) provided a good indication of the species present on site. A combined preliminary species list of 143 species was compiled following the autumn and spring site surveys. None of the species on the preliminary species list are listed as Red Data species however, numerous species are Specially Protected or Protected according to the Northern Cape Nature Conservation Act. Additionally, the family Euphorbiaceae is listed on CITES Appendix II. See Figure 2.

Figure 2: showing disturbance on site

Two geophytic species, Brunsvigia bosmaniae (Maartblom) and Haemanthus crispus (poeierkwas), were found on the site. Since the developer has expressed an interest in using geophytic species for landscaping purposes, these two showy species could possibly be used. Additional showy geophytic species encountered during the August spring surveys that could also potentially be used for landscaping purposes include Babiana curviscapa (bobbejaantjie) and Laperousia silenoides (meidestert). Succulents such as

Drosanthemum hispidum (fyn t'nouroebos), Cheiridopsis denticulata (t'noutsiama) and C. namaquesis could also be used for landscaping purposes and are present on the proposed development site. All these geophytic and succulent species are listed as Protected by the Northern Cape Nature Conservation Act.

Additionally, the spring surveys encountered numerous annual species, which also provide for a colourful display on the site. Some of the annuals present in high numbers were Dimorphotheca sinuata (Namaqualand daisy), Norlindhia amplectens (dassiegousblom), Monoculus hyoseroides (dassiegousblom) and Senecio cardaminifolius (hongerblom). These species could also potentially be used for landscaping purposes depending on the design of the proposed mall development. Large numbers of annual grasses were also encountered on the site probably as a result of the additional moist habitats resulting from the runoff from the N14 tarred road.

Disturbance over the years has lead to various alien species establishing on the site such as Atriplex lindleyi, Erodium moschatum, Pennisetum sectaceum, Prosopis glandulosa and Salsola kali. Prosopis glandulosa is listed as a Category 2 Invader species and has to be controlled according to CARA legislation. The indigenous pioneer species Galenia africana, also an indicator of disturbance, is common in places.

The two surveys, at different times of the year, gave a good indication of the species present on site. Once the developer and Environmental Practitioner have been provided with this report the necessary permits will have to be obtained from Department of Environment and Nature Conservation provided Environmental Authorisation is obtained. These permits should include the destruction and disturbance of Specially Protected, Protected and Indigenous flora present on the site. Based on the April and August 2013 site investigations and habitat found on the site, permits will be required for the Specially Protected and Protected families Aizoaceae/Mesembryanthemaceae, Amaryllidaceae, Anthericaceae, Apiaceae, Apocynaceae, Asphodelaceae, Crassulaceae, Iridaceae, and Orchidiaceae and the genera Cyanella, Diascia, Erica, Euphorbia, Jamesbrittenia, Lachenalia, Lessertia, Manulea, Nemesia, Ornithogalum, Oxalis, Phyllopodium, Sutherlandia and Pelargonium since these families and genera do occur or could potentially occur on site. Additionally, a permit for the removal/destruction of indigenous flora on site will also have to be applied for."

5. Visual (Appendix D5: Visual Statement):

The following summary as per the visual statement:

"The proposed site of development is on a gently sloping hillside with a northern aspect and is bound by residential development to the north and north east and workshops in the south east. To the south is an open erf and a road (R355) and to the west and open erf and the N7.

The Viewshed is the surrounding Koperberge, between 1 and 2,5kms from the site and the Zone of Visual Influence is limited to the upper slopes of the surrounding Koperberge including some residential areas and the immediately adjacent areas in the north east and east.

Receptors include adjacent residents and users of the N7, N14, R355 and Voortrekker Street.

The anticipated visual impacts include the change in character of the site from an unbuilt plot in the town to a built area and change of views from 2kms of the N7 as it passes through Springbok. See Figure 3

Figure 3: Views from the N7

The significance of these impacts is medium, i.e. there will be a moderate alteration of the environment which can be reduced by implementing the appropriate mitigation measures."

Heritage:

The NID outlined that there is no impact on Heritage resources as a result of the development.

2. FEASIBLE AND REASONABLE ALTERNATIVES

"alternatives", in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

(a) the property on which or location where it is proposed to undertake the activity;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

Describe alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Paragraphs 3 – 13 below should be completed for each alternative.

Alternatives:
Four alternatives were considered for the proposed development. Two of the alternatives are property alternatives, the third alternative is a design/layout alternatives and the fourth is the No-Go Alternative.

Alternative 1:
Design/Layout Alternative

This alternative will consist of the proposed development of high density residential units.

This alternative is not deemed preferred for the following reasons:

- **It would result in a rezoning application, when clearly this site was already appointed the status for a business/retail premises.**
- **The Municipality owns this site. Tenders were requested for the development of this site for business and retail purposes.**
- **The site's location in relation to the town lends for the development of a mall.**
- **From a Socio-Economic perspective this site will be profitable as a mall, and a residential development in this area is not a viable option financially.**

Therefore, this alternative was not considered further as it was not a reasonable or feasible option.

Alternative 2 (Appendix A2.2):
Design/Layout alternative and Property alternative

This alternative is for construction of the following:
Erf 2883, Springbok is 76 722m² in extent and the proposed development footprint is 65 002m² in size.
The proposed site is a business premises with retail related development proposed on site consisting of:

- **41 shops, ranging in sizes between 36m² - 4014m², single storey building with a maximum height of 21m, Building area will be 27730m² in extent.**
- **1185 parking bays, covering an area of 37272m²,**
- **With roads infrastructure and accesses.**

This alternative is in essence the same as that of Alternative 3, except for the positioning of the accesses, see Figure 4 below.

Figure 4: Alternative 2

This alternative is deemed:

- **Preferred from a Socio-Economic perspective, as it will result in the most profitable option for the local economy and the developer.**
- **Also from a Socio-Economic perspective it would result in a considerable amount of new job opportunities, with the opportunity for new skills development for the local community.**
- **This type of development is preferred from the Municipality's perspective.**
- **No new planning approvals are necessary as the site will be used for it's current zoning scheme, which is business/retail related.**
- **This alternative is, however, in total not preferred from Traffic and Transport perspective, as the positioning of the access is too close to the existing access from the Voortrekker street into R355.**

It is therefore clear that this alternative is not deemed preferred.

<u>Alternative 3 (Appendix A2.3 – Preferred alternative):</u>
Design/Layout alternative and Property alternative

This alternative is for construction of the following:
Erf 2883, Springbok is 76 722m² in extent and the proposed development footprint is 65 002m² in size. A small access will be constructed over Erf 931, Springbok. Erf 931 is approximately 42 000m² in extent.
The proposed site a business premises with retail related development proposed on site consisting of:

- **41 shops, ranging in sizes between 36m² - 4014m², single storey building with a maximum height of 21m, Building area will be 27730m² in extent.**
- **1185 parking bays, covering an area of 37272m²,**
- **With roads infrastructure and accesses.**

This alternative is in essence the same as that of Alternative 2, except for the positioning of the accesses, see Figure 5 below.

Figure 5: Alternative 3

This alternative is deemed:

- **Preferred from a Socio-Economic perspective, as it will result in the most profitable option for the local economy and the developer.**
- **Also from a Socio-Economic perspective would result in a considerable amount of new job opportunities, with the opportunity for new skills development for the local community.**
- **This type of development is preferred from the Municipality's perspective.**
- **No new planning approvals necessary as the site will be used for its current zoning scheme, which is business/retail related.**
- **This alternative is, however, preferred from Traffic and Transport perspective, as the positioning of the access is moved further from the existing access off Voortrekker street into the R355.**
- **From a visual perspective this alternative is considered to have a medium negative impact, this can however be reduced by implementing the appropriate mitigation measures.**

- **From a Botanical perspective this alternative will result in the loss of natural vegetation, this is however not considered as a high impact as the site is largely transformed and mitigation is to use some of the succulents and geophytic species for landscaping. An application will be made for the permits which will include the destruction and disturbance of Specially Protected, Protected and Indigenous flora present on the site.**

Alternative 4: No-Go Option:
The No-Go option for the site is to remain in its current undeveloped state. This is not considered preferred for the following reasons:

- **From a Socio-Economic perspective it will not provide new job opportunities and the possibility to procure new skills.**
- **Also the proposed development will not profit from the great financial boost this development would have on the community.**

3. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.
List alternative sites if applicable.

Alternative:	**Latitude (S):**		**Longitude (E):**	
~~Alternative S1[1] (preferred or only site alternative)~~	°	‘	°	‘
Alternative S2 (Alternative 2)	**,,……29°**	**,……39.831’**	**,,……17°**	**,……53.815’**
Alternative S3 (preferred alternative 3)	**,,……29°**	**,……39.831’**	**,,……17°**	**,……53.815’**

Both alternatives layout remain the same accept for the positioning of the accesses. This is provided below.

In the case of linear activities:

Alternative:	**Latitude (S):**		**Longitude (E):**	
~~Alternative S1 (preferred or only route alternative)~~				
~~• Starting point of the activity~~	~~°~~	~~‘~~	~~°~~	~~‘~~
~~• Middle point of the activity~~	~~°~~	~~‘~~	~~°~~	~~‘~~
~~• End point of the activity~~	~~°~~	~~‘~~	~~°~~	~~‘~~
Alternative S2 (Alternative 2)				
• Starting point of the activity	°	‘	°	‘
• Middle point of the activity	**,,……29°**	**39’.704**	**,,……17°**	**53’.822**
• End point of the activity	°	‘	°	‘
Alternative S3 (preferred alternative 3)				
• Starting point of the activity	°	‘	°	‘
• Middle point of the activity	**,,……29°**	**39’.697**	**,,……17°**	**53’.738**
• End point of the activity	°	‘	°	‘

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

4. PHYSICAL SIZE OF THE ACTIVITY

Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative:	**Size of the activity:**
~~Alternative S1[2] (preferred or only site alternative)~~	m^2
Alternative S2 (Alternative 2)	**65002m²**
Alternative S3 (preferred alternative 3)	**65002m² with an additional approximately 200m² access off Erf 931, Springbok.**

or, for linear activities:

Alternative:	**Length of the activity:**
Alternative A1 (preferred activity alternative)	m
Alternative S2 (Alternative 2)	**Approximately 15m**
Alternative S3 (preferred alternative 3)	**Approximately 35 m from Erf 931, Springbok**

Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Alternative:	**Size of the site/servitude:**
Alternative A1 (preferred activity alternative)	m^2
Alternative S2 (Alternative 2)	**Erf 2883 - 76722m²**
Alternative S3 (preferred alternative 3)	**Erf 2883 - 76722m² with Erf 931 – 42 000m²**

5. SITE ACCESS

[1] “Alternative S..” refer to site alternatives.
[2] “Alternative S..” refer to site alternatives.

Does ready access to the site exist?	**YES** / ~~NO~~
If NO, what is the distance over which a new access road will be built	**Approximately 35m**

There is an existing access, however a new access is proposed. The site currently has access off the R355.
Describe the type of access road planned:

Main Access (Access A on the SDP)
This is the main access to the Namakwa Mall off Voortrekker Street located at the President Street intersection. A new northbound approach at the existing T-intersection will provide access to the Mall via a servitude road over the neighbouring property. To improve safety at the intersection it is recommended that dedicated east and westbound right-turn lanes should be provided along Voortrekker Street at the intersection.
Secondary/Delivery Access (Access B on the SDP)
This is a secondary access off the link road between the N14 and Kokerboom Road (R355) that will also serve as a delivery access. This access is proposed at a spacing of approximately 120 meters to the north of the Kokerboom Road intersection. Single lanes on all approaches will be sufficient from a safety and operational perspective.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

6. SITE OR ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as **Appendix A** to this document.

The site or route plans must indicate the following:

6.1 the scale of the plan which must be at least a scale of 1:500;
6.2 the property boundaries and numbers of all the properties within 50 metres of the site;
6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
6.4 the exact position of each element of the application as well as any other structures on the site;
6.5 the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
6.6 all trees and shrubs taller than 1.8 metres;
6.7 walls and fencing including details of the height and construction material;
6.8 servitudes indicating the purpose of the servitude;
6.9 sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
- rivers;
- the 1:100 year flood line (where available or where it is required by DWA);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or invested with alien species);

6.9 for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
6.10 the positions from where photographs of the site were taken.

7. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under **Appendix B** to this form**.** It must be supplemented with additional photographs of relevant features on the site, if applicable.

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	**R150 000 000-00**
What is the expected yearly income that will be generated by or as a result of the activity?	**R21 600 000-00**
Will the activity contribute to service infrastructure?	**YES** / ~~NO~~
Is the activity a public amenity?	**YES** / ~~NO~~
How many new employment opportunities will be created in the development phase of the activity?	300
What is the expected value of the employment opportunities during the development phase?	**R16 200 000-00**
What percentage of this will accrue to previously disadvantaged individuals?	**75%**

How many permanent new employment opportunities will be created during the operational phase of the activity?	**900**
What is the expected current value of the employment opportunities during the first 10 years?	**R324 000 000-00**
What percentage of this will accrue to previously disadvantaged individuals?	**75%**

9(b) Need and desirability of the activity

Motivate and explain the need and desirability of the activity (including demand for the activity):

The demand with regards to enquiries from national tenants has been tested telephonically. This has established that there is a demand for at least 15 000m² of GLA from national tenants not currently represented in the town/area.

Indicate any benefits that the activity will have for society in general:

The Shopping Centre will make Springbok the hub of the region. It will stop migration to the south for shopping. Surrounding towns will shop in Springbok. It will give Springbok a sense of value that does not currently exist.

Indicate any benefits that the activity will have for the local communities where the activity will be located:

Permanent job creation of at least 1000 jobs. Community activities will be created at the Mall. (the developer are looking at a community swimming pool – maintained by the mall) for children to keep them off the streets.

DESIRABILITY:			
1.	Does the proposed land use / development fit the surrounding area?	YES	~~NO~~
2.	Does the proposed land use / development conform to the relevant structure plans, SDF and planning visions for the area?	YES	~~NO~~
3.	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	YES	~~NO~~
4.	If the answer to any of the questions 1-3 was NO, please provide further motivation / explanation:		
	Existing zoning is retail/business.		
5.	Will the proposed land use / development impact on the sense of place?	~~YES~~	NO
6.	Will the proposed land use / development set a precedent?	~~YES~~	NO
7.	Will any person's rights be affected by the proposed land use / development?	~~YES~~	NO
8.	Will the proposed land use / development compromise the "urban edge"?	~~YES~~	NO
9.	If the answer to any of the question 5-8 was YES, please provide further motivation / explanation.		

BENEFITS:			
1.	Will the land use / development have any benefits for society in general?	YES	~~NO~~
2.	Explain:		
	From a Socio-Economic perspective this proposed development would provide a financial boost to the local community and society in general.		
3.	Will the land use / development have any benefits for the local communities where it will be located?	YES	~~NO~~
4.	Explain:		
	The proposed development will contribute to job opportunities during the construction and operational phases. **The proposed development will introduce the possibility to procure new skills sets for the local community during the construction and operational phases.**		

10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline:	Administering authority:	Date:
National Environmental Management Act (1998)	**Northern Cape: Department of Environment and Nature Conservation**	**Pending**
National Heritage Resources Act No. 25 of 1999 (NHRA)	**SARHA: Northern Cape**	**Pending**

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	**YES**	~~NO~~
If yes, what estimated quantity will be produced per month?	**Unknown at this stage** /m^3	

How will the construction solid waste be disposed of (describe)?

It is proposed were practically possible all construction solid waste will be used on site. If some will have to be removed it will be taken to the licensed Bergsig Waste disposal site.

Where will the construction solid waste be disposed of (describe)?

Bergsig Waste disposal site

Will the activity produce solid waste during its operational phase?	**YES**	~~NO~~
If yes, what estimated quantity will be produced per month?	**2.5 m^3 /day**	

How will the solid waste be disposed of (describe)?

Solid waste will be removed by the Municipality on a weekly basis and taken to the Bergsig Waste Disposal site.

~~Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?~~

~~If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.~~

~~Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?~~	~~YES~~	~~NO~~
~~If yes, inform the competent authority and request a change to an application for scoping and EIA.~~		
~~Is the activity that is being applied for a solid waste handling or treatment facility?~~	~~YES~~	~~NO~~

~~If yes, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.~~

11(b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	~~YES~~	**NO**
~~If yes, what estimated quantity will be produced per month?~~	~~m^3~~	
Will the activity produce any effluent that will be treated and/or disposed of on site?	~~YES~~	**NO**

~~If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.~~

Will the activity produce effluent that will be treated and/or disposed of at another facility?	~~YES~~	**NO**

~~If yes, provide the particulars of the facility:~~

~~Facility name:~~			
~~Contact person:~~			
~~Postal address:~~			
~~Postal code:~~			
~~Telephone:~~		~~Cell:~~	
~~E-mail:~~		~~Fax:~~	

~~Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:~~

Sewer: **(Refer to the Services Report included in Appendix D2)**

The average daily sewer run-off from the proposed development is estimated at 74.8 kl/day, with a peak flow of 3.5 l/s. The internal sewer network will connect to the existing sewer running along Voortrekker Street to the north of the site. Proof of services included in Appendix E1.1.

11(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere?	**YES**	~~NO~~
If yes, is it controlled by any legislation of any sphere of government?	~~YES~~	**NO**

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the emissions in terms of type and concentration:

Please note these are normal emissions associated with a mall, however, are insignificant with regards to the National Environmental Management: Air Quality Act ("NEM:AQA"), 2004 (Act 39 of 2004).

11(d) Generation of noise

Will the activity generate noise?	**YES**	~~NO~~
If yes, is it controlled by any legislation of any sphere of government?	~~YES~~	**NO**

~~If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.~~

If no, describe the noise in terms of type and level:

The proposed Namakwa Mall will generate normal noise related to shopping areas and traffic.

12. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es)

Municipal	~~water board~~	~~groundwater~~	~~river, stream, dam or lake~~	~~other~~	~~the activity will not use water~~

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month: litres

Does the activity require a water use permit from the Department of Water Affairs? ~~YES~~ **NO**

If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted.

Water: (Refer to the Services Report included in Appendix D2)

The demand for portable water for the proposed development is estimated at 93.5 kl/day with a peak demand of 4.37 l/s. Water to the development can be supplied from the existing 160mm dia. water mains in Voortrekker Street. A 110mm dia. connection will be adequate to provide for the domestic needs.
The existing reservoir storage capacity is inadequate to accommodate the new shopping centre development and a 187kl on-site storage facility will have to be provided by the developer to provide 48 hour storage capacity. Proof of services included in Appendix E1.1.

13. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

- **Toilets should be fitted with a duel flush system;**
- **Waste to be separated and re-cycled (glass, paper, green/garden waste).**

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

- **The use of energy saving bulbs in all structures, alternatively low voltage or compact fluorescent lights are to be used as far as possible.**
- **The use of energy saving geysers; and or heat pumps.**
- **The use of solar panels and storage tanks on flat roof areas where possible**

SECTION B : SITE/AREA/PROPERTY DESCRIPTION

Important notes:

1. For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section C and indicate the area, which is covered by each copy No. on the Site Plan.

Section C Copy No. (e.g. A): [ ]

2. Paragraphs 1 - 6 below must be completed for each alternative.

3. Has a specialist been consulted to assist with the completion of this section? | YES | ~~NO~~ |

If YES, please complete form XX for each specialist thus appointed:
All specialist reports must be contained in Appendix D.

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

~~Alternative S1:~~

~~Flat~~	~~1:50 – 1:20~~	~~1:20 – 1:15~~	~~1:15 – 1:10~~	~~1:10 – 1:7,5~~	~~1:7,5 – 1:5~~	~~Steeper than 1:5~~

Alternative S2 (Alternative 2):

~~Flat~~	~~1:50 – 1:20~~	**1:20 – 1:15**	~~1:15 – 1:10~~	~~1:10 – 1:7,5~~	~~1:7,5 – 1:5~~	~~Steeper than 1:5~~

Alternative S3 (preferred alternative 3):

~~Flat~~	~~1:50 – 1:20~~	**1:20 – 1:15**	~~1:15 – 1:10~~	~~1:10 – 1:7,5~~	~~1:7,5 – 1:5~~	~~Steeper than 1:5~~

As per the Services Report (Appendix D2):
"The site has an average slope of 1:20 from east to west towards the N7 national road."

2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

~~2.1 Ridgeline~~
~~2.2 Plateau~~
2.3 Side slope of hill/mountain
~~2.4 Closed valley~~
2.5 Open valley
~~2.6 Plain~~
~~2.7 Undulating plain / low hills~~
~~2.8 Dune~~
~~2.9 Seafront~~

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following (tick the appropriate boxes)?

	Alternative S1:		**Alternative S2 (Alternative 2):**		**Alternative S3 (preferred alternative 3):**	
Shallow water table (less than 1.5m deep)	~~YES~~	~~NO~~	~~YES~~	NO	~~YES~~	NO
Dolomite, sinkhole or doline areas	~~YES~~	~~NO~~	~~YES~~	NO	~~YES~~	NO
Seasonally wet soils (often close to water bodies)	~~YES~~	~~NO~~	YES	~~NO~~	YES	~~NO~~
Unstable rocky slopes or steep slopes with loose soil	~~YES~~	~~NO~~	~~YES~~	NO	~~YES~~	NO
Dispersive soils (soils that dissolve in water)	~~YES~~	~~NO~~	~~YES~~	NO	~~YES~~	NO
Soils with high clay content (clay fraction more than 40%)	~~YES~~	~~NO~~	~~YES~~	NO	~~YES~~	NO
Any other unstable soil or geological feature	~~YES~~	~~NO~~	~~YES~~	NO	~~YES~~	NO
An area sensitive to erosion	~~YES~~	~~NO~~	~~YES~~	NO	~~YES~~	NO

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. (Information in respect of the above will often be available as part of the project information or at the planning

sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted).
Note there is a small storm water channel running along the site.

4. GROUNDCOVER

Indicate the types of groundcover present on the site:

4.1 Natural veld – good condition E
4.2 Natural veld – scattered aliens E
4.3 Natural veld with heavy alien infestation E
~~**4.4 Veld dominated by alien species**~~ [5]
~~**4.5 Gardens**~~
~~**4.6 Sport field**~~
~~**4.7 Cultivated land**~~
~~**4.8 Paved surface**~~
~~**4.9 Building or other structure**~~
4.10 Bare soil

The following is a summary taken from the Botanical Baseline Report included in Appendix D1:
"The development of a mall is proposed on an open area in the town of Springbok. This proposed development site is located in the Succulent Karoo Biome, a hotspot of diversity, and highlights the importance of establishing the presence of species of conservation significance on site before construction commences.

A species list was generated using the SIBIS Integrating Biodiversity Site of the South African National Biodiversity Institute. This generated list is a list of species that could potentially occur on site. Since the list includes various habitats not found on the proposed development site, not all the species listed could occur on the site.

Species of conservation significance in the 2917DB quarter degree grid listed as Red Data species are Acanthopsis spathularis (RARE), Adromischus mammillaris (EN), Albuca zebrina (RARE), Aloe buhrii (VU), A. dichotoma (VU), Babiana horizontalis (VU), B. vanzijlae (NT), Brunsvigia herrei (VU), Cheiridopsis rostrata (VU), Conophytum blandum (NT), Conophytum khamiesbergense (VU), Crassula exilis (RARE), Crassula roggeveldii (RARE), Crassula thunbergiana (RARE), Drosanthemum calycinum (NT), Empodium veratrifolium (EN), Eriospermum pusillum (RARE), Euryops marlothii (RARE), E. namaquensis (VU), Gladiolus salteri (RARE), Lachenalia concordiana (RARE), L. kliprandensis (RARE), L. verticillata (RARE), Leipoldtia amoenus (EN), L. aureus (EN), L. klaverensis (EN), Leobordea polycephala (EN), Manulea exigua (VU), Monalaria obconica (VU), Moraea indecora (VU), Odontophorus angustifolius (RARE), Othonna diversifolia (RARE), Oxalis exserta (RARE), Pectinaria articulata (RARE), Phylica cylindrica (VU), Polycarena capensis (NT), Quaqua cincta (RARE), Romulea namaquensis (NT), Strumaria merxmuelleriana (RARE), Wahlenbergia asparagoides (VU) and Zygophyllum divaricatum (EN). Numerous species are listed as DD (Data deficient) and thus their actual status is unknown.

The Specially Protected and Protected families according to the Northern Cape Nature Conservation Act are Aizoaceae/Mesembryanthemaceae, Amaryllidaceae, Anthericaceae, Apiaceae, Apocynaceae, Asphodelaceae, Crassulaceae, Iridaceae, Orchidiaceae and Restionaceae. Genera Specially Protected or Protected include: Agathosma, Anacampseros, Avonia, Boscia, Cyanella, Diascia, Erica, Euphorbia, Jamesbrittenia, Lachenalia, Lessertia, Manulea, Nemesia, Ornithogalum, Oxalis, Ozoroa, Phylica, Phyllopodium, Sutherlandia and Pelargonium. Additional to the Specially Protected or Protected families and genera, Specially Protected species include Aloe buhrii and Aloe dichotoma. CITES lists the genera Aloe, Anacampseros and Avonia and families Orchidiaceae and Euphorbiaceae as well as Pachypodium namaquanum on Appendix II.

The Springbok site is highly disturbed with many footpaths, soil heaps, rubbish and soil erosion evident. Site investigations in autumn (April 2013) and spring (end August 2013) provided a good indication of the species present on site. A combined preliminary species list of 143 species was compiled following the autumn and spring site surveys. None of the species on the preliminary species list are listed as Red Data species however, numerous species are Specially Protected or Protected according to the Northern Cape Nature Conservation Act. Additionally, the family Euphorbiaceae is listed on CITES Appendix II.

Two geophytic species, Brunsvigia bosmaniae (Maartblom) and Haemanthus crispus (poeierkwas), were found on the site. Since the developer has expressed an interest in using geophytic species for landscaping purposes, these two showy species could possibly be used. Additional showy geophytic species encountered during the August spring surveys that could also potentially be used for landscaping purposes include Babiana curviscapa (bobbejaantjie) and Laperousia silenoides (meidestert). Succulents such as Drosanthemum hispidum (fyn t'nouroebos), Cheiridopsis denticulata (t'noutsiama) and C. namaquesis could also be used for landscaping purposes and are present on the proposed development site. All these geophytic and succulent species are listed as Protected by the Northern Cape Nature Conservation Act.

Additionally, the spring surveys encountered numerous annual species, which also provide for a colourful display on the site. Some of the annuals present in high numbers were Dimorphotheca sinuata (Namaqualand daisy), Norlindhia amplectens (dassiegousblom), Monoculus hyoseroides (dassiegousblom) and Senecio cardaminifolius (hongerblom). These species could also potentially be used for landscaping purposes depending on the design of the proposed mall development. Large numbers of annual grasses

were also encountered on the site probably as a result of the additional moist habitats resulting from the runoff from the N14 tarred road.

Disturbance over the years has lead to various alien species establishing on the site such as Atriplex lindleyi, Erodium moschatum, Pennisetum sectaceum, Prosopis glandulosa and Salsola kali. Prosopis glandulosa is listed as a Category 2 Invader species and has to be controlled according to CARA legislation. The indigenous pioneer species Galenia africana, also an indicator of disturbance, is common in places.

The two surveys, at different times of the year, gave a good indication of the species present on site. Once the developer and Environmental Practitioner have been provided with this report the necessary permits will have to be obtained from Department of Environment and Nature Conservation provided Environmental Authorisation is obtained. These permits should include the destruction and disturbance of Specially Protected, Protected and Indigenous flora present on the site."

The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s). **See above**

Natural veld - good conditionE	**Natural veld with scattered aliensE**	**Natural veld with heavy alien infestationE**	**Veld dominated by alien speciesE**	~~Gardens~~
~~Sport field~~	~~Cultivated land~~	~~Paved surface~~	~~Building or other structure~~	**Bare soil**

If any of the boxes marked with an "[E] "is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn't have the necessary expertise.

5. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that does currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

5.1 Natural area
5.2 Low density residential
5.3 Medium density residential
~~5.4 High density residential~~
~~5.5 Informal residentialA~~
~~5.6 Retail commercial & warehousing~~
5.7 Light industrial
~~5.8 Medium industrial AN~~
~~5.9 Heavy industrial AN~~
~~5.10 Power station~~
5.11 Office/consulting room
~~5.12 Military or police base/station/compound~~
~~5.13 Spoil heap or slimes damA~~
~~5.14 Quarry, sand or borrow pit~~
~~5.15 Dam or reservoir~~
~~5.16 Hospital/medical centre~~
~~5.17 School~~
~~5.18 Tertiary education facility~~
5.19 Church
~~5.20 Old age home~~
~~5.21 Sewage treatment plantA~~
~~5.22 Train station or shunting yard N~~
~~5.23 Railway line N~~
5.24 Major road (4 lanes or more) N
~~5.25 Airport N~~
~~5.26 Harbour~~
5.27 Sport facilities
~~5.28 Golf course~~
~~5.29 Polo fields~~
~~5.30 Filling station H~~
~~5.31 Landfill or waste treatment site~~
~~5.32 Plantation~~
~~5.33 Agriculture~~
5.34 River, stream or wetland – Small storm drainages
~~5.35 Nature conservation area~~
5.36 Mountain, koppie or ridge
~~5.37 Museum~~
~~5.38 Historical building~~
~~5.39 Protected Area~~
5.40 Graveyard
~~5.41 Archaeological site~~
~~5.42 Other land uses (describe)~~

This storm water running through the northern part of the site will be formalized and diverted along the northern boundary of the site into the existing culvert underneath the N7 National Road. See Figure 6 and 7.

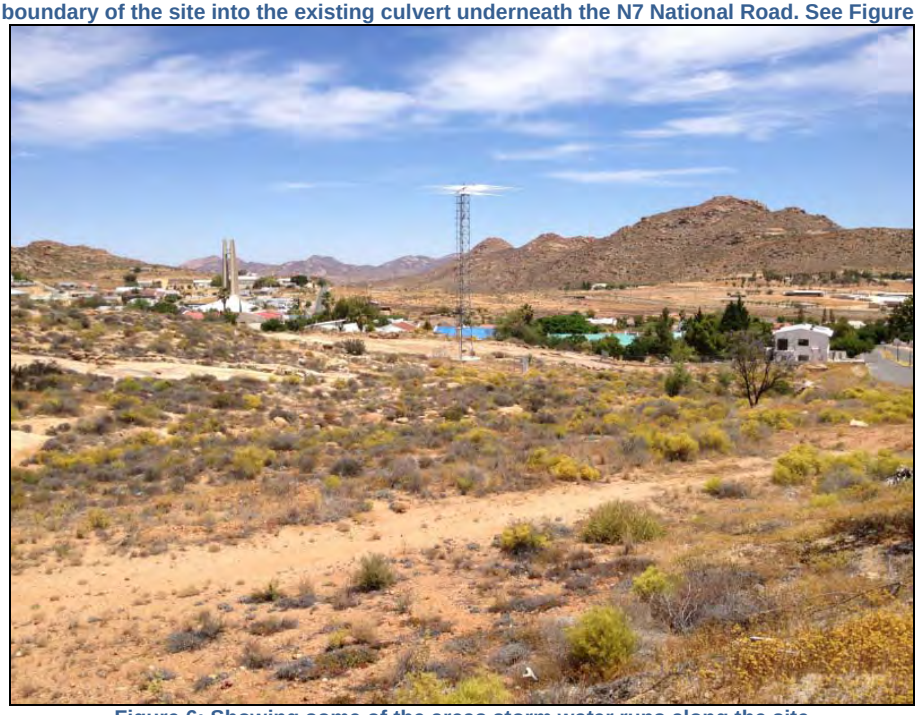


Figure 6: Showing some of the areas storm water runs along the site

Figure 7: Already formalized storm water drainage from adjacent properties running onto the site.

If any of the boxes marked with an "N "are ticked, how this impact will / be impacted upon by the proposed activity.

If YES, specify and explain:	**The proposed development is not directly adjacent to, but within 500m of the N7 and directly adjacent to the N14.** **Note that the information contained in this report and the traffic report was sent to SANRAL for further comments.** **The following is a summary from the Traffic Report included as Appendix D3:** ***"All the study intersections will operate at acceptable levels-of-service during both the Friday p.m. and Saturday peak hours and the surrounding road network has sufficient spare capacity to accommodate the additional trips associated with the proposed Namakwa Mall."***

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity.

If YES, specify and explain:	

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity.

If YES, specify and explain:	

6. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or paleontological sites, on or close (within 20m) to the site?	~~YES~~	NO
	Uncertain	
If YES, explain:		

If uncertain, conduct a specialist investigation by a recognised specialist in the field to establish whether there is such a feature(s) present on or close to the site.

Briefly explain the findings of the specialist:	**The NID was submitted to the Heritage committee in Northern Cape. Comments were received on the 29 October. Letter from Heritage Northern Cape included as Appendix E1.3. This letter referred the application to SARHA. This application is currently in process.**

Will any building or structure older than 60 years be affected in any way?	~~YES~~	**NO**
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	**YES**	~~NO~~

If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made. **Letter from Heritage Northern Cape included as Appendix E1.3.**

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT

The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by—

Find the Site Notice, positioning of the site notice and proof of the site notice being on site included in Appendix E3.

(a) **fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—**
- **(i) the site where the activity to which the application relates is or is to be undertaken; and**
- **(ii) any alternative site mentioned in the application;**

(b) **giving written notice to—**
- **(i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;**
- ~~(ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;~~
- **(iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;**
- **(iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;**
- **(v) the municipality which has jurisdiction in the area;**
- **(vi) any organ of state having jurisdiction in respect of any aspect of the activity; and**
- **(vii) any other party as required by the competent authority;**

(c) placing an advertisement in—
- **(i) one local newspaper; or**
- ~~(ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;~~

~~(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and~~

(e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
- **(i) illiteracy;**
- **(ii) disability; or**
- **(iii) any other disadvantage.**

2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

Find the Site notice, positioning of the site notice and proof of the site notice being on site included in Appendix E3.

Find the advertisement, proof of advertisement included in Appendix E2.

(a) indicate the details of the application which is subjected to public participation; and

(b) state—
- **(i) that the application has been submitted to the competent authority in terms of these Regulations, as the case may be;**
- **(ii) whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental authorisation;**
- **(iii) the nature and location of the activity to which the application relates;**
- **(iv) where further information on the application or activity can be obtained; and**
- **(iv) the manner in which and the person to whom representations in respect of the application may be made.**

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

~~Where the proposed activity may have impacts that extend beyond the municipal area where it is located, a notice must be placed in at least one provincial newspaper or national newspaper, indicating that an application will be submitted to the competent authority in terms of these regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made, unless a notice has been placed in any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of the EIA regulations.~~

Advertisements and notices must make provision for all alternatives.

4. DETERMINATION OF APPROPRIATE MEASURES

The practitioner must ensure that the public participation is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

Public participation included the following:
Advertisements
One advertisement for registration of I&APs, notification of the Public Meeting and notification of the availability of the Draft Basic Assessment (DBAR), was placed in the Plattelander on 28 March 2011. NC: DENC were notified of the report being distributed to the authority institutions and sent a copy of the DBAR. These authority institutions and all I&AP's were notified of the start of their 40 day commenting period. The commenting period for the general public stretched from Thursday 04 April 2013 to Monday 20 May 2013. The Final Basic Assessment Report was sent out for the final 21 day commenting period from Thursday 20 March 2014 until Friday 11 April 2014.

Public open Day Meeting:
The report was available at the Springbok Library. A Public meeting was held, on the Thursday, 04 April 2013 from 15:00 until 19:00 at that Springbok Skousaal.

Notice Board
Two Notice Boards with the same information as in the newspaper ads were displayed at the site and the alternative entrance site (see Appendix E3).

Information and reporting
A notification of the availability and the location of the Draft Basic Assessment Report was made available and distributed by registered post to all registered I&APs including neighbours. All comments received will be placed in the Final Basic Assessment Report.
Digital copies were made available to those that request it. Hard copies or digital copies of the report were sent to the list of authorities as shown in Appendix E1.

I&AP database
The I&AP database was compiled from registered and listed I&APs as shown in Appendix E1. The database will be updated to include new I&APs that have submitted comments.

5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before the application is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to this application. The comments and response report must be attached under Appendix E.
The comments and response sheet is included in Appendix E6.

6. AUTHORITY PARTICIPATION

Authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least 30 (thirty) calendar days before the submission of the application.

List of authorities informed:

Department of Water Affairs
SANRAL
Nama Khoi Municipality
Environment and Nature Conservation
Ward Councillor

List of authorities from whom comments have been received:

SANRAL
Namakwa District Municipality
Nama Khoi Municipality
Department of Water Affairs

7. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for linear activities, or where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub regulation to the extent and in the manner as may be agreed to by the competent authority.

Any stakeholder that has a direct interest in the site or property, such as servitude holders and service providers, should be informed of the application at least 30 (thirty) calendar days before the submission of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?	~~YES~~	NO

~~If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):~~

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2010, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

The main issues raised by I&AP's are as follows:

- **Traffic related impacts**
- **Visual Impacts**
- **Heritage Impacts**
- **All services infrastructure**
- **Botanical impact**
- **Socio-Economic impact**
- **Tenders**
- **Zoning**
- **Deeds of sale**

Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached to this report):

Responses included in the Comments and Response document in Appendix E6.
A summary will be provided here in the Final Basic Assessment Report.

2. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

List the potential direct, indirect and cumulative property/activity/design/technology/operational alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed.

Alternative 2:

CONSTRUCTION PHASE:
Botanical
Direct impacts:

The Springbok Mall development is proposed on an open area in the town of Springbok, Northern Cape province. This proposed development site is situated in the Succulent Karoo Biome, a hotspot of diversity and this highlights the importance of establishing the presence of species of conservation significance on site before construction commences.

A species list was generated using the SIBIS Integrating Biodiversity Site of the South African National Biodiversity Institute to compile a list of species that could potentially occur on site. Various habitats, not found on the proposed development site, are included on this list and thus not all the species listed are expected to occur on the site.

Numerous species of conservation significance were found for the 2917DB quarter degree grid. These

species include Red Data listed species and Specially Protected and Protected families, genera as well as specific species listed in the Northern Cape Nature Conservation Act. Various species are listed on CITES Appendix II.

The site investigations in autumn (April 2013) and spring (end August 2013) provided a good indication of the species present on site. A combined preliminary species list of 143 species was compiled following the two surveys. None of the species on the preliminary species list are listed as Red Data species however, numerous species are Specially Protected or Protected according to the Northern Cape Nature Conservation Act. The genus Euphorbia is listed on CITES Appendix II.

The Springbok site is highly disturbed and disturbance over the years has lead to various alien species establishing on the site (for example, Atriplex lindleyi, Erodium moschatum, Pennisetum sectaceum, Prosopis glandulosa and Salsola kali). Galenia africana, an indigenous pioneer species, is also relatively common on site.

The two surveys at different times of the year gave a good indication of the species present on site. Once the developer and Environmental Practitioner have been provided with this report, the necessary permits will have to be obtained from Department of Environment and Nature Conservation provided Environmental Authorisation is obtained. These permits will include the destruction and disturbance of Specially Protected, Protected and Indigenous flora present on the site.

Based on the April and August 2013 site investigations and habitat found on the proposed development site, permits will be required from Northern Cape Nature Conservation for the Specially Protected and Protected families Aizoaceae/Mesembryanthemaceae, Amaryllidaceae, Anthericaceae, Apiaceae, Apocynaceae, Asphodelaceae, Crassulaceae, Iridaceae, and Orchidiaceae and the genera Cyanella, Diascia, Erica, Euphorbia, Jamesbrittenia, Lachenalia, Lessertia, Manulea, Nemesia, Ornithogalum, Oxalis, Phyllopodium, Sutherlandia and Pelargonium since these families and genera do occur or could potentially occur on site. Additionally, a permit for the removal/destruction of indigenous flora on site will also have to be applied for.

Indirect impacts:
None

Cumulative impacts:
None

Mitigation measures:
Two conspicuous geophytic species, Brunsvigia bosmaniae (Maartblom) and Haemanthus crispus (poeierkwas), were found on the site in April 2013. Since the developer has expressed an interest in using geophytic species occurring on site for landscaping purposes, these two showy species could possibly be used. Additional showy geophytic species encountered during the August 2013 surveys that could also potentially be used for landscaping purposes include Babiana curviscapa (bobbejaantjie) and Laperousia silenoides (meidestert).

Succulents such as Drosanthemum hispidum (fyn t'nouroebos), Cheiridopsis denticulata (t'noutsiama) and C. namaquesis could also be used for landscaping purposes and are present on the proposed development site. All of these species are protected under Northern Cape Nature Conservation legislation however, all are listed as Least Concern on the Red Data lists. Various colourful annuals were present on site following winter/early spring rains and could also be considered for landscaping purposes. These annual species include Dimorphotheca sinuata (Namaqualand daisy), Norlindhia amplectens (dassiegousblom), Monoculus hyoseroides (dassiegousblom) and Senecio cardaminifolius (hongerblom).

Traffic:
Direct impacts:
None
Indirect impacts:
None
Cumulative impacts:
None
Mitigation measures
None

Socio-Economic
Direct impacts:
Will provide numerous job opportunities for the local community during the construction phase
Indirect impacts:
Will provide the local community with the opportunity to gain a new skills set.
Cumulative impacts:
Will contribute to the upliftment of the entire community.

Noise:
Direct impacts:
Construction noise
Indirect impacts:
None

Cumulative impacts:
None
Mitigation measures:
- ***Working hours will be restricted to daily normal working hours.***
- ***All noise and sounds generated by plant or machinery must adhere to SABS 0103 specifications for the maximum permissible noise levels for residential areas.***
- ***All plant and machinery are to be fitted with adequate silencers.***
- ***No sound amplification equipment such as sirens, loud hailers or hooters may be used on site, after normal working hours, except in emergencies.***
- ***If work is to be undertaken outside of normal work hours, permission must be obtained from the Local Authority. Prior to commencing any such activity the Contractor is also to advise the potentially affected neighbouring residents. Dates, times and the nature of the work to be undertaken are to be provided. Notification could include letter-drops.***

Visual:
Direct impacts:
- **During construction there will be a period during which earth moving vehicles and construction areas will be visible, but this will only be for a short period.**
- ***Change in the character of the site***

Indirect impacts:
None
Cumulative impacts:
None
Mitigation Measures:
- **This only a temporary impact.**
- **Mitigation measures will include appropriate landscaping, (use of as far as possible local material) of the proposed development such that it enhances the site and receptors are provided with a scene that does not detract from the surrounding landscape.**
- ***Signage on this façade of the building must be minimal, perhaps the Name of the Mall only, and should be placed that it relates to tree planting with the latter managing to function as a screen without the***

Cultural and Historical Aspects:
No impacts as per NID from Heritage specialist.

OPERATIONAL PHASE
Botanical
Direct impacts:
Direct impacts:
None
Indirect impacts:
None
Cumulative impacts:
None
Mitigation measures:
None

Traffic:
Direct impacts:
Access is proposed via two accesses, i.e. main access off Voortrekker Street 130m from the N14 intersection into Voortrekker street with a secondary access off the link road (R355) between Voortrekker Street and Kokerboom Road spaced approximately 120 metres to the north of the Kokerboom Road intersection.
The Namakwa Mall development is expected to generate approximately 1 030 vehicular trips (515 in/ 515 out) during the typical Friday p.m. peak hour and approximately 1 183 vehicular trips (556 in/ 627 out) during the typical Saturday peak hour.
Indirect impacts:
None
Cumulative impacts:
None
Mitigation measures
Move access of Voortrekker street to main access off Voortrekker Street at the President Street intersection.

Socio-Economic
Direct impacts:
Will provide numerous job opportunities for the local community during the operational phase
Indirect impacts:
Will provide the local community with the opportunity to gain new skills set.
Cumulative impacts:
Will contribute to the upliftment of the entire community.

Noise:
Direct impacts:

Noise impact on surroundings due to the development of the mall. Note this is not a significant impact

Indirect impacts:

None

Cumulative impacts:

None

Mitigation measures:

- *No mitigation necessary as this is not a significant impact.*

Visual:

Direct impacts:

- *Visibility from the N7*
- *Additional night lighting*

Indirect impacts:

None

Cumulative impacts:

None

Mitigation Measures:

- *Mitigation should include limited street/parking lighting to low level lighting and limited external lighting on the building.*
- *The proposed bulk of the building is well segmented to prevent one large façade, with shadows providing a mitigation measure for the visual impact to be experienced. To further mitigate the visual impact of the building from the N7, in particular the high facades and service area, landscaping with the use of potentially tall trees should be undertaken. For example, the Ficus trees along Voortrekker Street have the potential to grow tall and these will partly screen the building as seen from the N7. Similarly, some Acacia species will grow tall enough to partly screen the building.*

Cultural and Historical Aspects:

No impacts as outlined in the NID conducted by the Heritage Specialist.

Alternative 3(preferred alternative)

Botanical

Direct impacts:

The Springbok Mall development is proposed on an open area in the town of Springbok, Northern Cape province. This proposed development site is situated in the Succulent Karoo Biome, a hotspot of diversity and this highlights the importance of establishing the presence of species of conservation significance on site before construction commences.

A species list was generated using the SIBIS Integrating Biodiversity Site of the South African National Biodiversity Institute to compile a list of species that could potentially occur on site. Various habitats, not found on the proposed development site, are included on this list and thus not all the species listed are expected to occur on the site.

Numerous species of conservation significance were found for the 2917DB quarter degree grid. These species include Red Data listed species and Specially Protected and Protected families, genera as well as specific species listed in the Northern Cape Nature Conservation Act. Various species are listed on CITES Appendix II.

The site investigations in autumn (April 2013) and spring (end August 2013) provided a good indication of the species present on site. A combined preliminary species list of 143 species was compiled following the two surveys. None of the species on the preliminary species list are listed as Red Data species however, numerous species are Specially Protected or Protected according to the Northern Cape Nature Conservation Act. The genus Euphorbia is listed on CITES Appendix II.

The Springbok site is highly disturbed and disturbance over the years has lead to various alien species establishing on the site (for example, Atriplex lindleyi, Erodium moschatum, Pennisetum sectaceum, Prosopis glandulosa and Salsola kali). Galenia africana, an indigenous pioneer species, is also relatively common on site.

The two surveys at different times of the year gave a good indication of the species present on site. Once the developer and Environmental Practitioner have been provided with this report, the necessary permits will have to be obtained from Department of Environment and Nature Conservation provided Environmental Authorisation is obtained. These permits will include the destruction and disturbance of Specially Protected, Protected and Indigenous flora present on the site.

Based on the April and August 2013 site investigations and habitat found on the proposed development site, permits will be required from Northern Cape Nature Conservation for the Specially Protected and Protected families Aizoaceae/Mesembryanthemaceae, Amaryllidaceae, Anthericaceae, Apiaceae, Apocynaceae, Asphodelaceae, Crassulaceae, Iridaceae, and Orchidiaceae and the genera Cyanella, Diascia, Erica, Euphorbia, Jamesbrittenia, Lachenalia, Lessertia, Manulea, Nemesia, Ornithogalum, Oxalis, Phyllopodium, Sutherlandia and Pelargonium since these families and genera do occur or could potentially occur on site. Additionally, a permit for the removal/destruction of indigenous flora on site will also have to be applied for.

Indirect impacts:
None

Cumulative impacts:
None

Mitigation measures:
Two conspicuous geophytic species, Brunsvigia bosmaniae (Maartblom) and Haemanthus crispus (poeierkwas), were found on the site in April 2013. Since the developer has expressed an interest in using geophytic species occurring on site for landscaping purposes, these two showy species could possibly be used. Additional showy geophytic species encountered during the August 2013 surveys that could also potentially be used for landscaping purposes include Babiana curviscapa (bobbejaantjie) and Laperousia silenoides (meidestert).

Succulents such as Drosanthemum hispidum (fyn t'nouroebos), Cheiridopsis denticulata (t'noutsiama) and C. namaquesis could also be used for landscaping purposes and are present on the proposed development site. All of these species are protected under Northern Cape Nature Conservation legislation however, all are listed as Least Concern on the Red Data lists. Various colourful annuals were present on site following winter/early spring rains and could also be considered for landscaping purposes. These annual species include Dimorphotheca sinuata (Namaqualand daisy), Norlindhia amplectens (dassiegousblom), Monoculus hyoseroides (dassiegousblom) and Senecio cardaminifolius (hongerblom).

Traffic:
Direct impacts:
None
Indirect impacts:
None
Cumulative impacts:
None
Mitigation measures
None

Socio-Economic
Direct impacts:
Will provide numerous job opportunities for the local community during the construction phase
Indirect impacts:
Will provide the local community with the opportunity to gain a new skills set.
Cumulative impacts:
Will contribute to the upliftment of the entire community.

Noise:
Direct impacts:
Construction noise
Indirect impacts:
None
Cumulative impacts:
None
Mitigation measures:
- ***Working hours will be restricted to daily normal working hours.***
- ***All noise and sounds generated by plant or machinery must adhere to SABS 0103 specifications for the maximum permissible noise levels for residential areas.***
- ***All plant and machinery are to be fitted with adequate silencers.***
- ***No sound amplification equipment such as sirens, loud hailers or hooters may be used on site, after normal working hours, except in emergencies.***
- ***If work is to be undertaken outside of normal work hours, permission must be obtained from the Local Authority. Prior to commencing any such activity the Contractor is also to advise the potentially affected neighbouring residents. Dates, times and the nature of the work to be undertaken are to be provided. Notification could include letter-drops.***

Visual:
Direct impacts:
- **During construction there will be a period during which earth moving vehicles and construction areas will be visible, but this will only be for a short period.**
- ***Change in the character of the site***

Indirect impacts:
None
Cumulative impacts:
None
Mitigation Measures:
- **This only a temporary impact.**
- **Mitigation measures will include appropriate landscaping, (use of as far as possible local material) of the proposed development such that it enhances the site and receptors are provided with a scene that does not detract from the surrounding landscape.**

- *Signage on this façade of the building must be minimal, perhaps the Name of the Mall only, and should be placed that it relates to tree planting with the latter managing to function as a screen without the*

Cultural and Historical Aspects:
No impacts

OPERATIONAL PHASE

Botanical
Botanical
Direct impacts:
None
Indirect impacts:
None
Cumulative impacts:
None
Mitigation measures:
None

Traffic:
Direct impacts:
Access is proposed via two accesses, i.e. main access off Voortrekker Street at the President Street intersection with a secondary access off the link road (R355) between Voortrekker Street and Kokerboom Road spaced approximately 120 metres to the north of the Kokerboom Road intersection. Dedicated eastbound and westbound right-turn lanes are recommended along Voortrekker Street at the main access intersection.
The Namakwa Mall development is expected to generate approximately 1 030 vehicular trips (515 in/ 515 out) during the typical Friday p.m. peak hour and approximately 1 183 vehicular trips (556 in/ 627 out) during the typical Saturday peak hour.
All the study intersections will operate at acceptable levels-of-service during both the Friday p.m. and Saturday peak hours and the surrounding road network has sufficient spare capacity to accommodate the additional trips associated with the proposed Namakwa Mall.
Indirect impacts:
None
Cumulative impacts:
None
Mitigation measures
Sidewalks should be provided along the site frontages with Voortrekker Street and the link road (R355) between Voortrekker Street and the Kokerboom Road intersection. Well defined walkways should also be provided on site.
Minibus taxi lay-bys should be provided along both sides of Voortrekker Street downstream of the main access intersection.

Socio-Economic
Direct impacts:
Will provide numerous job opportunities for the local community during the operational phase
Indirect impacts:
Will provide the local community with the opportunity to gain new skills set.
Cumulative impacts:
Will contribute to the upliftment of the entire community.

Noise:
Direct impacts:
Noise impact on surroundings due to the development of the mall. Note this is not a significant impact
Indirect impacts:
None
Cumulative impacts:
None
Mitigation measures:
- *No mitigation necessary as this is not a significant impact.*

Visual:
Direct impacts:
- *Visibility from the N7*
- *Additional night lighting*

Indirect impacts:
None
Cumulative impacts:
None
Mitigation Measures:
- *Mitigation should include limited street/parking lighting to low level lighting and limited external lighting on the building.*
- *The proposed bulk of the building is well segmented to prevent one large façade, with shadows*

providing a mitigation measure for the visual impact to be experienced. To further mitigate the visual impact of the building from the N7, in particular the high facades and service area, landscaping with the use of potentially tall trees should be undertaken. For example, the Ficus trees along Voortrekker Street have the potential to grow tall and these will partly screen the building as seen from the N7. Similarly, some Acacia species will grow tall enough to partly screen the building.

Cultural and Historical Aspects:
No impacts

3. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Alternative 2

Botanical
Impacts:
The Springbok site is highly disturbed and disturbance over the years has lead to various alien species establishing on the site (for example, Atriplex lindleyi, Erodium moschatum, Pennisetum sectaceum, Prosopis glandulosa and Salsola kali). Galenia africana, an indigenous pioneer species, is also relatively common on site.

The two surveys at different times of the year gave a good indication of the species present on site. Once the developer and Environmental Practitioner have been provided with this report, the necessary permits will have to be obtained from Department of Environment and Nature Conservation provided Environmental Authorisation is obtained. These permits will include the destruction and disturbance of Specially Protected, Protected and Indigenous flora present on the site.

Based on the April and August 2013 site investigations and habitat found on the proposed development site, permits will be required from Northern Cape Nature Conservation for the Specially Protected and Protected families Aizoaceae/Mesembryanthemaceae, Amaryllidaceae, Anthericaceae, Apiaceae, Apocynaceae, Asphodelaceae, Crassulaceae, Iridaceae, and Orchidiaceae and the genera Cyanella, Diascia, Erica, Euphorbia, Jamesbrittenia, Lachenalia, Lessertia, Manulea, Nemesia, Ornithogalum, Oxalis, Phyllopodium, Sutherlandia and Pelargonium since these families and genera do occur or could potentially occur on site. Additionally, a permit for the removal/destruction of indigenous flora on site will also have to be applied for.
Type:
Medium to low negative
Duration:
Permanent
Likelihood of occurrence:
High
Significance:
Low negative after mitigation

Traffic
Impacts:
Access is proposed via two accesses, i.e. main access off Voortrekker Street 130m from the N14 intersection into Voortrekker street with a secondary access off the link road (R355) between Voortrekker Street and Kokerboom Road spaced approximately 120 metres to the north of the Kokerboom Road intersection.
The Namakwa Mall development is expected to generate approximately 1 030 vehicular trips (515 in/ 515 out) during the typical Friday p.m. peak hour and approximately 1 183 vehicular trips (556 in/ 627 out) during the typical Saturday peak hour.
Type:
Medium to high negative
Duration:
Permanent
Likelihood of occurrence:
Low
Significance:
Medium to high negative prior to mitigation, the mitigation is the access as per Alternative 3.

Socio-Economic
Impacts:
Will provide job opportunities during construction and operational phases.
Will provide opportunities for local community to procure a new skills set.
Will help with financial upliftment of the entire community.
Type:
Medium positive

Duration:
Permanent
Likelihood of occurrence:
High
Significance:
Medium Positive

Noise
Impacts:
Impact of construction noise.
Impact of operational noise.
Type:
Construction and operational noise is low negative
Duration:
Construction noise: Temporary
Operational noise: Permanent
Likelihood of occurrence:
High for both
Significance:
Construction and operational noise is low negative

Visual
Impacts:
1. ***Visibility of construction works during construction***
2. ***Change in the character of the site***
3. ***Visibility from the N7***
4. ***Additional night lighting***

Type:
Construction and operational impacts
Duration:
1. ***Visibility of construction works during construction - Temporary***
2. ***Change in the character of the site - long term***
3. ***Visibility from the N7 – long term***
4. ***Additional night lighting – long term***

Likelihood of occurrence:
1. ***Visibility of construction works during construction - definite***
2. ***Change in the character of the site - definite***
3. ***Visibility from the N7 – definite***
4. ***Additional night lighting – definite***

Significance:
1. ***Visibility of construction works during construction – low negative to neutral after mitigation***
2. ***Change in the character of the site - low negative to neutral after mitigation***
3. ***Visibility from the N7 – low negative to neutral after mitigation***
4. ***Additional night lighting – low negative to neutral after mitigation***

Alternative 3 (preferred alternative)

Botanical
Impacts:
The Springbok site is highly disturbed and disturbance over the years has lead to various alien species establishing on the site (for example, Atriplex lindleyi, Erodium moschatum, Pennisetum sectaceum, Prosopis glandulosa and Salsola kali). Galenia africana, an indigenous pioneer species, is also relatively common on site.

The two surveys at different times of the year gave a good indication of the species present on site. Once the developer and Environmental Practitioner have been provided with this report, the necessary permits will have to be obtained from Department of Environment and Nature Conservation provided Environmental Authorisation is obtained. These permits will include the destruction and disturbance of Specially Protected, Protected and Indigenous flora present on the site.

Based on the April and August 2013 site investigations and habitat found on the proposed development site, permits will be required from Northern Cape Nature Conservation for the Specially Protected and Protected families Aizoaceae/Mesembryanthemaceae, Amaryllidaceae, Anthericaceae, Apiaceae, Apocynaceae, Asphodelaceae, Crassulaceae, Iridaceae, and Orchidiaceae and the genera Cyanella, Diascia, Erica, Euphorbia, Jamesbrittenia, Lachenalia, Lessertia, Manulea, Nemesia, Ornithogalum, Oxalis, Phyllopodium, Sutherlandia and Pelargonium since these families and genera do occur or could potentially occur on site. Additionally, a permit for the removal/destruction of indigenous flora on site will also have to be applied for.
Type:
Medium to low negative
Duration:
Permanent
Likelihood of occurrence:
High
Significance:

Low negative after mitigation

Traffic

Impacts:

Access is proposed via two accesses, i.e. main access off Voortrekker Street at the President Street intersection with a secondary access off the link road (R355) between Voortrekker Street and Kokerboom Road spaced approximately 120 metres to the north of the Kokerboom Road intersection. Dedicated eastbound and westbound right-turn lanes are recommended along Voortrekker Street at the main access intersection.

The Namakwa Mall development is expected to generate approximately 1 030 vehicular trips (515 in/ 515 out) during the typical Friday p.m. peak hour and approximately 1 183 vehicular trips (556 in/ 627 out) during the typical Saturday peak hour.

All the study intersections will operate at acceptable levels-of-service during both the Friday p.m. and Saturday peak hours and the surrounding road network has sufficient spare capacity to accommodate the additional trips associated with the proposed Namakwa Mall.

Type:

Medium to low negative

Duration:

Permanent

Likelihood of occurrence:

High

Significance:

Low negative after mitigation

Socio-Economic

Impacts:

Will provide job opportunities during construction and operational phases.

Will provide opportunities for local community to procure a new skills set.

Will help with financial upliftment of the entire community.

Type:

Medium positive

Duration:

Permanent

Likelihood of occurrence:

High

Significance:

Medium Positive

Noise

Impacts:

Impact of construction noise.

Impact of operational noise.

Type:

Construction and operational noise is low negative

Duration:

Construction noise: Temporary

Operational noise: Permanent

Likelihood of occurrence:

High for both

Significance:

Construction and operational noise is low negative

Visual

Impacts:

1. ***Visibility of construction works during construction***
2. ***Change in the character of the site***
3. ***Visibility from the N7***
4. ***Additional night lighting***

Type:

Construction and operational impacts

Duration:

1. ***Visibility of construction works during construction - Temporary***
2. ***Change in the character of the site - long term***
3. ***Visibility from the N7 – long term***
4. ***Additional night lighting – long term***

Likelihood of occurrence:

1. ***Visibility of construction works during construction - definite***
2. ***Change in the character of the site - definite***
3. ***Visibility from the N7 – definite***
4. ***Additional night lighting – definite***

Significance:

1. *Visibility of construction works during construction – low negative to neutral after mitigation*
2. *Change in the character of the site - low negative to neutral after mitigation*
3. *Visibility from the N7 – low negative to neutral after mitigation*
4. *Additional night lighting – low negative to neutral after mitigation*

No-go alternative (compulsory)

Socio-Economic
Impacts:
Will impact on job opportunities during construction and operational phases.
Will impact on opportunities for local community to procure a new skills set.
Will impact on financial upliftment of the entire community.
Type:
Medium negative
Duration:
Permanent
Likelihood of occurrence:
Low
Significance:
Medium Negative

SECTION E: RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?	**YES**	~~NO~~
Is an EMPr attached?	**YES**	~~NO~~

The EMPr must be attached as Appendix F.
If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment):

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

Botanical:
Will be included once received

Traffic:
- *Access is proposed via two accesses, i.e. main access off Voortrekker Street at the President Street intersection with a secondary access off the link road (R355) between Voortrekker Street and Kokerboom Road spaced approximately 120 metres to the north of the Kokerboom Road intersection. Dedicated eastbound and westbound right-turn lanes are recommended along Voortrekker Street at the main access intersection.*
- *The Namakwa Mall development is expected to generate approximately 1 030 vehicular trips (515 in/ 515 out) during the typical Friday p.m. peak hour and approximately 1 183 vehicular trips (556 in/ 627 out) during the typical Saturday peak hour. All the study intersections will operate at acceptable levels-of-service during both the Friday p.m. and Saturday peak hours and the surrounding road network has sufficient spare capacity to accommodate the additional trips associated with the proposed Namakwa Mall.*
- *Sidewalks should be provided along the site frontages with Voortrekker Street and the link road (R355) between Voortrekker Street and the Kokerboom Road intersection. Well defined walkways should also be provided on site.*
- *Minibus taxi lay-bys should be provided along both sides of Voortrekker Street downstream of the main access intersection.*

DWA:
Will be included once received.

Heritage:
No impacts

SECTION F: APPENDIXES

The following appendixes must be attached as appropriate:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix E: Comments and responses report

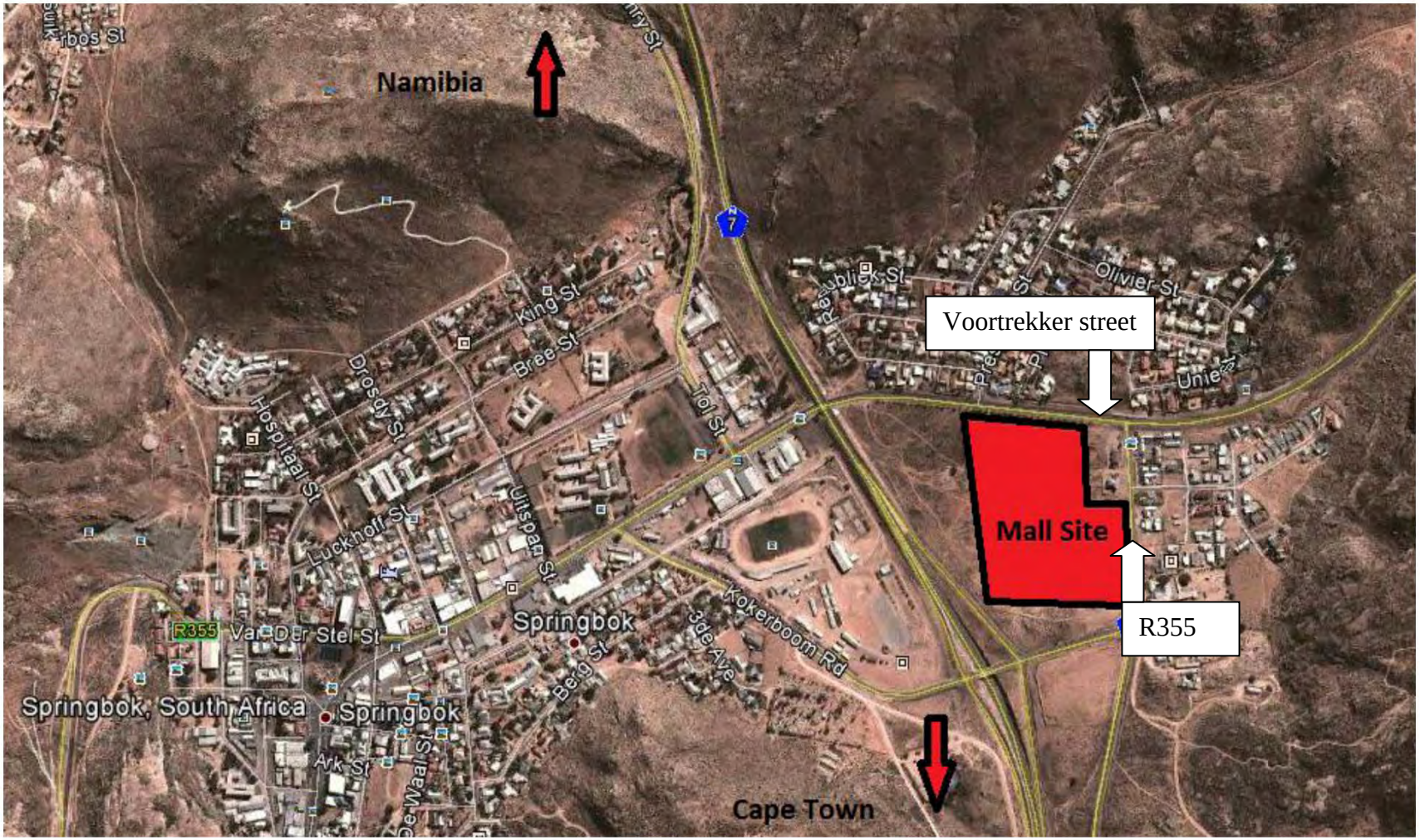
Appendix F: Environmental Management Programme (EMPr)

Appendix G: Other information

APPENDIX A: Locality Map and Site plans

Appendix A1: Proposed development area - locality

Namaqua Mall – Springbok, Northern Cape



Appendix A2: Alternative 2 -site plan

Appendix A3: Alternative 3 (preferred alternative) – site plan

Erf 2883		65 022m²	
Subdevide Erf 3437		11 700m²	
Total		**76 722m²**	
Coverage		0	0.00%

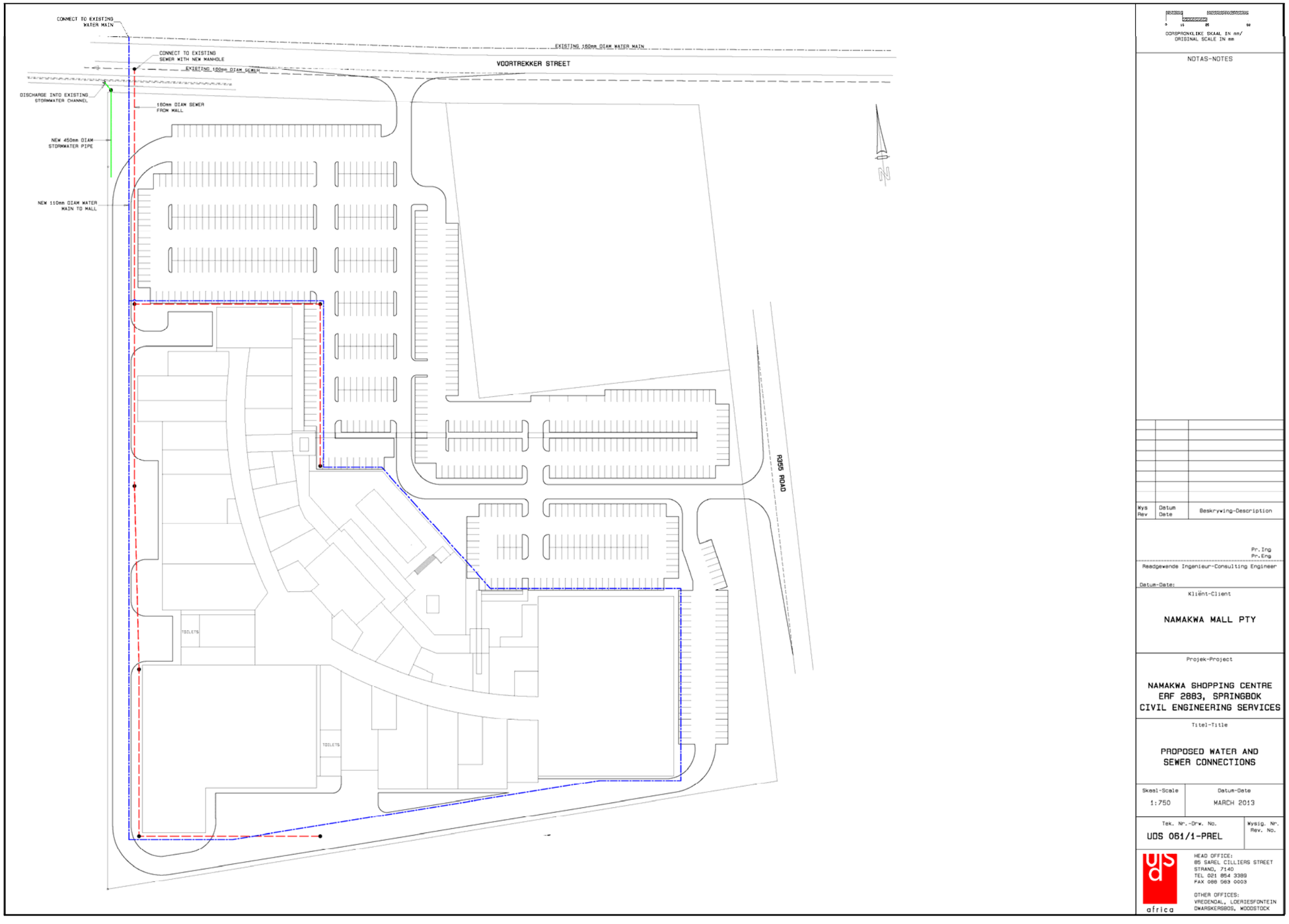
Shop No.:		**Name:**	**Area:**
Shop	1	--	490m²
Shop	2	--	133m²
Shop	3	--	250m²
Shop	4	--	250m²
Shop	5	--	43m²
Shop	6	--	107m²
Shop	7	--	100m²
Shop	8	--	137m²
Shop	9	--	189m²
Shop	10	--	105m²
Shop	11	--	212m²
Shop	12	--	130m²
Shop	13	--	555m²
Shop	14	--	125m²
Shop	15	--	275m²
Shop	16	--	214m²
Shop	17	--	293m²
Shop	18	--	287m²
Shop	19	--	103m²
Shop	20	--	4 014m²
Shop	21	--	317m²
Shop	22	--	389m²
Shop	23	--	203m²
Shop	24	--	403m²
Shop	25	--	631m²
Shop	26	--	158m²
Shop	27	--	501m²
Shop	28	--	220m²
Shop	29	--	94m²
Shop	30	--	72m²
Shop	31	--	3 959m²
Shop	32	--	225m²
Shop	33	--	525m²
Shop	34	--	1 130m²
Shop	35	--	237m²
Shop	36	--	94m²
Shop	37	--	36m²
Shop	38	--	519m²
Shop	39	--	393m²
Shop	40	--	693m²
Shop	41	--	244m²

GLA (Gross Lettable Area)		**19054**
Walkway	--	**2 845m²**
GBA (Gross Building Area)		**21899**

Parking Calculations	
Total Parking Required for GLA at 4/100	762
Total Parking Required for GLA at 6/100	1143
Total Parking Provided	**1185**

Ground floor	**1185**
Loading bays	--

Appendix A4: Services infrastructure



APPENDIX B: Photographs

View of disturbance on the site

View of the existing storm water channel from neighbouring properties onto the site.

View of site adjacent to Voortrekker street.

View of Voortrekker street along the site

APPENDIX C: Facility Illustrations

Frontage of the proposed Mall.

Aerial image.

Pool frontage

Visual illustration from N7

APPENDIX D: Specialist Reports

Appendix D1.1: Botanical Baseline Report

GUIDELINES FOR THE SEARCH AND RESCUE OF SPECIES

OF CONSERVATION SIGNIFICANCE:

INPUT INTO DRAFT BASIC ASSESSMENT REPORT FOR THE

PROPOSED SPRINGBOK MALL

Dr Helga van der Merwe (Pr. Sci. Nat.)

28 January 2013

The proposed development of a mall in the Namaqualand town of Springbok is expected to harm and/or destroy various plant species present on the proposed development site. Since the proposed site is situated within the Succulent Karoo Biome, an arid hotspot of diversity, it can be assumed that numerous species of conservation significance could occur on the proposed development site. These conservation important species are likely to include various geophytes (plants with underground storage organs such as bulbs) and succulent species for which Namaqualand is renowned. Before the construction of the proposed development takes place, a search and rescue effort should be launched in order to prevent the loss of any species of conservation significance.

It is suggested that a site investigation by a botanist familiar with the Namaqualand vegetation/flora be conducted in autumn (March/April), following late summer or early autumn rains. It is likely that if any geophytes are present, these species will either produce inflorescences and/or leaves following these rains. The presence of inflorescences and/or leaves will enable the botanist to formulate an opinion on whether there is a geophytic component of conservation significance that reacts to late summer and early autumn rains.

A follow-up site investigation in spring (August/September) should further inform the botanist on the geophytic component present under the soil surface that reacts to the winter and early spring rains. Additionally, the spring vegetation survey should be the ideal time of the year at which to conduct a detailed site investigation. The winter and early spring rains will aid in the germination, growth and flowering of annual (short-lived) species as well as the growth and flowering of perennial species (long-lived). These annual and perennial species could also be of conservation significance.

If species of conservation significance are identified, the developer has expressed an interest in using the conservation significant species, especially the geophytes (in particular the bulbs), for landscaping purposes. This should be considered a viable option in protecting these individuals from destruction but depends on the species found on site and their importance.

The botanist will formulate specific recommendations following the two site visits. These recommendations will be species specific i.e. dependent on the species found on site. Each species will have to be evaluated in terms of conservation significance and the likelihood that a species could be used for landscaping purposes. Aspects to be considered include the ease with which an individual or species could be transplanted and the chance of successfully transplanting such individuals. Additionally, the necessary permitting requirements for the various species that will be transplanted will be investigated and recommendations formulated in the final Basic Assessment Report.

A list of species that could potentially occur on site is included as an appendix (Appendix 1). This list was generated for the quarter degree grid, 2917DB, in which the site is situated using the SIBIS Integrating Biodiversity Site of the South African National Biodiversity Institute. Most of the species on this list will not occur on site since the list includes various habitats not found on the proposed development site. The conservation status of each species was sought amongst Red Data Lists (RDL) and various legislation such as the Northern Cape Nature Conservation Act (NCNCA) and Convention on International Trade in Endangered Species (CITES) and is included in the appendix. CITES does not regulate the EIA process but species listed in the Appendices of CITES are considered to be of conservation importance internationally and thus should be considered of conservation importance locally.

An additional aspect to be considered is that the site is situated in the town of Springbok and has been exposed to decades of use (and abuse). The disturbance factors to which the site has been exposed will definitely have changed its species composition and cover, and it is likely that many weedy and/or invasive species will be present on site. It is also anticipated that there will be a high cover of annual species in spring as a result of ongoing disturbance. Geophytes with showy and conspicuous inflorescences would also perhaps have been removed over the years by gardeners that have translocated such species to their private gardens.

In conclusion, the site is situated in the Succulent Karoo, a hotspot of diversity. This highlights the importance of establishing the presence of species of conservation significance on site before construction commences. Site investigations in autumn and in spring should provide a good indication of the species present on site. Recommendations with respect to specific species of conservation significance will be made once these species have been identified. These conservation significant species are expected to fall mainly within two groups, namely the geophytes and succulents. The option of using species found on site for the landscaping of the development will also be considered. The fact that the site is situated within the town of Springbok and has been subjected to decades of disturbance, increases the likelihood that more weedy and invasive species will be present on site and also increases the probability that fewer species of conservation significance will be found on site.

Appendix 1. Flora species that could potentially occur on the proposed development site (quarter degree grid 2917DB)

FAMILY	SCIENTIFIC NAME	RDL	NCNCA	CITES
FABACEAE	*Acacia karroo*	LC		
ACANTHACEAE	*Acanthopsis spathularis*	RARE		
ACAROSPORACEAE	*Acarospora schleicheri*	-		
POTTIACEAE	*Acaulon leucochaete*	-		
POTTIACEAE	*Acaulon recurvatum*	-		
MOLLUGINACEAE	*Adenogramma glomerata*	LC		
CRASSULACEAE	*Adromischus alstonii*	LC		
CRASSULACEAE	*Adromischus filicaulis* subsp. *filicaulis*	LC		
CRASSULACEAE	*Adromischus mammillaris*	EN		
CRASSULACEAE	*Adromischus marianiae* var. *immaculatus*	LC		
APIACEAE	*Afroligusticum thodei*	-	P	
RUTACEAE	*Agathosma serpyllacea*	LC	P	
POACEAE	*Aira cupaniana*	-		
AIZOACEAE/MESEMBRYANTHEMACEAE	*Aizoon canariense*	LC	P	
HYACINTHACEAE	*Albuca acuminata*	-		
HYACINTHACEAE	*Albuca canadensis*	LC		
HYACINTHACEAE	*Albuca caudata*	LC		
HYACINTHACEAE	*Albuca consanguinea*	-	P	
HYACINTHACEAE	*Albuca cooperi*	LC		
HYACINTHACEAE	*Albuca leucantha*	LC		
HYACINTHACEAE	*Albuca longipes*	LC		
HYACINTHACEAE	*Albuca namaquensis*	LC		
HYACINTHACEAE	*Albuca setosa*	LC		
HYACINTHACEAE	*Albuca* sp.	-		
HYACINTHACEAE	*Albuca villosa* subsp. *villosa*	LC		
HYACINTHACEAE	*Albuca viscosa*	LC		
HYACINTHACEAE	*Albuca zebrina*	-	P	
ASPHODELACEAE	*Aloe buhrii*	VU		
ASPHODELACEAE	*Aloe dichotoma* var. *dichotoma*	VU	SP	II
ASPHODELACEAE	*Aloe krapohliana*	DD	P	II
ASPHODELACEAE	*Aloe melanacantha*	LC	P	II
ASPHODELACEAE	*Aloe microstigma* subsp. *microstigma*	LC	P	II
ASTERACEAE	*Amellus alternifolius* subsp. *alternifolius*	LC		
ASTERACEAE	*Amellus microglossus*	LC		
AMARYLLIDACEAE	*Ammocharis coranica*	LC	P	
ASTERACEAE	*Amphiglossa tomentosa*	LC		
BORAGINACEAE	*Amsinckia calycina*	-		
PORTULACACEAE	*Anacampseros baeseckei*	LC	P	II
PORTULACACEAE	*Anacampseros filamentosa* subsp. *filamentosa*	LC	P	II
PORTULACACEAE	*Anacampseros filamentosa* subsp. *namaquensis*	LC	P	II

PORTULACACEAE	*Anacampseros filamentosa* subsp. *tomentosa*	LC	P	II
PORTULACACEAE	*Anacampseros lanceolata* subsp. *lanceolata*	LC	P	II
BORAGINACEAE	*Anchusa capensis*	LC		
BORAGINACEAE	*Anchusa riparia*	LC		
APIACEAE	*Anginon verticillatum*	LC	P	
MALVACEAE	*Anisodontea bryoniifolia*	LC		
MALVACEAE	*Anisodontea* sp.	-		
APIACEAE	*Annesorhiza latifolia*	DD	P	
RUBIACEAE	*Anthospermum dregei* subsp. *dregei*	LC		
RUBIACEAE	*Anthospermum spathulatum* subsp. *spathulatum*	LC		
AIZOACEAE/MESEMBRYANTHEMACEAE	*Antimima alborubra*	LC	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Antimima maleolens*	LC	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Antimima modesta*	-	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Antimima subtruncata*	DD	P	
MENISPERMACEAE	*Antizoma miersiana*	LC		
SCROPHULARIACEAE	*Aptosimum indivisum*	LC		
SCROPHULARIACEAE	*Aptosimum marlothii*	LC		
SCROPHULARIACEAE	*Aptosimum* sp.	-		
SCROPHULARIACEAE	*Aptosimum spinescens*	LC		
ASTERACEAE	*Arctotheca calendula*	LC		
ASTERACEAE	*Arctotis auriculata*	LC		
ASTERACEAE	*Arctotis campanulata*	LC		
ASTERACEAE	*Arctotis erosa*	LC		
ASTERACEAE	*Arctotis fastuosa*	LC		
ASTERACEAE	*Arctotis laevis*	LC		
ASTERACEAE	*Arctotis leiocarpa*	LC		
ASTERACEAE	*Arctotis leiocarpa* Harv. x *A. fastuosa* Jacq.	LC		
ASTERACEAE	*Arctotis revoluta*	LC		
ASTERACEAE	*Arctotis* sp.	-		
AIZOACEAE/MESEMBRYANTHEMACEAE	*Aridaria noctiflora* subsp. *noctiflora*	LC	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Aridaria noctiflora* subsp. *straminea*	LC	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Aridaria serotina*	LC	P	
POACEAE	*Aristida adscensionis*	LC		
POACEAE	*Aristida dasydesmis*	LC		
ASPARAGACEAE	*Asparagus aethiopicus*	LC		
ASPARAGACEAE	*Asparagus alopecurus*	LC		
ASPARAGACEAE	*Asparagus asparagoides*	LC		
ASPARAGACEAE	*Asparagus burchellii*	LC		
ASPARAGACEAE	*Asparagus capensis* var. *capensis*	LC		
ASPARAGACEAE	*Asparagus exuvialis* forma *exuvialis*	LC		
ASPARAGACEAE	*Asparagus fasciculatus*	LC		
ASPARAGACEAE	*Asparagus graniticus*	LC		
ASPARAGACEAE	*Asparagus multituberosus*	LC		
ASPARAGACEAE	*Asparagus retrofractus*	LC		

ASPLENIACEAE	*Asplenium cordatum*	LC		
AYTONIACEAE	*Asterella marginata*	-		
AYTONIACEAE	*Asterella* sp.	-		
ASTERACEAE	*Athanasia flexuosa*	LC		
CHENOPODIACEAE	*Atriplex eardleyae*	-		
CHENOPODIACEAE	*Atriplex lindleyi* subsp. *inflata*	-		
CHENOPODIACEAE	*Atriplex lindleyi* subsp. *quadripartita*	-		
CHENOPODIACEAE	*Atriplex semibaccata* var. *appendiculata*	LC		
ZYGOPHYLLACEAE	*Augea capensis*	LC		
PORTULACACEAE	*Avonia albissima*	LC	P	II
PORTULACACEAE	*Avonia quinaria subsp. quinaria*	LC	P	II
IRIDACEAE	*Babiana attenuata*	LC	P	
IRIDACEAE	*Babiana curviscapa*	LC	P	
IRIDACEAE	*Babiana flabellifolia*	LC	P	
IRIDACEAE	*Babiana horizontalis*	VU	P	
IRIDACEAE	*Babiana* sp.	-	P	
IRIDACEAE	*Babiana torta*	LC	P	
IRIDACEAE	*Babiana vanzijliae*	NT	P	
LAMIACEAE	*Ballota africana*	LC		
ASTERACEAE	*Berkheya canescens*	LC		
ASTERACEAE	*Berkheya ferox* var. *pseudodidelta*	LC		
ASTERACEAE	*Berkheya ferox* var. *tomentosa*	LC		
ASTERACEAE	*Berkheya fruticosa*	LC		
ASTERACEAE	*Berkheya onobromoides* var. *onobromoides*	LC		
ASTERACEAE	*Berkheya spinosissima* subsp. *namaensis* var. *namaensis*	LC		
ASTERACEAE	*Berkheya spinosissima* subsp. *spinosissima*	LC		
ACANTHACEAE	*Blepharis capensis*	LC		
ACANTHACEAE	*Blepharis macra*	LC		
ACANTHACEAE	*Blepharis mitrata*	LC		
ACANTHACEAE	*Blepharis pruinosa*	-		
ACANTHACEAE	*Blepharis* sp.	-		
AMARYLLIDACEAE	*Boophone* sp.	-	P	
CAPPARACEAE	*Boscia foetida* subsp. *foetida*	LC		
BRASSICACEAE	*Brassica tournefortii*	-		
POACEAE	*Bromus hordeaceus* subsp. *molliformis*	-		
POACEAE	*Bromus pectinatus*	LC		
POACEAE	*Bromus* sp.	-		
POACEAE	*Bromus tectorum*	-	I	
AMARYLLIDACEAE	*Brunsvigia bosmaniae*	LC	P	
AMARYLLIDACEAE	*Brunsvigia herrei*	VU	P	
BRYACEAE	*Bryum alpinum*	-		
BRYACEAE	*Bryum argenteum*	-		
BRYACEAE	*Bryum radiculosum*	-		
ASPHODELACEAE	*Bulbine favosa*	LC	P	

ASPHODELACEAE	*Bulbine frutescens*	LC	P
ASPHODELACEAE	*Bulbine lamprophylla*	DD	P
ASPHODELACEAE	*Bulbine praemorsa*	LC	P
ASPHODELACEAE	*Bulbine stolonifera*	LC	P
ASPHODELACEAE	*Bulbine vittatifolia*	LC	P
ASPHODELACEAE	*Bulbinella ciliolata*	LC	P
ASPHODELACEAE	*Bulbinella latifolia* subsp. *latifolia*	LC	P
FABACEAE	*Calobota angustifolia*	-	
FABACEAE	*Calobota cinerea*	-	
FABACEAE	*Calobota halenbergensis*	-	
FABACEAE	*Calobota sericea*	-	
CYPERACEAE	*Carex divisa*	-	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Carpobrotus edulis* subsp. *edulis*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Cephalophyllum goodii*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Cephalophyllum pillansii*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Cephalophyllum rigidum*	LC	P
SCROPHULARIACEAE	*Chaenostoma revolutum*	LC	
POACEAE	*Chaetobromus involucratus* subsp. *dregeanus*	LC	
GIGASPERMACEAE	*Chamaebryum pottioides*	-	
SINOPTERIDACEAE	*Cheilanthes capensis*	LC	
SINOPTERIDACEAE	*Cheilanthes deltoidea*	LC	
SINOPTERIDACEAE	*Cheilanthes dinteri*	-	
PTERIDACEAE	*Cheilanthes hirta*	-	
SINOPTERIDACEAE	*Cheilanthes kunzei*	LC	
SINOPTERIDACEAE	*Cheilanthes multifida* var. *multifida*	LC	
SINOPTERIDACEAE	*Cheilanthes namaquensis*	LC	
SINOPTERIDACEAE	*Cheilanthes rawsonii*	LC	
SINOPTERIDACEAE	*Cheilanthes robusta*	LC	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Cheiridopsis denticulata*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Cheiridopsis derenbergiana*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Cheiridopsis meyeri*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Cheiridopsis namaquensis*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Cheiridopsis pillansii*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Cheiridopsis pilosula*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Cheiridopsis robusta*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Cheiridopsis rostrata*	VU	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Cheiridopsis schlechteri*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Cheiridopsis* sp.	-	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Cheiridopsis speciosa*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Cheiridopsis turbinata*	LC	P
CHENOPODIACEAE	*Chenopodium glaucum*	-	
CHENOPODIACEAE	*Chenopodium murale* var. *murale*	-	
GENTIANACEAE	*Chironia baccifera*	LC	
POACEAE	*Chloris virgata*	LC	
ANTHERICACEAE	*Chlorophytum crassinerve*	LC	P

ANTHERICACEAE	*Chlorophytum namaquense*	LC	P	
ANTHERICACEAE	*Chlorophytum undulatum*	LC	P	
ASTERACEAE	*Chrysanthemoides monilifera* subsp. *canescens*	LC		
ASTERACEAE	*Chrysanthemoides monilifera* subsp. *pisifera*	LC		
ASTERACEAE	*Chrysocoma ciliata*	LC		
ASTERACEAE	*Chrysocoma coma-aurea*	LC		
ASTERACEAE	*Chrysocoma longifolia*	LC		
ASTERACEAE	*Chrysocoma oblongifolia*	LC		
ASTERACEAE	*Chrysocoma* sp.	-		
ASTERACEAE	*Cineraria canescens* var. *canescens*	LC		
CUCURBITACEAE	*Citrullus lanatus*	LC		
POACEAE	*Cladoraphis spinosa*	LC		
AIZOACEAE/MESEMBRYANTHEMACEAE	*Cleretum papulosum* subsp. *papulosum*	LC	P	
ROSACEAE	*Cliffortia ruscifolia* var. *ruscifolia*	LC		
EUPHORBIACEAE	*Clutia daphnoides*	LC		
BORAGINACEAE	*Codon royenii*	LC		
BORAGINACEAE	*Codon schenckii*	LC		
COLCHICACEAE	*Colchicum circinatum* subsp. *circinatum*	LC	P	
COLCHICACEAE	*Colchicum dregei*	LC	P	
COLCHICACEAE	*Colchicum poeltianum*	LC	P	
COLCHICACEAE	*Colchicum volutare*	LC	P	
COLCHICACEAE	*Colchicum walteri*	LC	P	
SCROPHULARIACEAE	*Colpias mollis*	LC		
BURSERACEAE	*Commiphora cervifolia*	LC		
AIZOACEAE/MESEMBRYANTHEMACEAE	*Conicosia elongata*	LC	P	
APIACEAE	*Conium chaerophylloides*	LC	P	
APIACEAE	*Conium sphaerocarpum*	LC	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Conophytum bilobum* subsp. *bilobum* var. *bilobum*	LC	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Conophytum bilobum* subsp. *bilobum* var. *elishae*	LC	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Conophytum blandum*	NT	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Conophytum breve*	LC	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Conophytum flavum* subsp. *flavum*	LC	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Conophytum khamiesbergense*	VU	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Conophytum pageae*	LC	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Conophytum pellucidum*	-	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Conophytum roodiae* subsp. *roodiae*	LC	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Conophytum* sp.	-	P	
ORCHIDACEAE	*Corycium crispum*	LC	P	II
ASTERACEAE	*Cotula barbata*	LC		
ASTERACEAE	*Cotula bipinnata*	LC		
ASTERACEAE	*Cotula coronopifolia*	LC		
ASTERACEAE	*Cotula laxa*	LC		
ASTERACEAE	*Cotula leptalea*	LC		
ASTERACEAE	*Cotula microglossa*	LC		

ASTERACEAE	*Cotula* sp.	-	
ASTERACEAE	*Cotula tenella*	LC	
ASTERACEAE	*Cotula thunbergii*	LC	
CRASSULACEAE	*Cotyledon orbiculata* var. *oblonga*	LC	
CRASSULACEAE	*Cotyledon orbiculata* var. *orbiculata*	LC	
CRASSULACEAE	*Cotyledon* sp.	-	
CRASSULACEAE	*Crassula aphylla*	LC	P
CRASSULACEAE	*Crassula atropurpurea* var. *atropurpurea*	LC	P
CRASSULACEAE	*Crassula atropurpurea* var. *cultriformis*	LC	P
CRASSULACEAE	*Crassula atropurpurea* var. *purcellii*	LC	P
CRASSULACEAE	*Crassula atropurpurea* var. *watermeyeri*	LC	P
CRASSULACEAE	*Crassula brevifolia* subsp. *brevifolia*	LC	P
CRASSULACEAE	*Crassula columnaris* subsp. *columnaris*	LC	P
CRASSULACEAE	*Crassula cotyledonis*	LC	P
CRASSULACEAE	*Crassula decumbens* var. *brachyphylla*	NT	P
CRASSULACEAE	*Crassula dichotoma*	LC	P
CRASSULACEAE	*Crassula elegans* subsp. *elegans*	LC	P
CRASSULACEAE	*Crassula exilis* subsp. *exilis*	RARE	P
CRASSULACEAE	*Crassula glomerata*	LC	P
CRASSULACEAE	*Crassula hirsuta*	LC	P
CRASSULACEAE	*Crassula macowaniana*	LC	P
CRASSULACEAE	*Crassula muscosa* var. *muscosa*	LC	P
CRASSULACEAE	*Crassula muscosa* var. *obtusifolia*	LC	P
CRASSULACEAE	*Crassula namaquensis* subsp. *namaquensis*	LC	P
CRASSULACEAE	*Crassula natans* var. *minus*	LC	P
CRASSULACEAE	*Crassula nudicaulis* var. *nudicaulis*	LC	P
CRASSULACEAE	*Crassula roggeveldii*	RARE	P
CRASSULACEAE	*Crassula rudolfii*	LC	P
CRASSULACEAE	*Crassula* sp.	-	P
CRASSULACEAE	*Crassula strigosa*	LC	P
CRASSULACEAE	*Crassula subaphylla* var. *subaphylla*	LC	P
CRASSULACEAE	*Crassula tenuipedicellata*	LC	P
CRASSULACEAE	*Crassula thunbergiana* subsp. *minutiflora*	RARE	P
CRASSULACEAE	*Crassula tomentosa* var. *glabrifolia*	LC	P
CRASSULACEAE	*Crassula tomentosa* var. *tomentosa*	LC	P
CRASSULACEAE	*Crassula umbellata*	LC	P
CRASSULACEAE	*Crassula vaillantii*	-	P
SCROPHULARIACEAE	*Cromidon confusum*	LC	
SCROPHULARIACEAE	*Cromidon corrigioloides*	LC	
CUCURBITACEAE	*Cucumis africanus*	LC	
TECOPHILAEACEAE	*Cyanella hyacinthoides*	LC	P
TECOPHILAEACEAE	*Cyanella lutea*	LC	P
POACEAE	*Cymbopogon pospischilii*	-	
POACEAE	*Cynodon dactylon*	LC	
CYPERACEAE	*Cyperus longus* var. *longus*	LC	

CYPERACEAE	*Cyperus marginatus*	LC		
LOBELIACEAE	*Cyphia crenata* var. *angustifolia*	LC		
FUMARIACEAE	*Cysticapnos vesicaria* subsp. *vesicaria*	LC		
APIACEAE	*Dasispermum capense*	LC	P	
APIACEAE	*Dasispermum tenue*	LC	P	
APIACEAE	*Deverra denudata* subsp. *aphylla*	LC	P	
CARYOPHYLLACEAE	*Dianthus holopetalus*	LC	P	
CARYOPHYLLACEAE	*Dianthus karnisbergensis*	LC	P	
SCROPHULARIACEAE	*Diascia diffusa*	LC	P	
SCROPHULARIACEAE	*Diascia minutiflora*	LC	P	
SCROPHULARIACEAE	*Diascia namaquensis*	LC	P	
SCROPHULARIACEAE	*Diascia runcinata*	LC	P	
SCROPHULARIACEAE	*Diascia tanyceras*	LC	P	
ASTERACEAE	*Dicerothamnus rhinocerotis*	LC		
ASTERACEAE	*Dicoma capensis*	LC		
ASTERACEAE	*Didelta carnosa* var. *carnosa*	LC		
ASTERACEAE	*Didelta spinosa*	LC		
POTTIACEAE	*Didymodon australasii*	-		
URTICACEAE	*Didymodoxa capensis* var. *capensis*	LC		
ASTERACEAE	*Dimorphotheca fruticosa*	LC		
ASTERACEAE	*Dimorphotheca polyptera*	LC		
ASTERACEAE	*Dimorphotheca sinuata*	LC		
ASTERACEAE	*Dimorphotheca* sp.	-		
ASTERACEAE	*Dimorphotheca tragus*	LC		
RUTACEAE	*Diosma acmaeophylla*	LC		
RUTACEAE	*Diosma ramosissima*	LC		
EBENACEAE	*Diospyros austro-africana* var. *austro-africana*	LC		
EBENACEAE	*Diospyros austro-africana* var. *rubriflora*	LC		
EBENACEAE	*Diospyros ramulosa*	LC		
HYACINTHACEAE	*Dipcadi ciliare*	LC		
HYACINTHACEAE	*Dipcadi crispum*	LC		
ORCHIDACEAE	*Disa spathulata* subsp. *spathulata*	D	P	II
SCROPHULARIACEAE	*Dischisma clandestinum*	LC		
SCROPHULARIACEAE	*Dischisma spicatum*	LC		
SAPINDACEAE	*Dodonaea viscosa* var. *angustifolia*	LC		
AIZOACEAE/MESEMBRYANTHEMACEAE	*Dorotheanthus bellidiformis* subsp. *hestermalensis*	LC	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Dorotheanthus* sp.	-	P	
HYACINTHACEAE	*Drimia cuscutoides*	LC		
HYACINTHACEAE	*Drimia exuviata*	LC		
HYACINTHACEAE	*Drimia intricata*	LC		
HYACINTHACEAE	*Drimia marginata*	LC		
HYACINTHACEAE	*Drimia multifolia*	LC		
HYACINTHACEAE	*Drimia physodes*	LC		
HYACINTHACEAE	*Drimia pulchromarginata*	LC		
AIZOACEAE/MESEMBRYANTHEMACEAE	*Drosanthemum calycinum*	NT	P	

AIZOACEAE/MESEMBRYANTHEMACEAE	*Drosanthemum floribundum*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Drosanthemum framesii*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Drosanthemum hispidum*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Drosanthemum latipetalum*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Drosanthemum lique*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Drosanthemum* sp.	-	P
PLUMBAGINACEAE	*Dyerophytum africanum*	LC	
POACEAE	*Ehrharta barbinodis*	LC	
POACEAE	*Ehrharta calycina*	LC	
POACEAE	*Ehrharta delicatula*	LC	
POACEAE	*Ehrharta longiflora*	LC	
POACEAE	*Ehrharta melicoides*	LC	
POACEAE	*Ehrharta pusilla*	LC	
POACEAE	*Ehrharta triandra*	LC	
POLYGONACEAE	*Emex australis*	-	
HYPOXIDACEAE	*Empodium flexile*	LC	
HYPOXIDACEAE	*Empodium veratrifolium*	EN	
POACEAE	*Enneapogon desvauxii*	LC	
POACEAE	*Enneapogon scaber*	LC	
ERICACEAE	*Erica plukenetii* subsp. *plukenetii*	LC	P
ASTERACEAE	*Eriocephalus africanus* var. *africanus*	LC	
ASTERACEAE	*Eriocephalus africanus* var. *paniculatus*	LC	
ASTERACEAE	*Eriocephalus brevifolius*	LC	
ASTERACEAE	*Eriocephalus ericoides* subsp. *ericoides*	LC	
ASTERACEAE	*Eriocephalus macroglossus*	LC	
ASTERACEAE	*Eriocephalus microcephalus*	LC	
ASTERACEAE	*Eriocephalus microphyllus* var. *microphyllus*	LC	
ASTERACEAE	*Eriocephalus microphyllus* var. *pubescens*	LC	
ASTERACEAE	*Eriocephalus punctulatus*	LC	
ASTERACEAE	*Eriocephalus* sp.	-	
ERIOSPERMACEAE	*Eriospermum alcicorne*	LC	
ERIOSPERMACEAE	*Eriospermum capense* subsp. *capense*	LC	
ERIOSPERMACEAE	*Eriospermum cervicorne*	LC	
ERIOSPERMACEAE	*Eriospermum descendens*	LC	
ERIOSPERMACEAE	*Eriospermum deserticolum*	LC	
ERIOSPERMACEAE	*Eriospermum folioliferum*	LC	
ERIOSPERMACEAE	*Eriospermum multifidum*	LC	
ERIOSPERMACEAE	*Eriospermum paradoxum*	LC	
ERIOSPERMACEAE	*Eriospermum parvifolium*	LC	
ERIOSPERMACEAE	*Eriospermum pusillum*	RARE	
ERIOSPERMACEAE	*Eriospermum* sp.	-	
GERANIACEAE	*Erodium cicutarium*	-	
GERANIACEAE	*Erodium moschatum*	-	
SAPINDACEAE	*Erythrophysa alata*	LC	
EBENACEAE	*Euclea lancea*	LC	

EBENACEAE	*Euclea tomentosa*	LC		
EUPHORBIACEAE	*Euphorbia brachiata*	LC	P	II
EUPHORBIACEAE	*Euphorbia caterviflora*	LC	P	II
EUPHORBIACEAE	*Euphorbia chersina*	LC	P	II
EUPHORBIACEAE	*Euphorbia crispa*	LC	P	II
EUPHORBIACEAE	*Euphorbia decussata*	LC	P	II
EUPHORBIACEAE	*Euphorbia dregeana*	LC	P	II
EUPHORBIACEAE	*Euphorbia ephedroides* var. *ephedroides*	LC	P	II
EUPHORBIACEAE	*Euphorbia filiflora*	LC	P	II
EUPHORBIACEAE	*Euphorbia mauritanica* var. *corallothamnus*	-	P	II
EUPHORBIACEAE	*Euphorbia mauritanica* var. *mauritanica*	LC	P	II
EUPHORBIACEAE	*Euphorbia mauritanica* var. *namaquensis*	LC	P	II
EUPHORBIACEAE	*Euphorbia rudis*	LC	P	II
EUPHORBIACEAE	*Euphorbia* sp.	-	P	II
ASTERACEAE	*Euryops brevipapposus*	LC		
ASTERACEAE	*Euryops dregeanus*	LC		
ASTERACEAE	*Euryops marlothii*	RARE		
ASTERACEAE	*Euryops multifidus*	LC		
ASTERACEAE	*Euryops namaquensis*	VU		
ASTERACEAE	*Euryops subcarnosus* subsp. *vulgaris*	LC		
ASTERACEAE	*Euryops tenuissimus* subsp. *tenuissimus*	LC		
ASTERACEAE	*Felicia australis*	LC		
ASTERACEAE	*Felicia bergeriana*	LC		
ASTERACEAE	*Felicia brevifolia*	LC		
ASTERACEAE	*Felicia clavipilosa* subsp. *clavipilosa*	LC		
ASTERACEAE	*Felicia dubia*	LC		
ASTERACEAE	*Felicia filifolia* subsp. *filifolia*	LC		
ASTERACEAE	*Felicia filifolia* subsp. *schaeferi*	LC		
ASTERACEAE	*Felicia hirsuta*	LC		
ASTERACEAE	*Felicia merxmuelleri*	LC		
ASTERACEAE	*Felicia microsperma*	LC		
ASTERACEAE	*Felicia namaquana*	LC		
ASTERACEAE	*Felicia scabrida*	LC		
ASTERACEAE	*Felicia tenella* subsp. *longifolia*	LC		
ASTERACEAE	*Felicia tenera*	LC		
IRIDACEAE	*Ferraria ferrariola*	LC	P	
IRIDACEAE	*Ferraria macrochlamys* subsp. *macrochlamys*	-	P	
IRIDACEAE	*Ferraria uncinata*	LC	P	
IRIDACEAE	*Ferraria variabilis*	LC	P	
CYPERACEAE	*Ficinia argyropa*	LC		
CYPERACEAE	*Ficinia brevifolia*	LC		
CYPERACEAE	*Ficinia laevis*	LC		
CYPERACEAE	*Ficinia nigrescens*	LC		
MORACEAE	*Ficus cordata* subsp. *cordata*	LC		
MORACEAE	*Ficus ilicina*	LC		

MORACEAE	*Ficus ingens*	LC	
POACEAE	*Fingerhuthia africana*	LC	
FISSIDENTACEAE	*Fissidens rufescens*	-	
APOCYNACEAE	*Fockea comaru*	LC	P
APOCYNACEAE	*Fockea sinuata*	LC	P
URTICACEAE	*Forsskaolea candida*	LC	
ASTERACEAE	*Foveolina dichotoma*	LC	
FRANKENIACEAE	*Frankenia pulverulenta*	LC	
FRANKENIACEAE	*Frankenia repens*	LC	
IRIDACEAE	*Freesia viridis*	LC	P
FUNARIACEAE	*Funaria bergiana*	-	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Galenia africana*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Galenia collina*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Galenia crystallina* var. *crystallina*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Galenia cymosa*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Galenia fruticosa*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Galenia namaensis*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Galenia sarcophylla*	LC	P
RUBIACEAE	*Galium* sp.	-	
RUBIACEAE	*Galium tomentosum*	LC	
ASTERACEAE	*Gazania heterochaeta*	LC	
ASTERACEAE	*Gazania krebsiana* subsp. *arctotoides*	LC	
ASTERACEAE	*Gazania leiopoda*	LC	
ASTERACEAE	*Gazania lichtensteinii*	LC	
ASTERACEAE	*Gazania tenuifolia*	LC	
AMARYLLIDACEAE	*Gethyllis lanuginosa*	LC	P
AMARYLLIDACEAE	*Gethyllis* sp.	-	P
IRIDACEAE	*Gladiolus equitans*	LC	P
IRIDACEAE	*Gladiolus orchidiflorus*	LC	P
IRIDACEAE	*Gladiolus saccatus*	LC	P
IRIDACEAE	*Gladiolus salteri*	RARE	P
IRIDACEAE	*Gladiolus scullyi*	LC	P
THYMELAEACEAE	*Gnidia meyeri*	LC	
THYMELAEACEAE	*Gnidia nitida*	LC	
THYMELAEACEAE	*Gnidia* sp.	-	
APOCYNACEAE	*Gomphocarpus cancellatus*	-	P
APOCYNACEAE	*Gomphocarpus filiformis*	LC	P
APOCYNACEAE	*Gomphocarpus fruticosus* subsp. *fruticosus*	-	P
FUNARIACEAE	*Goniomitrium africanum*	-	
ASTERACEAE	*Gorteria diffusa* subsp. *calendulacea*	LC	
ASTERACEAE	*Gorteria diffusa* subsp. *diffusa*	LC	
PROTEACEAE	*Grevillea robusta*	-	
MALVACEAE	*Grewia flava*	LC	
NEURADACEAE	*Grielum humifusum* var. *humifusum*	LC	
NEURADACEAE	*Grielum sinuatum*	LC	

GRIMMIACEAE	*Grimmia laevigata*	-	
GRIMMIACEAE	*Grimmia pulvinata*	-	
ASTERACEAE	*Gymnodiscus linearifolia*	LC	
AMARYLLIDACEAE	*Haemanthus amarylloides* subsp. *polyanthus*	LC	P
AMARYLLIDACEAE	*Haemanthus crispus*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Hallianthus planus*	LC	P
ASTERACEAE	*Haplocarpha* sp.	-	
ASPHODELACEAE	*Haworthia reticulata* var. *reticulata*	LC	P
SCROPHULARIACEAE	*Hebenstretia dentata*	LC	
SCROPHULARIACEAE	*Hebenstretia fastigiosa*	LC	
SCROPHULARIACEAE	*Hebenstretia integrifolia*	LC	
SCROPHULARIACEAE	*Hebenstretia parviflora*	LC	
SCROPHULARIACEAE	*Hebenstretia robusta*	LC	
SCROPHULARIACEAE	*Hebenstretia* sp.	-	
ASTERACEAE	*Helichrysum hebelepis*	LC	
ASTERACEAE	*Helichrysum herniarioides*	LC	
ASTERACEAE	*Helichrysum leontonyx*	LC	
ASTERACEAE	*Helichrysum litorale*	LC	
ASTERACEAE	*Helichrysum micropoides*	LC	
ASTERACEAE	*Helichrysum obtusum*	LC	
ASTERACEAE	*Helichrysum oxybelium*	LC	
ASTERACEAE	*Helichrysum revolutum*	LC	
ASTERACEAE	*Helichrysum tinctum*	LC	
ASTERACEAE	*Helichrysum tomentosulum* subsp. *aromaticum*	LC	
ASTERACEAE	*Helichrysum zeyheri*	LC	
BRASSICACEAE	*Heliophila amplexicaulis*	LC	
BRASSICACEAE	*Heliophila arenaria* var. *acocksii*	LC	
BRASSICACEAE	*Heliophila carnosa*	LC	
BRASSICACEAE	*Heliophila cornuta* var. *cornuta*	LC	
BRASSICACEAE	*Heliophila cornuta* var. *squamata*	LC	
BRASSICACEAE	*Heliophila crithmifolia*	LC	
BRASSICACEAE	*Heliophila deserticola* var. *deserticola*	LC	
BRASSICACEAE	*Heliophila lactea*	LC	
BRASSICACEAE	*Heliophila namaquana*	LC	
BRASSICACEAE	*Heliophila pinnata*	LC	
BRASSICACEAE	*Heliophila seselifolia* var. *nigellifolia*	LC	
BRASSICACEAE	*Heliophila* sp.	-	
BRASSICACEAE	*Heliophila thunbergii* var. *macrostylis*	LC	
BRASSICACEAE	*Heliophila thunbergii* var. *thunbergii*	LC	
BRASSICACEAE	*Heliophila variabilis*	LC	
SCROPHULARIACEAE	*Hemimeris racemosa*	LC	
MALVACEAE	*Hermannia althaeifolia*	LC	
MALVACEAE	*Hermannia cuneifolia* var. *cuneifolia*	LC	
MALVACEAE	*Hermannia cuneifolia* var. *glabrescens*	LC	
MALVACEAE	*Hermannia disermifolia*	LC	

MALVACEAE	*Hermannia gariepina*	LC		
MALVACEAE	*Hermannia marginata*	LC		
MALVACEAE	*Hermannia meyeriana*	-		
MALVACEAE	*Hermannia minutiflora*	LC		
MALVACEAE	*Hermannia paucifolia*	LC		
MALVACEAE	*Hermannia pfeilii*	LC		
MALVACEAE	*Hermannia pulchella*	LC		
MALVACEAE	*Hermannia pulverata*	LC		
MALVACEAE	*Hermannia* sp.	-		
MALVACEAE	*Hermannia stricta*	LC		
MALVACEAE	*Hermannia trifoliata*	LC		
MALVACEAE	*Hermannia trifurca*	LC		
AMARANTHACEAE	*Hermbstaedtia glauca*	LC		
IRIDACEAE	*Hesperantha bachmannii*	LC	P	
IRIDACEAE	*Hesperantha flexuosa*	LC	P	
IRIDACEAE	*Hesperantha radiata*	LC	P	
AMARYLLIDACEAE	*Hessea breviflora*	LC	P	
ASTERACEAE	*Hirpicium alienatum*	LC		
ASTERACEAE	*Hirpicium echinus*	LC		
ORCHIDACEAE	*Holothrix schlechteriana*	LC	P	II
ARALIACEAE	*Hydrocotyle* sp.	-		
ASTERACEAE	*Hymenolepis parviflora*	LC		
OROBANCHACEAE	*Hyobanche barklyi*	LC		
OROBANCHACEAE	*Hyobanche glabrata*	LC		
OROBANCHACEAE	*Hyobanche sanguinea*	LC		
MOLLUGINACEAE	*Hypertelis salsoloides* var. *salsoloides*	LC		
DENNSTAEDTIACEAE	*Hypolepis sparsisora*	LC		
HYPOXIDACEAE	*Hypoxis* sp.	-		
ASTERACEAE	*Ifloga molluginoides*	LC		
ASTERACEAE	*Ifloga* sp.	LC		
AIZOACEAE/MESEMBRYANTHEMACEAE	*Ihlenfeldtia excavata*	LC	P	
FABACEAE	*Indigofera heterophylla*	LC		
FABACEAE	*Indigofera meyeriana*	LC		
FABACEAE	*Indigofera nigromontana*	LC		
FABACEAE	*Indigofera pungens*	LC		
FABRONIACEAE	*Ischyrodon lepturus*	-		
RESTIONACEAE	*Ischyrolepis sieberi*	LC	P	
RESTIONACEAE	*Ischyrolepis* sp.	-	P	
CYPERACEAE	*Isolepis brevicaulis*	LC		
CYPERACEAE	*Isolepis capensis*	LC		
IRIDACEAE	*Ixia scillaris* var. *scillaris*	LC	P	
SCROPHULARIACEAE	*Jamesbrittenia amplexicaulis*	LC	P	
SCROPHULARIACEAE	*Jamesbrittenia aridicola*	LC	P	
SCROPHULARIACEAE	*Jamesbrittenia atropurpurea* subsp. *atropurpurea*	LC	P	
SCROPHULARIACEAE	*Jamesbrittenia fruticosa*	LC	P	

SCROPHULARIACEAE	*Jamesbrittenia maxii*	LC	P
SCROPHULARIACEAE	*Jamesbrittenia namaquensis*	LC	P
SCROPHULARIACEAE	*Jamesbrittenia pedunculosa*	LC	P
SCROPHULARIACEAE	*Jamesbrittenia* sp.	-	P
JUNCACEAE	*Juncus acutus* subsp. *leopoldii*	LC	
JUNCACEAE	*Juncus bufonius*	-	
PARMELIACEAE	*Karoowia perspersa*	-	
POACEAE	*Karroochloa schismoides*	LC	
POACEAE	*Karroochloa tenella*	LC	
ACHARIACEAE	*Kiggelaria africana*	LC	
ASTERACEAE	*Kleinia longiflora*	LC	
HYACINTHACEAE	*Lachenalia anguinea*	LC	P
HYACINTHACEAE	*Lachenalia carnosa*	LC	P
HYACINTHACEAE	*Lachenalia concordiana*	RARE	P
HYACINTHACEAE	*Lachenalia kliprandensis*	RARE	P
HYACINTHACEAE	*Lachenalia mutabilis*	LC	P
HYACINTHACEAE	*Lachenalia obscura*	LC	P
HYACINTHACEAE	*Lachenalia undulata*	LC	P
HYACINTHACEAE	*Lachenalia verticillata*	RARE	P
HYACINTHACEAE	*Lachenalia violacea* var. *glauca*	LC	P
HYACINTHACEAE	*Lachenalia violacea* var. *violacea*	LC	P
POACEAE	*Lagurus* sp.	RARE	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Lampranthus amoenus*	EN	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Lampranthus aureus*	EN	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Lampranthus godmaniae*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Lampranthus otzenianus*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Lampranthus* sp.	-	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Lampranthus uniflorus*	LC	P
IRIDACEAE	*Lapeirousia anceps*	LC	P
IRIDACEAE	*Lapeirousia exilis*	LC	P
IRIDACEAE	*Lapeirousia fabricii*	LC	P
IRIDACEAE	*Lapeirousia littoralis* subsp. *littoralis*	LC	P
IRIDACEAE	*Lapeirousia pyramidalis* subsp. *pyramidalis*	LC	P
IRIDACEAE	*Lapeirousia silenoides*	LC	P
ASTERACEAE	*Lasiopogon micropoides*	LC	
ASTERACEAE	*Lasiospermum brachyglossum*	LC	
LECIDEACEAE	*Lecidea tragorum*	-	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Leipoldtia brevifolia*	-	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Leipoldtia klaverensis*	EN	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Leipoldtia laxa*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Leipoldtia schultzei*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Leipoldtia* sp.	-	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Leipoldtia uniflora*	LC	P
FABACEAE	*Leobordea longiflora*	-	
FABACEAE	*Leobordea pentaphylla*	-	

FABACEAE	*Leobordea polycephala*	-	
FABACEAE	*Leobordea quinata*	-	
BRASSICACEAE	*Lepidium africanum* subsp. *africanum*	LC	
BRASSICACEAE	*Lepidium africanum* subsp. *divaricatum*	LC	
BRASSICACEAE	*Lepidium desertorum*	LC	
POACEAE	*Leptochloa fusca*	LC	
POTTIACEAE	*Leptophascum leptophyllum*	-	
FABACEAE	*Lessertia argentea*	LC	SP
FABACEAE	*Lessertia brachypus*	LC	SP
FABACEAE	*Lessertia brachystachya*	LC	SP
FABACEAE	*Lessertia capitata*	LC	SP
FABACEAE	*Lessertia diffusa*	LC	SP
FABACEAE	*Lessertia fruticosa*	LC	SP
FABACEAE	*Lessertia* sp.	-	SP
FABACEAE	*Lessertia spinescens*	LC	SP
FABACEAE	*Lessertia stenoloba*	LC	SP
ASTERACEAE	*Leysera gnaphalodes*	LC	
ASTERACEAE	*Leysera tenella*	LC	
MOLLUGINACEAE	*Limeum africanum* subsp. *africanum*	LC	
PLUMBAGINACEAE	*Limonium dregeanum*	LC	
PLUMBAGINACEAE	*Limonium scabrum* var. *avenaceum*	LC	
BORAGINACEAE	*Lobostemon echioides*	LC	
BORAGINACEAE	*Lobostemon* sp.	-	
POACEAE	*Lophochloa pumila*	-	
ASTERACEAE	*Lopholaena cneorifolia*	LC	
ASTERACEAE	*Lopholaena* sp.	-	
FABACEAE	*Lotononis benthamiana*	LC	
FABACEAE	*Lotononis falcata*	LC	
FABACEAE	*Lotononis leptoloba*	LC	
FABACEAE	*Lotononis parviflora*	LC	
FABACEAE	*Lotononis quinata*	LC	
FABACEAE	*Lotononis rostrata* subsp. *namaquensis*	LC	
FABACEAE	*Lotononis* sp.	-	
SOLANACEAE	*Lycium amoenum*	LC	
SOLANACEAE	*Lycium cinereum*	LC	
SOLANACEAE	*Lycium ferocissimum*	LC	
SOLANACEAE	*Lycium horridum*	LC	
SOLANACEAE	*Lycium oxycarpum*	LC	
SCROPHULARIACEAE	*Lyperia tristis*	LC	
MALVACEAE	*Malva parviflora* var. *parviflora*	-	
CHENOPODIACEAE	*Manochlamys albicans*	LC	
SCROPHULARIACEAE	*Manulea altissima* subsp. *glabricaulis*	LC	P
SCROPHULARIACEAE	*Manulea decipiens*	LC	P
SCROPHULARIACEAE	*Manulea exigua*	VU	P
SCROPHULARIACEAE	*Manulea gariepina*	LC	P

SCROPHULARIACEAE	*Manulea nervosa*	LC	P
SCROPHULARIACEAE	*Manulea pusilla*	LC	P
SCROPHULARIACEAE	*Manulea silenoides*	LC	P
SCROPHULARIACEAE	*Manulea* sp.	-	P
APIACEAE	*Marlothiella gummifera*	-	P
HYACINTHACEAE	*Massonia bifolia*	LC	
HYACINTHACEAE	*Massonia depressa*	LC	
HYACINTHACEAE	*Massonia echinata*	LC	
CELASTRACEAE	*Maytenus oleoides*	LC	
MELIANTHACEAE	*Melianthus pectinatus* subsp. *gariepinus*	LC	
MELIANTHACEAE	*Melianthus pectinatus* subsp. *pectinatus*	LC	
FABACEAE	*Melolobium candicans*	LC	
FABACEAE	*Melolobium humile*	LC	
FABACEAE	*Melolobium macrocalyx* var. *macrocalyx*	LC	
OLEACEAE	*Menodora juncea*	LC	
LAMIACEAE	*Mentha longifolia* subsp. *capensis*	LC	
LAMIACEAE	*Mentha longifolia* subsp. *wissii*	LC	
POACEAE	*Merxmuellera stricta*	LC	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Mesembryanthemum articulatum*	-	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Mesembryanthemum baylissii*	-	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Mesembryanthemum brevicarpum*	-	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Mesembryanthemum crystallinum*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Mesembryanthemum guerichianum*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Mesembryanthemum nodiflorum*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Mesembryanthemum* sp.	-	P
SCROPHULARIACEAE	*Microdon polygaloides*	LC	
APOCYNACEAE	*Microloma armatum* var. *armatum*	LC	P
APOCYNACEAE	*Microloma calycinum*	LC	P
APOCYNACEAE	*Microloma incanum*	LC	P
APOCYNACEAE	*Microloma namaquense*	LC	P
APOCYNACEAE	*Microloma sagittatum*	LC	P
MOLLUGINACEAE	*Mollugo cerviana* var. *cerviana*	LC	
MOLLUGINACEAE	*Mollugo namaquensis*	LC	
ACANTHACEAE	*Monechma divaricatum*	LC	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Monilaria obconica*	VU	P
ASTERACEAE	*Monoculus hyoseroides*	LC	
ASTERACEAE	*Monoculus monstrosus*	LC	
LOBELIACEAE	*Monopsis debilis* var. *gracilis*	LC	
MONTINIACEAE	*Montinia caryophyllacea*	LC	
LORANTHACEAE	*Moquiniella rubra*	LC	
IRIDACEAE	*Moraea bolusii*	LC	P
IRIDACEAE	*Moraea brevituba*	LC	P
IRIDACEAE	*Moraea falcifolia*	LC	P
IRIDACEAE	*Moraea fugacissima*	LC	P
IRIDACEAE	*Moraea fugax* subsp. *filicaulis*	LC	P

IRIDACEAE	*Moraea fugax* subsp. *fugax*	LC	P
IRIDACEAE	*Moraea herrei*	LC	P
IRIDACEAE	*Moraea inconspicua*	LC	P
IRIDACEAE	*Moraea indecora*	VU	P
IRIDACEAE	*Moraea intermedia*	-	P
IRIDACEAE	*Moraea margaretae*	LC	P
IRIDACEAE	*Moraea miniata*	LC	P
IRIDACEAE	*Moraea nana*	LC	P
IRIDACEAE	*Moraea pallida*	LC	P
IRIDACEAE	*Moraea schlechteri*	LC	P
IRIDACEAE	*Moraea serpentina*	LC	P
IRIDACEAE	*Moraea* sp.	-	P
IRIDACEAE	*Moraea tortilis*	LC	P
POLYGALACEAE	*Muraltia rigida*	LC	
POLYGALACEAE	*Muraltia spinosa*	-	
SCROPHULARIACEAE	*Nemesia affinis*	LC	P
SCROPHULARIACEAE	*Nemesia anisocarpa*	LC	P
SCROPHULARIACEAE	*Nemesia azurea*	LC	P
SCROPHULARIACEAE	*Nemesia ligulata*	LC	P
SCROPHULARIACEAE	*Nemesia* sp.	-	P
RUBIACEAE	*Nenax cinerea*	LC	
ASTERACEAE	*Norlindhia amplectens*	LC	
POLYGALACEAE	*Nylandtia spinosa*	LC	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Octopoma connatum*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Octopoma subglobosum*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Odontophorus angustifolius* subsp. *angustifolius*	RARE	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Odontophorus nanus*	LC	P
ASTERACEAE	*Oedera sedifolia*	LC	
SCROPHULARIACEAE	*Oftia revoluta*	LC	
ASTERACEAE	*Oncosiphon grandiflorum*	LC	
ASTERACEAE	*Oncosiphon suffruticosum*	LC	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Oophytum nanum*	LC	P
APOCYNACEAE	*Orbea namaquensis*	LC	P
HYACINTHACEAE	*Ornithogalum hispidum* subsp. *hispidum*	LC	P
HYACINTHACEAE	*Ornithogalum multifolium*	LC	P
HYACINTHACEAE	*Ornithogalum nannodes*	LC	P
HYACINTHACEAE	*Ornithogalum pruinosum*	LC	P
HYACINTHACEAE	*Ornithogalum rupestre*	LC	P
HYACINTHACEAE	*Ornithogalum secundum*	LC	P
HYACINTHACEAE	*Ornithogalum* sp.	-	P
HYACINTHACEAE	*Ornithogalum thyrsoides*	LC	P
HYACINTHACEAE	*Ornithogalum xanthochlorum*	LC	P
COLCHICACEAE	*Ornithoglossum parviflorum* var. *parviflorum*	LC	
COLCHICACEAE	*Ornithoglossum viride*	LC	
COLCHICACEAE	*Ornithoglossum vulgare*	LC	

COLCHICACEAE	*Ornithoglossum zeyheri*	LC	
ASTERACEAE	*Osteospermum acanthospermum*	LC	
ASTERACEAE	*Osteospermum grandiflorum*	LC	
ASTERACEAE	*Osteospermum karrooicum*	LC	
ASTERACEAE	*Osteospermum pinnatum* var. *pinnatum*	LC	
ASTERACEAE	*Osteospermum rigidum* var. *elegans*	LC	
ASTERACEAE	*Osteospermum* sp.	-	
ASTERACEAE	*Osteospermum spinescens*	LC	
FABACEAE	*Otholobium arborescens*	LC	
ASTERACEAE	*Othonna abrotanifolia*	LC	
ASTERACEAE	*Othonna amplexifolia*	LC	
ASTERACEAE	*Othonna arbuscula*	LC	
ASTERACEAE	*Othonna auriculifolia*	LC	
ASTERACEAE	*Othonna carnosa* var. *carnosa*	LC	
ASTERACEAE	*Othonna chromochaeta*	LC	
ASTERACEAE	*Othonna coronopifolia*	LC	
ASTERACEAE	*Othonna cylindrica*	LC	
ASTERACEAE	*Othonna diversifolia*	RARE	
ASTERACEAE	*Othonna euphorbioides*	-	
ASTERACEAE	*Othonna floribunda*	LC	
ASTERACEAE	*Othonna furcata*	LC	
ASTERACEAE	*Othonna graveolens*	LC	
ASTERACEAE	*Othonna incisa*	LC	
ASTERACEAE	*Othonna lobata*	LC	
ASTERACEAE	*Othonna macrophylla*	LC	
ASTERACEAE	*Othonna obtusiloba*	LC	
ASTERACEAE	*Othonna perfoliata*	LC	
ASTERACEAE	*Othonna ramulosa*	LC	
ASTERACEAE	*Othonna sedifolia*	LC	
ASTERACEAE	*Othonna* sp.	-	
ASTERACEAE	*Othonna sparsiflora*	-	
OXALIDACEAE	*Oxalis ambigua*	LC	P
OXALIDACEAE	*Oxalis annae*	LC	P
OXALIDACEAE	*Oxalis beneprotecta*	LC	P
OXALIDACEAE	*Oxalis campylorrhiza*	LC	P
OXALIDACEAE	*Oxalis comosa*	LC	P
OXALIDACEAE	*Oxalis dregei*	LC	P
OXALIDACEAE	*Oxalis exserta*	RARE	P
OXALIDACEAE	*Oxalis flava*	LC	P
OXALIDACEAE	*Oxalis flaviuscula*	LC	P
OXALIDACEAE	*Oxalis furcillata* var. *caulescens*	LC	P
OXALIDACEAE	*Oxalis furcillata* var. *furcillata*	LC	P
OXALIDACEAE	*Oxalis grammopetala*	LC	P
OXALIDACEAE	*Oxalis helicoides* var. *helicoides*	LC	P
OXALIDACEAE	*Oxalis luteola*	LC	P

OXALIDACEAE	*Oxalis namaquana*	LC	P	
OXALIDACEAE	*Oxalis obliquifolia*	LC	P	
OXALIDACEAE	*Oxalis obtusa*	LC	P	
OXALIDACEAE	*Oxalis pes-caprae* var. *pes-caprae*	LC	P	
OXALIDACEAE	*Oxalis pulchella* var. *pulchella*	DD	P	
OXALIDACEAE	*Oxalis* sp.	-	P	
ANACARDIACEAE	*Ozoroa concolor*	LC		
ANACARDIACEAE	*Ozoroa dispar*	LC		
APOCYNACEAE	*Pachypodium namaquanum*	LC	SP	II
SAPINDACEAE	*Pappea capensis*	LC		
THYMELAEACEAE	*Passerina galpinii*	LC		
APOCYNACEAE	*Pectinaria articulata* subsp. *articulata*	RARE	P	
ASTERACEAE	*Pegolettia retrofracta*	LC		
GERANIACEAE	*Pelargonium acetosum*	LC	SP	
GERANIACEAE	*Pelargonium alternans*	LC	SP	
GERANIACEAE	*Pelargonium aridicola*	LC	SP	
GERANIACEAE	*Pelargonium barklyi*	LC	SP	
GERANIACEAE	*Pelargonium carnosum* subsp. *carnosum*	LC	SP	
GERANIACEAE	*Pelargonium ceratophyllum*	LC	SP	
GERANIACEAE	*Pelargonium crithmifolium*	LC	SP	
GERANIACEAE	*Pelargonium dasyphyllum*	LC	SP	
GERANIACEAE	*Pelargonium echinatum*	LC	SP	
GERANIACEAE	*Pelargonium fissifolium*	LC	SP	
GERANIACEAE	*Pelargonium fulgidum*	LC	SP	
GERANIACEAE	*Pelargonium grandicalcaratum*	LC	SP	
GERANIACEAE	*Pelargonium incrassatum*	LC	SP	
GERANIACEAE	*Pelargonium klinghardtense*	LC	SP	
GERANIACEAE	*Pelargonium longiflorum*	LC	SP	
GERANIACEAE	*Pelargonium moniliforme*	LC	SP	
GERANIACEAE	*Pelargonium nanum*	LC	SP	
GERANIACEAE	*Pelargonium parviflorum*	-	SP	
GERANIACEAE	*Pelargonium praemorsum* subsp. *praemorsum*	LC	SP	
GERANIACEAE	*Pelargonium pulchellum*	LC	SP	
GERANIACEAE	*Pelargonium radicatum*	LC	SP	
GERANIACEAE	*Pelargonium radulifolium*	LC	SP	
GERANIACEAE	*Pelargonium ramosissimum*	LC	SP	
GERANIACEAE	*Pelargonium rapaceum*	LC	SP	
GERANIACEAE	*Pelargonium redactum*	LC	SP	
GERANIACEAE	*Pelargonium scabrum*	LC	SP	
GERANIACEAE	*Pelargonium sericifolium*	LC	SP	
GERANIACEAE	*Pelargonium* sp.	-	SP	
GERANIACEAE	*Pelargonium spinosum*	LC	SP	
GERANIACEAE	*Pelargonium triste*	LC	SP	
SCROPHULARIACEAE	*Peliostomum leucorrhizum*	LC		
SCROPHULARIACEAE	*Peliostomum virgatum*	LC		

POACEAE	*Pentaschistis airoides* subsp. *airoides*	LC	
POACEAE	*Pentaschistis capillaris*	LC	
POACEAE	*Pentaschistis patula*	-	
POACEAE	*Pentaschistis* sp.	-	
POACEAE	*Pentaschistis tomentella*	LC	
ASTERACEAE	*Pentzia incana*	LC	
POACEAE	*Phalaris minor*	-	
MOLLUGINACEAE	*Pharnaceum albens*	LC	
MOLLUGINACEAE	*Pharnaceum aurantium*	LC	
MOLLUGINACEAE	*Pharnaceum confertum* var. *confertum*	LC	
MOLLUGINACEAE	*Pharnaceum croceum*	LC	
MOLLUGINACEAE	*Pharnaceum incanum*	LC	
RHAMNACEAE	*Phylica cylindrica*	VU	P
RHAMNACEAE	*Phylica montana*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Phyllobolus decurvatus*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Phyllobolus delus*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Phyllobolus oculatus*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Phyllobolus roseus*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Phyllobolus sinuosus*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Phyllobolus sinuosus*	LC	P
SCROPHULARIACEAE	*Phyllopodium anomalum*	LC	P
SCROPHULARIACEAE	*Phyllopodium collinum*	LC	P
SCROPHULARIACEAE	*Phyllopodium maxii*	DD	P
SCROPHULARIACEAE	*Phyllopodium* sp.	-	P
APOCYNACEAE	*Piaranthus geminatus* subsp. *decorus*	LC	P
AYTONIACEAE	*Plagiochasma rupestre* var. *rupestre*	-	
PLANTAGINACEAE	*Plantago cafra*	LC	
DITRICHACEAE	*Pleuridium nervosum*	-	
SCROPHULARIACEAE	*Polycarena capensis*	NT	
SCROPHULARIACEAE	*Polycarena pubescens*	LC	
SCROPHULARIACEAE	*Polycarena tenella*	LC	
POLYGALACEAE	*Polygala ephedroides*	LC	
POLYGALACEAE	*Polygala scabra*	LC	
POLYGALACEAE	*Polygala virgata* var. *decora*	LC	
POLYGALACEAE	*Polygala virgata* var. *virgata*	LC	
POLYGONACEAE	*Polygonum aviculare*	-	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Polymita albiflora*	LC	P
POACEAE	*Polypogon monspeliensis*	-	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Prenia pallens* subsp. *lancea*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Prenia pallens* subsp. *lutea*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Prenia pallens* subsp. *namaquensis*	LC	P
POTTIACEAE	*Pseudocrossidium crinitum*	-	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Psilocaulon coriarium*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Psilocaulon dinteri*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Psilocaulon junceum*	LC	P

AIZOACEAE/MESEMBRYANTHEMACEAE	*Psilocaulon* sp.	-	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Psilocaulon subnodosum*	LC	P
ASTERACEAE	*Pteronia ciliata*	LC	
ASTERACEAE	*Pteronia cinerea*	LC	
ASTERACEAE	*Pteronia divaricata*	LC	
ASTERACEAE	*Pteronia glabrata*	LC	
ASTERACEAE	*Pteronia glauca*	LC	
ASTERACEAE	*Pteronia incana*	LC	
ASTERACEAE	*Pteronia leptospermoides*	LC	
ASTERACEAE	*Pteronia ovalifolia*	LC	
ASTERACEAE	*Pteronia scariosa*	LC	
ASTERACEAE	*Pteronia* sp.	-	
ASTERACEAE	*Pteronia undulata*	LC	
APOCYNACEAE	*Quaqua cincta*	RARE	P
APOCYNACEAE	*Quaqua multiflora*	LC	P
MALVACEAE	*Radyera urens*	LC	
ASTERACEAE	*Rhynchopsidium pumilum*	LC	
RICCIACEAE	*Riccia albomarginata*	-	
RICCIACEAE	*Riccia cavernosa*	-	
RICCIACEAE	*Riccia concava*	-	
RICCIACEAE	*Riccia cupulifera*	-	
RICCIACEAE	*Riccia furfuracea*	-	
RICCIACEAE	*Riccia namaquensis*	-	
RICCIACEAE	*Riccia nigrella*	-	
RICCIACEAE	*Riccia schelpei*	-	
RICCIACEAE	*Riccia* sp.	-	
RICCIACEAE	*Riccia tomentosa*	-	
RICCIACEAE	*Riccia villosa*	-	
RICCIACEAE	*Riccia vitrea*	-	
IRIDACEAE	*Romulea citrina*	-	P
IRIDACEAE	*Romulea namaquensis*	NT	P
POLYGONACEAE	*Rumex cordatus*	LC	
POLYGONACEAE	*Rumex lanceolatus*	LC	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Ruschia aggregata*	DD	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Ruschia aspera*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Ruschia brakdamensis*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Ruschia breekpoortensis*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Ruschia brevibracteata*	DD	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Ruschia brevifolia*	DD	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Ruschia caroli*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Ruschia cradockensis* subsp. *cradockensis*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Ruschia elineata*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Ruschia erecta*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Ruschia extensa*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Ruschia goodiae*	LC	P

AIZOACEAE/MESEMBRYANTHEMACEAE	*Ruschia laxiflora*	LC	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Ruschia lerouxiae*	LC	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Ruschia muelleri*	LC	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Ruschia robusta*	LC	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Ruschia senaria*	-	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Ruschia* sp.	-	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Ruschia stricta*	LC	P	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Ruschia viridifolia*	LC	P	
SALICACEAE	*Salix mucronata* subsp. *mucronata*	LC		
CHENOPODIACEAE	*Salsola aphylla*	LC		
CHENOPODIACEAE	*Salsola kali*	-		
CHENOPODIACEAE	*Salsola namibica*	-		
LAMIACEAE	*Salvia dentata*	LC		
LAMIACEAE	*Salvia disermas*	LC		
LAMIACEAE	*Salvia lanceolata*	LC		
GERANIACEAE	*Sarcocaulon herrei*	LC		
GERANIACEAE	*Sarcocaulon l'heritieri*	LC		
GERANIACEAE	*Sarcocaulon patersonii*	LC		
ORCHIDACEAE	*Satyrium erectum*	LC	P	II
DIPSACACEAE	*Scabiosa columbaria*	LC		
POACEAE	*Schismus barbatus*	LC		
POACEAE	*Schismus inermis*	LC		
POACEAE	*Schismus scaberrimus*	LC		
POACEAE	*Schmidtia kalahariensis*	LC		
CYPERACEAE	*Schoenoplectus senegalensis*	LC		
CYPERACEAE	*Scirpoides dioecus*	LC		
ANACARDIACEAE	*Searsia burchellii*	LC		
ANACARDIACEAE	*Searsia horrida*	LC		
ANACARDIACEAE	*Searsia incisa* var. *incisa*	LC		
ANACARDIACEAE	*Searsia lancea*	LC		
ANACARDIACEAE	*Searsia pendulina*	LC		
ANACARDIACEAE	*Searsia populifolia*	LC		
ANACARDIACEAE	*Searsia undulata*	LC		
SCROPHULARIACEAE	*Selago albida*	LC		
SCROPHULARIACEAE	*Selago glabrata*	-		
SCROPHULARIACEAE	*Selago glutinosa* subsp. *glutinosa*	LC		
SCROPHULARIACEAE	*Selago minutissima*	-		
SCROPHULARIACEAE	*Selago morrisii*	LC		
SCROPHULARIACEAE	*Selago namaquensis*	LC		
SCROPHULARIACEAE	*Selago pinguicula*	LC		
SCROPHULARIACEAE	*Selago* sp.	-		
SCROPHULARIACEAE	*Selago speciosa*	LC		
SCROPHULARIACEAE	*Selago verna*	LC		
ASTERACEAE	*Senecio abruptus*	LC		
ASTERACEAE	*Senecio arenarius*	LC		

ASTERACEAE	*Senecio cardaminifolius*	LC	
ASTERACEAE	*Senecio cinerascens*	LC	
ASTERACEAE	*Senecio cotyledonis*	LC	
ASTERACEAE	*Senecio glaberrimus*	LC	
ASTERACEAE	*Senecio glabrifolius*	LC	
ASTERACEAE	*Senecio glutinarius*	DD	
ASTERACEAE	*Senecio laxus*	LC	
ASTERACEAE	*Senecio maydae*	LC	
ASTERACEAE	*Senecio niveus*	LC	
ASTERACEAE	*Senecio parvifolius*	LC	
ASTERACEAE	*Senecio piptocoma*	LC	
ASTERACEAE	*Senecio repandus*	LC	
ASTERACEAE	*Senecio sisymbriifolius*	LC	
ASTERACEAE	*Senecio* sp.	-	
ASTERACEAE	*Senecio speciosus*	LC	
POACEAE	*Setaria pumila*	LC	
CARYOPHYLLACEAE	*Silene bellidioides*	LC	
CARYOPHYLLACEAE	*Silene burchellii* var. *angustifolia*	-	
CARYOPHYLLACEAE	*Silene clandestina*	-	
CARYOPHYLLACEAE	*Silene undulata*	LC	
ZYGOPHYLLACEAE	*Sisyndite spartea*	LC	
SOLANACEAE	*Solanum burchellii*	LC	
SOLANACEAE	*Solanum capense*	LC	
SOLANACEAE	*Solanum giftbergense*	LC	
SOLANACEAE	*Solanum guineense*	LC	
SOLANACEAE	*Solanum nigrum*	-	
SOLANACEAE	*Solanum rigescens*	LC	
SOLANACEAE	*Solanum tomentosum* var. *coccineum*	LC	
CARYOPHYLLACEAE	*Spergularia media*	-	
CARYOPHYLLACEAE	*Spergularia* sp.	-	
POACEAE	*Sphenopus divaricatus*	-	
HYPOXIDACEAE	*Spiloxene scullyi*	LC	
LAMIACEAE	*Stachys flavescens*	LC	
LAMIACEAE	*Stachys rugosa*	LC	
ASTERACEAE	*Stilpnogyne bellidioides*	LC	
POACEAE	*Stipagrostis brevifolia*	LC	
POACEAE	*Stipagrostis namaquensis*	LC	
POACEAE	*Stipagrostis obtusa*	LC	
POACEAE	*Stipagrostis zeyheri* subsp. *macropus*	LC	
POACEAE	*Stipagrostis zeyheri* subsp. *zeyheri*	LC	
AMARYLLIDACEAE	*Strumaria merxmuelleriana*	RARE	P
AMARYLLIDACEAE	*Strumaria truncata*	LC	P
THYMELAEACEAE	*Struthiola leptantha*	LC	
CHENOPODIACEAE	*Suaeda fruticosa*	LC	
FABACEAE	*Sutherlandia frutescens*	LC	SP

FABACEAE	*Sutherlandia microphylla*	LC	SP
POTTIACEAE	*Syntrichia chisosa*	-	
POTTIACEAE	*Syntrichia fragilis*	-	
POTTIACEAE	*Syntrichia leucostega* var. *leucostega*	-	
POTTIACEAE	*Syntrichia ruralis*	-	
IRIDACEAE	*Syringodea longituba* var. *longituba*	-	P
TAMARICACEAE	*Tamarix usneoides*	LC	
LORANTHACEAE	*Tapinanthus oleifolius*	LC	
SCROPHULARIACEAE	*Teedia lucida*	LC	
FABACEAE	*Tephrosia dregeana* var. *dregeana*	LC	
AIZOACEAE/MESEMBRYANTHEMACEAE	*Tetragonia arbuscula*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Tetragonia calycina*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Tetragonia decumbens*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Tetragonia fruticosa*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Tetragonia glauca*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Tetragonia microptera*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Tetragonia namaquensis*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Tetragonia reduplicata*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Tetragonia robusta*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Tetragonia sarcophylla*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Tetragonia schenckii*	-	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Tetragonia* sp.	-	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Tetragonia spicata*	LC	P
SANTALACEAE	*Thesium lineatum*	LC	
SANTALACEAE	*Thesium polycephalum*	LC	
SANTALACEAE	*Thesium spinosum*	LC	
POTTIACEAE	*Tortula splachnoides*	-	
ASPHODELACEAE	*Trachyandra bulbinifolia*	LC	P
ASPHODELACEAE	*Trachyandra falcata*	LC	P
ASPHODELACEAE	*Trachyandra flexifolia*	LC	P
ASPHODELACEAE	*Trachyandra jacquiniana*	LC	P
ASPHODELACEAE	*Trachyandra laxa* var. *laxa*	LC	P
ASPHODELACEAE	*Trachyandra patens*	LC	P
ASPHODELACEAE	*Trachyandra revoluta*	LC	P
ASPHODELACEAE	*Trachyandra tortilis*	LC	P
AIZOACEAE/MESEMBRYANTHEMACEAE	*Trianthema parvifolia* var. *parvifolia*	LC	P
POACEAE	*Tribolium echinatum*	LC	
POACEAE	*Tribolium utriculosum*	LC	
ZYGOPHYLLACEAE	*Tribulus terrestris*	LC	
ZYGOPHYLLACEAE	*Tribulus zeyheri* subsp. *zeyheri*	LC	
BORAGINACEAE	*Trichodesma africanum*	LC	
ASTERACEAE	*Trichogyne paronychioides*	LC	
ASTERACEAE	*Trichogyne polycnemoides*	LC	
JUNCAGINACEAE	*Triglochin bulbosa*	LC	
ASTERACEAE	*Tripteris microcarpa* subsp. *microcarpa*	LC	

ASTERACEAE	*Tripteris oppositifolia*	LC	
ASTERACEAE	*Tripteris pinnatilobata*	LC	P
ASTERACEAE	*Tripteris sinuata* var. *linearis*	LC	
ASTERACEAE	*Tripteris sinuata* var. *sinuata*	LC	
ASTERACEAE	*Tripteris spathulata*	-	
POACEAE	*Triraphis ramosissima*	LC	
IRIDACEAE	*Tritonia karooica*	LC	P
ASTERACEAE	*Troglophyton capillaceum* subsp. *capillaceum*	LC	
ASTERACEAE	*Troglophyton leptomerum*	LC	
CRASSULACEAE	*Tylecodon paniculatus*	LC	
CRASSULACEAE	*Tylecodon ventricosus*	LC	
CRASSULACEAE	*Tylecodon wallichii* subsp. *ecklonianus*	LC	
CRASSULACEAE	*Tylecodon wallichii* subsp. *wallichii*	LC	
ASTERACEAE	*Ursinia anthemoides* subsp. *anthemoides*	LC	
ASTERACEAE	*Ursinia anthemoides* subsp. *versicolor*	LC	
ASTERACEAE	*Ursinia anthemoides* subsp. *versicolor*	LC	
ASTERACEAE	*Ursinia cakilefolia*	LC	
ASTERACEAE	*Ursinia calenduliflora*	LC	
ASTERACEAE	*Ursinia chrysanthemoides*	LC	
ASTERACEAE	*Ursinia discolor*	LC	
ASTERACEAE	*Ursinia nana* subsp. *nana*	LC	
CARYOPHYLLACEAE	*Vaccaria hispanica* var. *hispanica*	-	
VISCACEAE	*Viscum capense*	LC	
VISCACEAE	*Viscum capense* subsp. *hoolei*	LC	
VISCACEAE	*Viscum continuum*	LC	
VISCACEAE	*Viscum pauciflorum*	LC	
POTTIACEAE	*Vrolijkheidia peraristata*	-	
POACEAE	*Vulpia bromoides*	-	
CAMPANULACEAE	*Wahlenbergia acaulis*	LC	
CAMPANULACEAE	*Wahlenbergia annularis*	LC	
CAMPANULACEAE	*Wahlenbergia asparagoides*	VU	
CAMPANULACEAE	*Wahlenbergia cernua*	LC	
CAMPANULACEAE	*Wahlenbergia divergens*	DD	
CAMPANULACEAE	*Wahlenbergia ecklonii*	LC	
CAMPANULACEAE	*Wahlenbergia lasiocarpa*	LC	
CAMPANULACEAE	*Wahlenbergia oligotricha*	DD	
CAMPANULACEAE	*Wahlenbergia oxyphylla*	LC	
CAMPANULACEAE	*Wahlenbergia paniculata*	LC	
CAMPANULACEAE	*Wahlenbergia prostrata*	LC	
CAMPANULACEAE	*Wahlenbergia roelliflora*	DD	
CAMPANULACEAE	*Wahlenbergia* sp.	-	
CAMPANULACEAE	*Wahlenbergia thunbergiana*	LC	
FABACEAE	*Wiborgia fusca* subsp. *fusca*	LC	
FABACEAE	*Wiborgia incurvata*	LC	
FABACEAE	*Wiborgia monoptera*	LC	

FABACEAE	*Wiborgia mucronata*	LC	
FABACEAE	*Wiborgia sericea*	LC	
PARMELIACEAE	*Xanthomaculina hottentotta*	-	
PARMELIACEAE	*Xanthoparmelia chalybaeizans*	-	
IRIDACEAE	*Xenoscapa fistulosa*	LC	P
SCROPHULARIACEAE	*Zaluzianskya benthamiana*	LC	
SCROPHULARIACEAE	*Zaluzianskya peduncularis*	LC	
SCROPHULARIACEAE	*Zaluzianskya pusilla*	LC	
ZYGOPHYLLACEAE	*Zygophyllum divaricatum*	EN	
ZYGOPHYLLACEAE	*Zygophyllum flexuosum*	LC	
ZYGOPHYLLACEAE	*Zygophyllum foetidum*	LC	
ZYGOPHYLLACEAE	*Zygophyllum fulvum*	LC	
ZYGOPHYLLACEAE	*Zygophyllum leptopetalum*	LC	
ZYGOPHYLLACEAE	*Zygophyllum lichtensteinianum*	LC	
ZYGOPHYLLACEAE	*Zygophyllum morgsana*	LC	
ZYGOPHYLLACEAE	*Zygophyllum pubescens*	LC	
ZYGOPHYLLACEAE	*Zygophyllum retrofractum*	LC	
ZYGOPHYLLACEAE	*Zygophyllum simplex*	LC	
ZYGOPHYLLACEAE	*Zygophyllum spinosum*	LC	

Clarification of symbols:

Red data list (RDL) categories are as follows: Least Concern (LC), Near Threatened (NT), Vulnerable (VU), Rare (RARE), Data deficient (DD), Endangered (EN), Critically Endangered (CR), Extinct in the Wild (EW) and Extinct (EX). Species Not Evaluated are left blank. These categories indicate the conservation importance of a species based on an expert evaluation of the species.

Northern Cape Nature Conservation Act (NCNCA) lists some of the plant species as Specially Protected (SP) and Protected (P). An Invasive (I) species is also indicated.

Convention on International Trade in Endangered Species (CITES) Appendix I includes species threatened with extinction. Trade in specimens of these species is permitted only under exceptional circumstances. Appendix II includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilisation incompatible with their survival. Appendix III contains species that are protected in at least one country, which has asked other CITES Parties for assistance in controlling the trade.

Appendix D1.2: Botanical Assessment Report

BOTANICAL INPUT INTO

A BASIC ASSESSMENT REPORT

FOR THE PROPOSED

SPRINGBOK MALL:

FINAL REPORT

Dr Helga van der Merwe (Pr. Sci. Nat.)

29 August 2013

EXECUTIVE SUMMARY

The Springbok Mall development is proposed on an open area in the town of Springbok, Northern Cape province. This proposed development site is situated in the Succulent Karoo Biome, a hotspot of diversity and this highlights the importance of establishing the presence of species of conservation significance on site before construction commences.

A species list was generated using the SIBIS Integrating Biodiversity Site of the South African National Biodiversity Institute to compile a list of species that could potentially occur on site. Various habitats, not found on the proposed development site, are included on this list and thus not all the species listed are expected to occur on the site.

Numerous species of conservation significance were found for the 2917DB quarter degree grid. These species include Red Data listed species and Specially Protected and Protected families, genera as well as specific species listed in the Northern Cape Nature Conservation Act. Various species are listed on CITES Appendix II.

The site investigations in autumn (April 2013) and spring (end August 2013) provided a good indication of the species present on site. A combined preliminary species list of 143 species was compiled following the two surveys. None of the species on the preliminary species list are listed as Red Data species however, numerous species are Specially Protected or Protected according to the Northern Cape Nature Conservation Act. The genus *Euphorbia* is listed on CITES Appendix II.

The Springbok site is highly disturbed and disturbance over the years has lead to various alien species establishing on the site (for example, *Atriplex lindleyi*, *Erodium moschatum*, *Pennisetum sectaceum*, *Prosopis glandulosa* and *Salsola kali*). *Galenia africana*, an indigenous pioneer species, is also relatively common on site.

Two conspicuous geophytic species, *Brunsvigia bosmaniae* (Maartblom) and *Haemanthus crispus* (poeierkwas), were found on the site in April 2013. Since the developer has expressed an interest in using geophytic species occurring on site for landscaping purposes, these two showy species could possibly be used. Additional showy geophytic species encountered during the August 2013 surveys that could also potentially be used for landscaping purposes include *Babiana curviscapa* (bobbejaantjie) and *Laperousia silenoides* (meidestert).

Succulents such as *Drosanthemum hispidum* (fyn t'nouroebos), *Cheiridopsis denticulata* (t'noutsiama) and *C. namaquesis* could also be used for landscaping purposes and are present on the proposed development site. All of these species are protected under Northern Cape Nature Conservation legislation however, all are listed as Least Concern on the Red Data lists. Various colourful annuals were present on site following winter/early spring rains and could also be considered for landscaping purposes. These annual species include *Dimorphotheca sinuata* (Namaqualand daisy), *Norlindhia amplectens* (dassiegousblom), *Monoculus hyoseroides* (dassiegousblom) and *Senecio cardaminifolius* (hongerblom).

The two surveys at different times of the year gave a good indication of the species present on site. Once the developer and Environmental Practitioner have been provided with this report, the necessary permits will have to be obtained from Department of Environment and Nature Conservation provided Environmental Authorisation is obtained. These permits will include the

destruction and disturbance of Specially Protected, Protected and Indigenous flora present on the site.

Based on the April and August 2013 site investigations and habitat found on the proposed development site, permits will be required from Northern Cape Nature Conservation for the Specially Protected and Protected families Aizoaceae/Mesembryanthemaceae, Amaryllidaceae, Anthericaceae, Apiaceae, Apocynaceae, Asphodelaceae, Crassulaceae, Iridaceae, and Orchidiaceae and the genera *Cyanella*, *Diascia*, *Erica*, *Euphorbia*, *Jamesbrittenia*, *Lachenalia*, *Lessertia*, *Manulea*, *Nemesia*, *Ornithogalum*, *Oxalis*, *Phyllopodium*, *Sutherlandia* and *Pelargonium* since these families and genera do occur or could potentially occur on site. Additionally, a permit for the removal/destruction of indigenous flora on site will also have to be applied for.

GENERAL INFORMATION

Project:

Proposed mall development in the town of Springbok, Northern Cape province. Mr Pieter Badenhorst of Pieter Badenhorst Professional Services requested that Dr Helga van der Merwe conduct a botanical assessment of the site with special attention being paid to species of conservation significance, especially the geophtyes, that could potentially occur on site. Two site surveys were conducted, one in Autumn (April) and one in Spring (late August).

Report prepared by:

Dr Helga van der Merwe (PhD, Pr.Sci.Nat.)
P.O. Box 1
Calvinia
8190
Tel/Fax (027) 3412578
E-mail: soekop@hantam.co.za

A *Curriculum Vitae* and summary of expertise is attached as Appendix C in the document.

Affiliation(s):

- South African Council for Natural Scientific Professions (SACNASP) (Pr.Sci.Nat.; Registration no. 400193/10).
- Golden Key International Honour Society – Membership upon invitation, granted to the 15% of academic achievers in their field of study. (Membership number – 6790927).
- South African Association of Botanists
- Botanical Society of South Africa

Report prepared for:

Pieter Badenhorst
Pieter Badenhorst Professional Services
P.O. Box 1058
Wellington
7654
Cell: 0827763422
pbps@iafrica.com

REGULATIONS GOVERNING THIS REPORT

The proposed development is regulated in terms of the EIA Regulations under the National Environmental Management Act, (Act No. 107 of 1998 (NEMA). A Basic Assessment study was commissioned (Government Notice GN R543 of 2010).

Appointment of specialist

Pieter Badenhorst Professional Services appointed Dr Helga van der Merwe to provide botanical input into a basic assessment report of a site within the town of Springbok in the Northern Cape province, on which a mall is proposed to be developed.

Declaration of independence

A signed declaration of independence by Dr Helga van der Merwe is attached as Appendix D.

Indemnity and conditions relating to this report

The observations, findings, recommendations and conclusions provided in the current report are based on Helga van der Merwe's best scientific and professional knowledge and other available information. If new information should become available Helga van der Merwe reserves the right to modify aspects of the report. This report (hard copy and/or electronic) may not be amended or extended without the prior written consent of the author. Furthermore, any recommendations, statements or conclusions drawn from or based on this report must make reference to the report. If these recommendations, statements or conclusions form part of a main report relating to the current investigation, this report must be included in its entirety.

Although Helga van der Merwe has exercised due care in preparing this report, she accepts no liability, and by receiving this document, the client indemnifies Helga van der Merwe against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, and by the use of the information contained in this document.

TERMS OF REFERENCE

The terms of reference was to provide input into a Basic Assessment Report on relevant botanical aspects with respect to the proposed development of a mall on a site within the town of Springbok. Special attention was to be paid to flora species of conservation significance, including geophytes, that occur on the proposed development site and that could possibly be used for landscaping purposes.

TABLE OF CONTENTS

INTRODUCTION

The proposed development of a mall in the Namaqualand town of Springbok will harm and/or destroy various plant species present on the proposed development site. Since the town and the site are situated within the Succulent Karoo Biome, an arid hotspot of diversity, it can be assumed that numerous species of conservation significance occur on the proposed site. These conservation important species to include various geophytes (plants with underground storage organs such as bulbs) and succulent species for which Namaqualand is renowned.

A site investigation was conducted in autumn (April 2013) following late summer/early autumn rains. Since a number of geophytes produce inflorescences and/or leaves following these rainfall episodes, these geophytic species are visible and can be noted at this time of the year. A follow-up site investigation was conducted in spring (end August 2013) and further informed the botanist on the geophytic component present under the soil surface that reacts to the winter and early spring rains. Additionally, the spring vegetation survey was the ideal time of the year at which to conduct a more detailed site investigation as the winter and early spring rains aid in the germination, growth and flowering of annual (short-lived) species as well as the growth and flowering of perennial (long-lived) species. These annual and perennial species could also be of conservation significance.

Before the construction of the proposed development takes place, the developer has suggested that a search and rescue effort should be launched in order to prevent the loss of species of conservation significance. Additionally, the developer has expressed an interest in using conservation significant species such as geophytes for landscaping purposes.

This final report combines the findings following the two site visits in April and August 2013 and includes various recommendations with respect to the floral component on the proposed development site.

ASSUMPTIONS

The following assumptions regarding the project are relevant:

- it is assumed the proposed development site will be entirely stripped of vegetation and that no naturally occurring vegetation will be left on the site.
- the developer suggested using flora individuals, especially geophytes, currently on site for landscaping purposes.
- these assumptions did not negatively influence the current study.

METHODOLOGY

Desktop study

A list of species that could potentially occur on site is included as an appendix (Appendix A). This list was generated for the quarter degree grid, 2917DB, in which the site is situated using the SIBIS Integrating Biodiversity Site of the South African National Biodiversity Institute. Most of the species on this list will not occur on site since the list includes various habitats not found on the proposed development site.

The conservation status of each species on the generated list was sought amongst Red Data lists (RDL) and various legislation such as the Northern Cape Nature Conservation Act (NCNCA) and Convention on International Trade in Endangered Species (CITES). CITES does not regulate the EIA process but species listed in the Appendices of CITES are considered to be of conservation importance internationally and thus should be considered of conservation importance locally.

Field surveys

Google Earth satellite imagery was used to study the proposed development site (Figure 1 and 2). All plant species encountered on the site in April and August 2013 were recorded. These surveys resulted in a preliminary species list for the proposed development site. The conservation significance of species on the preliminary species list was determined.

Figure 1. Proposed development site (figure provided by Pieter Badenhorst Professional Services).

Figure 2. Detail of the proposed site to be developed.

Data analysis

The conservation significance of each species on the preliminary species checklist for the site and the potential species list generated using SIBIS:SABIF Integrating Biodiversity Information website were determined. Species of conservation importance were sought in various gazetted legislation as well as Red Data lists. These lists include the Red Data lists of southern African plants compiled by Hilton-Taylor (1996a, 1996b, 1997), the Southern African Plant Red Data list of Golding (2002), the Red List of South African Plants (Raimondo et al. 2009) and the IUCN Red List of Threatened Species (Version 2011.2).

IUCN Red data list categories are as follows: Data Deficient (DD), Least Concern (LC), Near Threatened (NT), Vulnerable (VU), Endangered (EN), Critically Endangered (CR), Extinct in the Wild (EW) and Extinct (EX). These categories indicate the conservation importance of a species based on an expert evaluation of the species.

Gazetted legislation consulted included the protected trees according to the National Forests Act (no 84 of 1998), the threatened and protected species list (TOPS list) of the National Environmental Management: Biodiversity Act, (Act 10 of 2004) (NEM:BA), CITES appendices, Government Notice No. 1002 of 2011 (National list of ecosystems that are threatened and in need of protection), GNR 151 (Critically endangered, vulnerable and protected species list), GNR 1187 (Amendment of critically endangered, endangered, vulnerable and protected species list) and the Northern Cape Nature Conservation Act (Act 9 of 2009). Declared weed and alien invader species were classified in terms of the Conservation of Agricultural Resources Act (Act 43 of 1983) and its amendments.

CITES (the Convention on International Trade in Endangered Species) is an international agreement between governments. It aims to ensure that international trade in species of wild

animals and plants does not threaten their survival. There are three appendices in CITES which regulate international trade in species. Appendix I includes species threatened with extinction. Trade in specimens of these species is permitted only in exceptional circumstances. Appendix II includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilisation incompatible with their survival. Appendix III contains species that are protected in at least one country, which has asked other CITES parties for assistance in controlling the trade. CITES does not regulate the EIA process but species listed in the Appendices of CITES are considered to be of conservation importance internationally and thus should be considered of conservation importance locally.

Relevant legislation

National Environmental Management Act (NEMA) (Act 107 of 1998)

NEMA requires that measures are taken that 'prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development'. In addition:
(1) that the disturbance of ecosystems and loss of biological diversity are avoided, or where they cannot be altogether avoided, are minimised and remedied,
(2) that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions, and
(3) sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.

NEMA states that the environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage.

Environment Conservation Act (ECA) (No 73 of 1989 Amendment Notice No. R1183 of 1997)

This Act provides for the effective protection and controlled utilisation of the environment. The Act has largely been repealed by NEMA, but certain provisions remain, in particular provisions relating to environmental impact assessments. The ECA requires that developers must undertake Environmental Impact Assessments (EIA) for all projects listed as a Schedule 1 activity in the EIA regulations. Such activities will only be permitted with written authorisation from a competent authority.

National Environmental Management: Biodiversity Act (NEM:BA) (Act 10 of 2004) and amendments

NEM:BA places the responsibility on the developer in the:
(1) conservation of endangered ecosystems and restricts activities according to the categorisation of an area,
(2) promotes the appropriate use of environmental management tools to ensure that development is sustainable and protects biodiversity, and
(3) limits further loss of biodiversity and conserves endangered ecosystems.
Activities are restricted in terms of threatened and protected species while invasive species must be controlled and eradicated.

National list of ecosystems that are threatened and in need of protection (Government Notice 1002 of 2011)

This notice provides for the listing of threatened or protected ecosystems based on national criteria and dictates environmental authorisation required.

National Forest Act (NFA) (Act 84 of 1998) and amendments

This law states that no person may cut, disturb, damage or destroy (or remove) any protected tree……except under a licence granted by the Minister.

Conservation of Agricultural Resources Act (CARA) (Act 43 of 1983) and amendments

Declared weed and alien invader species were found in the vicinity of the proposed development. CARA states that Category 1 plants may not occur on any land or inland water surface other than in biological control reserves while Category 2 plants may not occur on any land or inland water surface other than a demarcated area or in a biological control reserve. Category 3 plants includes ornamental plants that may no longer be planted but existing plants may remain provided that all reasonable steps are taken to prevent the spreading thereof, except within the floodline of water courses and wetlands.

National Water Act (NWA) (Act 36 of 1998) and amendments

Wetlands, riparian zones and watercourses are defined as water resources by the Water Act and any activities that are contemplated that could affect these areas requires authorisation.

Northern Cape Nature Conservation Act (NCNCA) (Act 9 of 2009)

Sections 49 and 50 deal with the restricted activities involving specially protected and protected plants and states that no person may, without a permit, pick, import, export, transport, cultivate or trade in a specimen of a protected plant. While, Section 51 involves the picking, receipt, possession, acquisition or handling of indigenous plants and states that no person may, without a permit, pick an indigenous plant.

RESULTS

A list was generated for the quarter degree grid, 2917DB, in which the site is situated using the SIBIS Integrating Biodiversity Site of the South African National Biodiversity Institute. This generated list is a list of species that could potentially occur on site is included as an appendix (Appendix A). Most of the species on this list will not occur on site since the list includes various habitats not found on the proposed development site.

Red Data listed species in the 2917DB quarter degree grid include *Acanthopsis spathularis* (RARE), *Adromischus mammillaris* (EN), *Albuca zebrina* (RARE), *Aloe buhrii* (VU), *A. dichotoma* (VU), *Babiana horizontalis* (VU), *B. vanzijlae* (NT), *Brunsvigia herrei* (VU), *Cheiridopsis rostrata* (VU), *Conophytum blandum* (NT), *Conophytum khamiesbergense* (VU), *Crassula exilis* (RARE), *Crassula roggeveldii* (RARE), *Crassula thunbergiana* (RARE), *Drosanthemum calycinum* (NT), *Empodium veratrifolium* (EN), *Eriospermum pusillum* (RARE), *Euryops marlothii* (RARE), *E. namaquensis* (VU), *Gladiolus salteri* (RARE), *Lachenalia concordiana* (RARE), *L. kliprandensis* (RARE), *L. verticillata* (RARE), *Leipoldtia amoenus* (EN), *L. aureus* (EN), *L. klaverensis* (EN), *Leobordea polycephala* (EN), *Manulea*

exigua (VU), *Monalaria obconica* (VU), *Moraea indecora* (VU), *Odontophorus angustifolius* (RARE), *Othonna diversifolia* (RARE), *Oxalis exserta* (RARE), *Pectinaria articulata* (RARE), *Phylica cylindrica* (VU), *Polycarena capensis* (NT), *Quaqua cincta* (RARE), *Romulea namaquensis* (NT), *Strumaria merxmuelleriana* (RARE), *Wahlenbergia asparagoides* (VU) and *Zygophyllum divaricatum* (EN). Various species are listed as DD (Data deficient) and thus their actual status is unknown.

Numerous species on the list generated for the 2917DB quarter degree grid are listed as Protected or Specially Protected according to the Northern Cape Nature Conservation Act. The Specially Protected and Protected families on the generated list are Aizoaceae/Mesembryanthemaceae, Amaryllidaceae, Anthericaceae, Apiaceae, Apocynaceae, Asphodelaceae, Crassulaceae, Iridaceae, Orchidiaceae and Restionaceae. Genera, on the SIBIS generated list, listed as Specially Protected or Protected include: *Agathosma*, *Anacampseros*, *Avonia*, *Boscia*, *Cyanella*, *Diascia*, *Erica*, *Euphorbia*, *Jamesbrittenia*, *Lachenalia*, *Lessertia*, *Manulea*, *Nemesia*, *Ornithogalum*, *Oxalis*, *Ozoroa*, *Phylica*, *Phyllopodium*, *Sutherlandia* and *Pelargonium*. Specially Protected or Protected species *Aloe buhrii* and *Aloe dichotoma* are also found on the generated species list. CITES lists the genera *Aloe*, *Anacampseros* and *Avonia* and families Orchidiaceae and Euphorbiaceae as well as *Pachypodium namaquanum* on Appendix II.

The proposed development site is situated within the town of Springbok and has been exposed to disturbance for many years (Figure 3). The site is criss-crossed with numerous footpaths (Figure 2), soil heaps/dumps lie scattered over the site, rubbish litters the area and soil erosion is evident in places (Figure 3). Invader species such as *Prosopis glandulosa* are also present on the site (GPS readings supplied in Appendix B). This species is a Category 2 Invader and the Conservation of Agricultural Resources Act (CARA) stipulates that this species must be controlled.

Figure 3. The highly disturbed site on which the proposed mall will be developed.

On the northern edge of the proposed development site is a moister environment (Figure 4). If this wetter area is natural or just as a result of additional water runoff off of the N14 tarred

road is unknown. However, runoff off of the N14 tarred road definitely contributes to this moister environment. The area is covered by an increased amount of grass especially the alien *Pennisetum sectaceum*.

Figure 4. Grass species more common on the moist area adjacent to the N14 tarred road.

The August 2013 surveys encountered numerous annual species which provided for a colourful display on the site (Figure 5). Some of the annuals present in high numbers were, *Dimorphotheca sinuata* (Namaqualand daisy), *Norlindhia amplectens* (dassiegousblom), *Monoculus hyoseroides* (dassiegousblom) and *Senecio cardaminifolius* (hongerblom). Numerous annual grasses were encountered on the site probably as a result of the additional moist habitats resulting from the runoff from the tarred road.

Figure 5. Proposed development site during the site visit conducted end August 2013.

The April and August 2013 surveys of the proposed site to be developed produced a combined preliminary species list of 143 plant species. This list should be considered as incomplete since is was compiled following only two field surveys. The early timing of the April survey and limited amount of rain until that stage, made identification of various annual seedlings and the early emergence of geophytic species leaves to species level very difficult or impossible. The later survey in August provided a better opportunity to identify the annuals that had emerged, however, the rains were not as abundant as in good rainfall years and there is a chance that a few annuals species did not germinate or were unable to survive the drier unfavourable conditions.

Table 1. Combined preliminary species list for the proposed Springbok mall site following two site investigations (April and August 2013)

Family	Scientific Name	RDL	NCNCA	CITES
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Aizoon canariense*	LC	P	
HYACINTHACEAE	*Albuca canadensis*	LC		
BORAGINACEAE	*Amsinckia calycina*	-		
MALVACEAE	*Anisodontea* sp.	-		
SCROPHULARIACEAE	*Aptosimum indivisum*	LC		
ASTERACEAE	*Arctotheca calendula*	LC		
ASTERACEAE	*Arctotis fastuosa*	LC		
POACEAE	*Aristida adscensionis*	LC		
ASPARAGACEAE	*Asparagus capensis*	LC		
ASPARAGACEAE	*Asparagus retrofractus*	LC		
CHENOPODIACEAE	*Atriplex lindleyi*	-		
CHENOPODIACEAE	*Atriplex nummularia* subsp. *nummularia*	-		
CHENOPODIACEAE	*Atriplex semibaccata*	LC		
POACEAE	*Avena sativa*	-		
IRIDACEAE	*Babiana curviscapa*	LC	P	
POACEAE	*Bromus pectinatus*	LC		
AMARYLLIDACEAE	*Brunsvigia bosmaniae*	LC	P	
ASPHODELACEAE	*Bulbine praemorsa*	LC	P	
POACEAE	*Chaetobromus involucratus* subsp. *dregeanus*	LC		
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Cheiridopsis denticulata*	LC	P	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Cheiridopsis namaquensis*	LC	P	
ANTHERICACEAE	*Chlorophytum* cf. *undulatum*	LC	P	
ANTHERICACEAE	*Chlorophytum crassinerve*	LC	P	
ASTERACEAE	*Chrysocoma ciliata*	LC		
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Cleretum papulosum*	LC	P	
CONVOLVULACEAE	*Convolvulus sp.*	-		
CRASSULACEAE	*Crassula atropurpurea*	LC	P	
CRASSULACEAE	*Crassula* cf. *sericea*	LC	P	
CRASSULACEAE	*Crassula glomerata*	LC	P	

CRASSULACEAE	*Crassula muscosa*	LC	P	
ASTERACEAE	*Didelta carnosa*	LC		
ASTERACEAE	*Didelta spinosa*	LC		
ASTERACEAE	*Dimorphotheca sinuata*	LC		
HYACINTHACEAE	*Dipcadi crispum*	LC		
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Drosanthemum hispidum*	LC	P	
POACEAE	*Ehrharta longiflora*	LC		
POACEAE	*Eragrostis* cf. *echinochlodea*	LC		
ASTERACEAE	*Eriocephalus africanus*	LC		
ASTERACEAE	*Eriocephalus microphyllus*	LC		
ERIOSPERMACEAE	*Eriospermum capense*	LC		
ERIOSPERMACEAE	*Eriospermum* sp.	-		
GERANIACEAE	*Erodium moschatum*	-		
EUPHORBIACEAE	*Euphorbia mauritanica*	LC	P	II
CHENOPODIACEAE	*Exomis* sp.	-		
FABACEAE	Fabaceae shrub	-		
ASTERACEAE	*Felicia merxmuelleri*	LC		
POACEAE	*Fingerhuthia africana*	LC		
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Galenia africana*	LC	P	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Galenia meziana*	LC	P	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Galenia sarcophylla*	LC	P	
ASTERACEAE	*Gazania heterochaeta*	LC		
IRIDACEAE	*Gladiolus* cf. *orchidiflorus*	LC	P	
ASTERACEAE	*Gorteria diffusa*	LC		
NEURADACEAE	*Grielum humifusum* var. *humifusum*	LC		
AMARYLLIDACEAE	*Haemanthus crispus*	LC	P	
SCROPHULARIACEAE	*Hebenstretia robusta*	LC		
ASTERACEAE	*Helichrysum* cf. *aspermum*	LC		
ASTERACEAE	*Helichrysum obtusum*	LC		
ASTERACEAE	*Helichrysum* sp.	-		
BRASSICACEAE	*Heliophila thunbergii* var. *thunbergii*	LC		
BRASSICACEAE	*Heliophila variabilis*	LC		
MALVACEAE	*Hermannia* cf. *gariepina*	LC		
MALVACEAE	*Hermannia disermifolia*	LC		
MALVACEAE	*Hermannia marginata*	LC		
MALVACEAE	*Hermannia trifurca*	LC		
IRIDACEAE	*Hesperantha* sp.	LC		
ASTERACEAE	*Hirpicium alienatum*	LC		
MOLLUGINACEAE	*Hypertelis salsoloides*	LC		
POACEAE	*Karroochloa schismoides*	LC		
HYACINTHACEAE	*Lachenalia* sp.	-	P	
IRIDACEAE	*Lapeirousia silenoides*	LC	P	

ASTERACEAE	*Lasiospermum* sp.	-	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Leipoldtia schultzei*	LC	P
FABACEAE	*Leobordea polycephala*	-	
FABACEAE	*Lessertia diffusa*	LC	SP
ASTERACEAE	*Leysera gnaphalodes*	LC	
ASTERACEAE	*Leysera tenella*	LC	
PLUMBAGINACEAE	*Limonium sinuatum* subsp. *sinuatum*	-	
FABACEAE	*Lotononis falcata*	LC	
SOLANACEAE	*Lycium cinereum*	LC	
CHENOPODIACEAE	*Manochlamys albicans*	LC	
SCROPHULARIACEAE	*Manulea altissima*	LC	P
HYACINTHACEAE	*Massonia depressa*	LC	
FABACEAE	*Medicargo polymorpha*	-	
FABACEAE	*Melolobium humile*	LC	
APOCYNACEAE	*Microloma sagittatum*	LC	P
ASTERACEAE	*Monoculus hyoseroides*	LC	
IRIDACEAE	*Moraea falcifolia*	LC	P
IRIDACEAE	*Moraea miniata*	LC	P
IRIDACEAE	*Moraea tortilis*	LC	P
ASTERACEAE	*Norlindhia amplectens*	LC	
ASTERACEAE	*Oncosiphon grandiflorum*	LC	
HYACINTHACEAE	*Ornithogalum secundum*	LC	P
HYACINTHACEAE	*Ornithogalum xanthochlorum*	LC	P
COLCHICACEAE	*Ornithoglossum vulgare*	LC	
ASTERACEAE	*Osteospermum grandiflorum*	LC	
ASTERACEAE	*Osteospermum pinnatum* var. *pinnatum*	LC	
ASTERACEAE	*Othonna* cf. *arbuscula*	LC	
ASTERACEAE	*Othonna sedifolia*	LC	
OXALIDACEAE	*Oxalis ambigua*	LC	P
OXALIDACEAE	*Oxalis obtusa*	LC	P
OXALIDACEAE	*Oxalis* sp.	-	P
MALVACEAE	*Pelargonium crithmifolium*	LC	
MALVACEAE	*Pelargonium* sp 2.	-	
SCROPHULARIACEAE	*Peliostomum leucorrhizum*	LC	
SCROPHULARIACEAE	*Peliostomum virgatum*	LC	
POACEAE	*Pennisetum sectaceum*	-	
ASTERACEAE	*Pentzia incana*	LC	
MOLLUGINACEAE	*Pharnaceum* cf. *lanatum*	LC	
SCROPHULARIACEAE	*Phyllopodium collinum*	LC	P
PLANTAGINACEAE	*Plantago cafra*	LC	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Prenia* cf. *tetragona*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Prenia sladeniana*	LC	P

FABACEAE	*Prosopis glandulosa*	-	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Psilocaulon* cf. *dinteri*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Psilocaulon junceum*	LC	P
ASTERACEAE	*Pteronia divaricata*	LC	
ASTERACEAE	*Pteronia glomerata*	LC	
ASTERACEAE	*Rhynchopsidium pumilum*	LC	
POLYGONACEAE	*Rumex cordatus*	LC	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Ruschia elineata*	LC	P
CHENOPODIACEAE	*Salsola kali*	-	
SCROPHULARIACEAE	*Selago* sp.	-	
ASTERACEAE	*Senecio arenarius*	LC	
ASTERACEAE	*Senecio cardaminifolius*	LC	
ASTERACEAE	*Senecio cinerascens*	LC	
ASTERACEAE	*Senecio niveus*	LC	
PEDALIACEAE	*Sesamum capense*	LC	
POACEAE	*Stipagrostis obtusa*	LC	
POACEAE	*Stipagrostis zeyheri*	LC	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Tetragonia microptera*	LC	P
SANTALACEAE	*Thesium lineatum*	LC	
ASPHODELACEAE	*Trachyandra* cf. *muricata*	LC	
POACEAE	*Tribolium hispidum*	LC	
POACEAE	*Tribolium* sp.	-	
ZYGOPHYLLACEAE	*Tribulus terrestris*	LC	
ASTERACEAE	*Trichogyne* cf. *polycnemoides*	LC	
ASTERACEAE	*Tripteris microcarpa*	LC	
ASTERACEAE	*Tripteris oppositifolia*	LC	
ASTERACEAE	*Tripteris sinuata*	LC	
ASTERACEAE	*Ursinia nana*	LC	
SCROPHULARIACEAE	*Zaluzianskya benthamiana*	LC	
ZYGOPHYLLACEAE	*Zygophyllum retrofractum*	LC	

Clarification of symbols:
Red data list (RDL) categories are as follows: Least Concern (LC), Near Threatened (NT), Vulnerable (VU), Rare (RARE), Data deficient (DD), Endangered (EN), Critically Endangered (CR), Extinct in the Wild (EW) and Extinct (EX). Species Not Evaluated are left blank. These categories indicate the conservation importance of a species based on an expert evaluation of the species.
Northern Cape Nature Conservation Act (NCNCA) lists some of the plant species as Specially Protected (SP) and Protected (P). An Invasive (I) species is also indicated.

None of the species on the preliminary species list are listed as Red Data species however, numerous species are Specially Protected or Protected according to the Northern Cape Nature Conservation Act. The family *Euphorbiaceae* is listed on CITES Appendix II. Present, in high numbers at times, are alien species such as *Atriplex lindleyi*, *Bromus pectinatus*, *Erodium moschatum*, *Pennisetum sectaceum* and *Salsola kali*. The indigenous pioneer species, *Galenia africana* is common in places (Figure 6).

Figure 6. *Galenia africana* and *Atriplex lindleyi* are common in places and are disturbance indicators.

The developer has expressed an interest in using the conservation significant species, especially the geophytes, for landscaping purposes. This should be considered a viable option in protecting these individuals from destruction but depends on the species found on site and their importance. Species found during the April 2013 survey that could potentially be transplanted and used for the landscaping of the development are *Brunsvigia bosmaniae* (Maartblom, Figure 7) and *Haemanthus crispus* (poeierkwas, Figure 8), (GPS readings supplied in Appendix B). Both of these species are not Red Data species but they are listed as Protected by the Northern Cape Nature Conservation Act. Additional showy geophytic species encountered during the August spring surveys that could also potentially be used for landscaping purposes include *Babiana curviscapa* (bobbejaantjie, Figure 9) and *Laperousia silenoides* (meidestert, Figure 10). Global Positioning System co-ordinates are not supplied for these species since these individuals are abundant on the site. Succulents such as *Drosanthemum hispidum* (fyn t'noeroebos), *Cheiridopsis denticulata* (t'noutsiama) and *C. namaquesis* (Figure 11) could also be used for landscaping purposes and are present on the proposed development site.

Figure 7. An example of *Brunsvigia bosmaniae* (Maartblom) found on the proposed development site.

Figure 8. *Haemanthus crispus* (poeierkwas) found on the Springbok site.

Figure 9. *Babiana curviscapa* (bobbejaantjie) found on the proposed development site.

Figure 10. *Laperousia silenoides* (meidestert) present on site.

Figure 11. *Cheiridopsis namaquensis*, a succulent species, found on the rocky shallow soils of the site.

DISCUSSION AND CONCLUSIONS

The development of a mall is proposed on an open area in the town of Springbok. This proposed development site is located in the Succulent Karoo Biome, a hotspot of diversity, and highlights the importance of establishing the presence of species of conservation significance on site before construction commences.

A species list was generated using the SIBIS Integrating Biodiversity Site of the South African National Biodiversity Institute. This generated list is a list of species that could potentially occur on site. Since the list includes various habitats not found on the proposed development site, not all the species listed could occur on the site.

Species of conservation significance in the 2917DB quarter degree grid listed as Red Data species are *Acanthopsis spathularis* (RARE), *Adromischus mammillaris* (EN), *Albuca zebrina* (RARE), *Aloe buhrii* (VU), *A. dichotoma* (VU), *Babiana horizontalis* (VU), *B. vanzijlae* (NT), *Brunsvigia herrei* (VU), *Cheiridopsis rostrata* (VU), *Conophytum blandum* (NT), *Conophytum*

khamiesbergense (VU), *Crassula exilis* (RARE), *Crassula roggeveldii* (RARE), *Crassula thunbergiana* (RARE), *Drosanthemum calycinum* (NT), *Empodium veratrifolium* (EN), *Eriospermum pusillum* (RARE), *Euryops marlothii* (RARE), *E. namaquensis* (VU), *Gladiolus salteri* (RARE), *Lachenalia concordiana* (RARE), *L. kliprandensis* (RARE), *L. verticillata* (RARE), *Leipoldtia* amoenus (EN), *L. aureus* (EN), *L. klaverensis* (EN), *Leobordea polycephala* (EN), *Manulea exigua* (VU), *Monalaria obconica* (VU), *Moraea indecora* (VU), *Odontophorus angustifolius* (RARE), *Othonna diversifolia* (RARE), *Oxalis exserta* (RARE), *Pectinaria articulata* (RARE), *Phylica cylindrica* (VU), *Polycarena capensis* (NT), *Quaqua cincta* (RARE), *Romulea namaquensis* (NT), *Strumaria merxmuelleriana* (RARE), *Wahlenbergia asparagoides* (VU) and *Zygophyllum divaricatum* (EN). Numerous species are listed as DD (Data deficient) and thus their actual status is unknown.

The Specially Protected and Protected families according to the Northern Cape Nature Conservation Act are Aizoaceae/Mesembryanthemaceae, Amaryllidaceae, Anthericaceae, Apiaceae, Apocynaceae, Asphodelaceae, Crassulaceae, Iridaceae, Orchidiaceae and Restionaceae. Genera Specially Protected or Protected include: *Agathosma*, *Anacampseros*, *Avonia*, *Boscia*, *Cyanella*, *Diascia*, *Erica*, *Euphorbia*, *Jamesbrittenia*, *Lachenalia*, *Lessertia*, *Manulea*, *Nemesia*, *Ornithogalum*, *Oxalis*, *Ozoroa*, *Phylica*, *Phyllopodium*, *Sutherlandia* and *Pelargonium*. Additional to the Specially Protected or Protected families and genera, Specially Protected species include *Aloe buhrii* and *Aloe dichotoma*. CITES lists the genera *Aloe*, *Anacampseros* and *Avonia* and families Orchidiaceae and Euphorbiaceae as well as *Pachypodium namaquanum* on Appendix II.

The Springbok site is highly disturbed with many footpaths, soil heaps, rubbish and soil erosion evident. Site investigations in autumn (April 2013) and spring (end August 2013) provided a good indication of the species present on site. A combined preliminary species list of 143 species was compiled following the autumn and spring site surveys. None of the species on the preliminary species list are listed as Red Data species however, numerous species are Specially Protected or Protected according to the Northern Cape Nature Conservation Act. Additionally, the family *Euphorbiaceae* is listed on CITES Appendix II.

Two geophytic species, *Brunsvigia bosmaniae* (Maartblom) and *Haemanthus crispus* (poeierkwas), were found on the site. Since the developer has expressed an interest in using geophytic species for landscaping purposes, these two showy species could possibly be used. Additional showy geophytic species encountered during the August spring surveys that could also potentially be used for landscaping purposes include *Babiana curviscapa* (bobbejaantjie) and *Laperousia silenoides* (meidestert). Succulents such as *Drosanthemum hispidum* (fyn t'nouroebos), *Cheiridopsis denticulata* (t'noutsiama) and *C. namaquesis* could also be used for landscaping purposes and are present on the proposed development site. All these geophytic and succulent species are listed as Protected by the Northern Cape Nature Conservation Act.

Additionally, the spring surveys encountered numerous annual species, which also provide for a colourful display on the site. Some of the annuals present in high numbers were *Dimorphotheca sinuata* (Namaqualand daisy), *Norlindhia amplectens* (dassiegousblom), *Monoculus hyoseroides* (dassiegousblom) and *Senecio cardaminifolius* (hongerblom). These species could also potentially be used for landscaping purposes depending on the design of the proposed mall development. Large numbers of annual grasses were also encountered on the site probably as a result of the additional moist habitats resulting from the runoff from the N14 tarred road.

Disturbance over the years has lead to various alien species establishing on the site such as *Atriplex lindleyi*, *Erodium moschatum*, *Pennisetum sectaceum, Prosopis glandulosa* and *Salsola kali. Prosopis glandulosa* is listed as a Category 2 Invader species and has to be controlled according to CARA legislation. The indigenous pioneer species *Galenia africana*, also an indicator of disturbance, is common in places.

The two surveys, at different times of the year, gave a good indication of the species present on site. Once the developer and Environmental Practitioner have been provided with this report the necessary permits will have to be obtained from Department of Environment and Nature Conservation provided Environmental Authorisation is obtained. These permits should include the destruction and disturbance of Specially Protected, Protected and Indigenous flora present on the site. Based on the April and August 2013 site investigations and habitat found on the site, permits will be required for the Specially Protected and Protected families Aizoaceae/Mesembryanthemaceae, Amaryllidaceae, Anthericaceae, Apiaceae, Apocynaceae, Asphodelaceae, Crassulaceae, Iridaceae, and Orchidiaceae and the genera *Cyanella*, *Diascia*, *Erica*, *Euphorbia*, *Jamesbrittenia*, *Lachenalia*, *Lessertia*, *Manulea*, *Nemesia*, *Ornithogalum*, *Oxalis*, *Phyllopodium*, *Sutherlandia* and *Pelargonium* since these families and genera do occur or could potentially occur on site. Additionally, a permit for the removal/destruction of indigenous flora on site will also have to be applied for.

RECOMENDATIONS

The two surveys, one in April and one in August, gave a good indication of the species present on site. These surveys together with the species information generated via the SIBIS Integrating Biodiversity Site enable an informed decision regarding floral species that will be harmed and/or destroyed by the proposed development. This in turn enables informed decisions to be made by Department Environmental Affairs as well as the developer.

Applications for the necessary permits can be made to the Department of Environment and Nature Conservation once a Record of Decision has been provided by the Department of Environmental Affairs. These permits will include the destruction and disturbance of Specially Protected, Protected and Indigenous flora present on the site. Permits will be required for the Specially Protected and Protected families Aizoaceae/Mesembryanthemaceae, Amaryllidaceae, Anthericaceae, Apiaceae, Apocynaceae, Asphodelaceae, Crassulaceae, Iridaceae, and Orchidiaceae and the genera *Cyanella*, *Diascia*, *Erica*, *Euphorbia*, *Jamesbrittenia*, *Lachenalia*, *Lessertia*, *Manulea*, *Nemesia*, *Ornithogalum*, *Oxalis*, *Phyllopodium*, *Sutherlandia* and *Pelargonium* as well as for Indigenous flora.

REFERENCES AND BIBLOGRAPHY

ACOCKS, J.P.H. 1953, 1988. *Veld types of South Africa. Memoir of the Botanical Survey of South Africa* 57: 1-146.
BROMILOW, C. 2010. *Probleemplante en Indringeronkruide van Suid-Afrika*. Briza Publications, Pretoria.
CITES 2012. APPENDICES I, II & III valid from 3 April 2012.
COETZEE, K. 2005. *Caring for rangelands*. University of KwaZulu-Natal Press, Pietermaritzburg.
DEAN, W.R. & MILTON, S.J. (Eds) 1999. *The Karoo: Ecological patterns and processes*. Cambridge University Press, Cambridge.

ESLER, K., MILTON, S.J. & DEAN, R.J. 2006. *Karoo veld – ecology and management*. Briza Publications, Pretoria.
GERMISHUIZEN, G. & MEYER, N.L. (Eds). 2003. Plants of southern Africa: an annotated checklist. *Strelitzia* 14. National Botanical Institute, Pretoria.
GIBBS RUSSELL, G.E., WATSON, L., KOEKEMOER, M., SMOOK, L., BARKER, N.P., ANDERSON, H.M. & DALLWITZ, M.J. 1990. Grasses of southern Africa. *Memoir of the Botanical Survey of South Africa* 58: 1 – 437.
GOLDING, J. (Ed.). 2002. *Southern African Plant Red Data Lists*. Southern African Botanical Diversity Network report no. 14. National Botanical Institute, Pretoria.
HARTMANN, H.E.K. 2002. *Illustrated handbook of succulent plants*. AIZOACEAE A-Z. Springer-Verlag, Berlin.
HENDERSON, L. 2001. *Alien weeds and invasive plants*. Plant Protection Research Institute Handbook no. 12, Agricultural Research Council, Pretoria.
HILTON-TAYLOR, C. 1996a. Red Data list of southern African plants. *Strelitzia* 4: 1 - 117.
HILTON-TAYLOR, C. 1996b. Red Data list of southern African plants. 1. corrections and additions. *Bothalia* 26: 177 - 182.
HILTON-TAYLOR, C. 1997. Red Data list of southern African plants. 2. corrections and additions. *Bothalia* 27: 195 - 209.
LE ROUX, P.M., KOTZE, C.D., NEL, G.P. & GLEN, H.F. 1994. *Bossieveld – grazing plants of the Karoo and karoo-like areas*. Bulletin 428. Department of Agriculture, Pretoria.
LOW, A & REBELO, A. 1998. *Vegetation of South Africa, Lesotho and Swaziland*. Department of Environmental Affairs & Tourism, Pretoria.
MANNING, J. 2003. *Wildflowers of South Africa*. Briza, Pretoria.
MANNING, J. GOLDBLATT, P. & SNIJMAN, D. 2002. The color encyclopedia of Cape bulbs. Timber Press, Inc., Oregon, U.S.A. and Cambridge U.K.
MUCINA, L., RUTHERFORD, M.C. & POWRIE, L.W. (eds). 2005. Vegetation map of South Africa, Lesotho and Swaziland, 1 : 1 000 000 scale sheet maps. Pretoria: South African Biodiversity Institute.
MUCINA, L. & RUTHERFORD, M.C. (Eds). 2006. *The vegetation of South Africa, Lesotho and Swaziland*. Strelitzia 19. South African National Biodiversity Institute, Pretoria.
RAIMONDO, D., VON STADEN, L., FODEN, W., VICTOR, J.E., HELME, N.A., TURNER, R.C., KAMUNDI, D.A. & MANYAMA, P.A. (Eds). 2009. Red lists of South African plants 2009. *Strelitzia* 25. South African National Biodiversity Institute (SANBI), Pretoria.
RUTHERFORD, M.C. & WESTFALL, R.H. 1986. *Biomes of southern Africa: an objective categorization*. *Memoir of the Botanical Survey of South Africa* 63. 2nd edition. National Botanical Institute, Pretoria.
SHEARING, D. & VAN HEERDEN, K. 1994. *Karoo*. South African wild flower guide 6. Botanical Society of South Africa. Cape Town.
VAHRMEIJER, J. 1981. *Gifplante van suider-Afrika wat veeverliese veroorsaak*. Tafelberg Uitgewers, Kaapstad.
VAN DER MERWE, H. & VAN ROOYEN, G. 2011. Wild flowers of the Roggeveld and Tanqua. Published by Helga van der Merwe.
VAN JAARSVELD, E., VAN WYK, B-E & SMITH, G. 2000. *Vetplante van Suid-Afrika*. Tafelberg Uitgewers, Cape Town.
VAN OUDTSHOORN, F. 1999. *Guide to grasses of southern Africa*. Briza, Pretoria.
VAN ROOYEN, N. 2001. *Flowering plants of the Kalahari dunes*. Ekotrust CC, Pretoria.
VAN WYK, A.E. & SMITH, G.F. 1998. *Regions of Floristic Endemism in southern Africa*. Umdaus Press, Pretoria.
VAN WYK, B-E. & SMITH, G. 1996. *Guide to the Aloes of South Africa*. Briza, Pretoria.
VAN WYK, B-E., VAN HEERDEN, F. & VAN OUDTSHOORN, B. 2002. *Poisonous plants of South Africa*. Briza, Pretoria.

VAN WYK, B-E, VAN OUDTSHOORN, B. & GERICKE, N. 1997. *Medicinal plants of South Africa*. Briza, Pretoria.
VAN WYK, B-E. & GERICKE, N. 2000. *Peoples Plants*. Briza, Pretoria.
VLOK, J. & SCHUTTE-VLOK, A. 2010. Plants of the Klein Karoo. Umdaus Press, Pretoria.

Appendix A. Flora species that could potentially occur on the proposed development site (quarter degree grid 2917DB)

FAMILY	SCIENTIFIC NAME	RDL	NCNCA	CITES
FABACEAE	*Acacia karroo*	LC		
ACANTHACEAE	*Acanthopsis spathularis*	**RARE**		
ACAROSPORACEAE	*Acarospora schleicheri*	-		
POTTIACEAE	*Acaulon leucochaete*	-		
POTTIACEAE	*Acaulon recurvatum*	-		
MOLLUGINACEAE	*Adenogramma glomerata*	LC		
CRASSULACEAE	*Adromischus alstonii*	LC	P	
CRASSULACEAE	*Adromischus filicaulis* subsp. *filicaulis*	LC	P	
CRASSULACEAE	*Adromischus mammillaris*	**EN**	P	
CRASSULACEAE	*Adromischus marianiae* var. *immaculatus*	LC	P	
APIACEAE	*Afroligusticum thodei*	-	P	
RUTACEAE	*Agathosma serpyllacea*	LC	P	
POACEAE	*Aira cupaniana*	-		
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Aizoon canariense*	LC	P	
HYACINTHACEAE	*Albuca acuminata*	-		
HYACINTHACEAE	*Albuca canadensis*	LC		
HYACINTHACEAE	*Albuca caudata*	LC		
HYACINTHACEAE	*Albuca consanguinea*	-	P	
HYACINTHACEAE	*Albuca cooperi*	LC		
HYACINTHACEAE	*Albuca leucantha*	LC		
HYACINTHACEAE	*Albuca longipes*	LC		
HYACINTHACEAE	*Albuca namaquensis*	LC		
HYACINTHACEAE	*Albuca setosa*	LC		
HYACINTHACEAE	*Albuca* sp.	-		
HYACINTHACEAE	*Albuca villosa* subsp. *villosa*	LC		
HYACINTHACEAE	*Albuca viscosa*	LC		
HYACINTHACEAE	*Albuca zebrina*	**RARE**	P	
ASPHODELACEAE	*Aloe buhrii*	**VU**	SP	II
ASPHODELACEAE	*Aloe dichotoma* var. *dichotoma*	**VU**	SP	II
ASPHODELACEAE	*Aloe krapohliana*	DD	P	II
ASPHODELACEAE	*Aloe melanacantha*	LC	P	II
ASPHODELACEAE	*Aloe microstigma* subsp. *microstigma*	LC	P	II
ASTERACEAE	*Amellus alternifolius* subsp. *alternifolius*	LC		
ASTERACEAE	*Amellus microglossus*	LC		
AMARYLLIDACEAE	*Ammocharis coranica*	LC	P	
ASTERACEAE	*Amphiglossa tomentosa*	LC		
BORAGINACEAE	*Amsinckia calycina*	-		
PORTULACACEAE	*Anacampseros baeseckei*	LC	P	II
PORTULACACEAE	*Anacampseros filamentosa* subsp. *filamentosa*	LC	P	II
PORTULACACEAE	*Anacampseros filamentosa* subsp. *namaquensis*	LC	P	II

PORTULACACEAE	*Anacampseros filamentosa* subsp. *tomentosa*	LC	P	II
PORTULACACEAE	*Anacampseros lanceolata* subsp. *lanceolata*	LC	P	II
BORAGINACEAE	*Anchusa capensis*	LC		
BORAGINACEAE	*Anchusa riparia*	LC		
APIACEAE	*Anginon verticillatum*	LC	P	
MALVACEAE	*Anisodontea bryoniifolia*	LC		
MALVACEAE	*Anisodontea* sp.	-		
APIACEAE	*Annesorhiza latifolia*	DD	P	
RUBIACEAE	*Anthospermum dregei* subsp. *dregei*	LC		
RUBIACEAE	*Anthospermum spathulatum* subsp. *spathulatum*	LC		
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Antimima alborubra*	LC	P	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Antimima maleolens*	LC	P	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Antimima modesta*	-	P	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Antimima subtruncata*	DD	P	
MENISPERMACEAE	*Antizoma miersiana*	LC		
SCROPHULARIACEAE	*Aptosimum indivisum*	LC		
SCROPHULARIACEAE	*Aptosimum marlothii*	LC		
SCROPHULARIACEAE	*Aptosimum* sp.	-		
SCROPHULARIACEAE	*Aptosimum spinescens*	LC		
ASTERACEAE	*Arctotheca calendula*	LC		
ASTERACEAE	*Arctotis auriculata*	LC		
ASTERACEAE	*Arctotis campanulata*	LC		
ASTERACEAE	*Arctotis erosa*	LC		
ASTERACEAE	*Arctotis fastuosa*	LC		
ASTERACEAE	*Arctotis laevis*	LC		
ASTERACEAE	*Arctotis leiocarpa*	LC		
ASTERACEAE	*Arctotis leiocarpa* Harv. x *A. fastuosa* Jacq.	LC		
ASTERACEAE	*Arctotis revoluta*	LC		
ASTERACEAE	*Arctotis* sp.	-		
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Aridaria noctiflora* subsp. *noctiflora*	LC	P	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Aridaria noctiflora* subsp. *straminea*	LC	P	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Aridaria serotina*	LC	P	
POACEAE	*Aristida adscensionis*	LC		
POACEAE	*Aristida dasydesmis*	LC		
ASPARAGACEAE	*Asparagus aethiopicus*	LC		
ASPARAGACEAE	*Asparagus alopecurus*	LC		
ASPARAGACEAE	*Asparagus asparagoides*	LC		
ASPARAGACEAE	*Asparagus burchellii*	LC		
ASPARAGACEAE	*Asparagus capensis* var. *capensis*	LC		
ASPARAGACEAE	*Asparagus exuvialis* forma *exuvialis*	LC		
ASPARAGACEAE	*Asparagus fasciculatus*	LC		
ASPARAGACEAE	*Asparagus graniticus*	LC		

ASPARAGACEAE	*Asparagus multituberosus*	LC		
ASPARAGACEAE	*Asparagus retrofractus*	LC		
ASPLENIACEAE	*Asplenium cordatum*	LC		
AYTONIACEAE	*Asterella marginata*	-		
AYTONIACEAE	*Asterella* sp.	-		
ASTERACEAE	*Athanasia flexuosa*	LC		
CHENOPODIACEAE	*Atriplex eardleyae*	-		
CHENOPODIACEAE	*Atriplex lindleyi* subsp. *inflata*	-		
CHENOPODIACEAE	*Atriplex lindleyi* subsp. *quadripartita*	-		
CHENOPODIACEAE	*Atriplex semibaccata* var. *appendiculata*	LC		
ZYGOPHYLLACEAE	*Augea capensis*	LC		
PORTULACACEAE	*Avonia albissima*	LC	P	II
PORTULACACEAE	*Avonia quinaria subsp. quinaria*	LC	P	II
IRIDACEAE	*Babiana attenuata*	LC	P	
IRIDACEAE	*Babiana curviscapa*	LC	P	
IRIDACEAE	*Babiana flabellifolia*	LC	P	
IRIDACEAE	*Babiana horizontalis*	VU	P	
IRIDACEAE	*Babiana* sp.	-	P	
IRIDACEAE	*Babiana torta*	LC	P	
IRIDACEAE	*Babiana vanzijliae*	NT	P	
LAMIACEAE	*Ballota africana*	LC		
ASTERACEAE	*Berkheya canescens*	LC		
ASTERACEAE	*Berkheya ferox* var. *pseudodidelta*	LC		
ASTERACEAE	*Berkheya ferox* var. *tomentosa*	LC		
ASTERACEAE	*Berkheya fruticosa*	LC		
ASTERACEAE	*Berkheya onobromoides* var. *onobromoides*	LC		
ASTERACEAE	*Berkheya spinosissima* subsp. *namaensis* var. *namaensis*	LC		
ASTERACEAE	*Berkheya spinosissima* subsp. *spinosissima*	LC		
ACANTHACEAE	*Blepharis capensis*	LC		
ACANTHACEAE	*Blepharis macra*	LC		
ACANTHACEAE	*Blepharis mitrata*	LC		
ACANTHACEAE	*Blepharis pruinosa*	-		
ACANTHACEAE	*Blepharis* sp.	-		
AMARYLLIDACEAE	*Boophone* sp.	-	P	
CAPPARACEAE	*Boscia foetida* subsp. *foetida*	LC	P	
BRASSICACEAE	*Brassica tournefortii*	-		
POACEAE	*Bromus hordeaceus* subsp. *molliformis*	-		
POACEAE	*Bromus pectinatus*	LC		
POACEAE	*Bromus* sp.	-		
POACEAE	*Bromus tectorum*	-	I	
AMARYLLIDACEAE	*Brunsvigia bosmaniae*	LC	P	
AMARYLLIDACEAE	*Brunsvigia herrei*	VU	P	
BRYACEAE	*Bryum alpinum*	-		
BRYACEAE	*Bryum argenteum*	-		

BRYACEAE	*Bryum radiculosum*	-	
ASPHODELACEAE	*Bulbine favosa*	LC	P
ASPHODELACEAE	*Bulbine frutescens*	LC	P
ASPHODELACEAE	*Bulbine lamprophylla*	DD	P
ASPHODELACEAE	*Bulbine praemorsa*	LC	P
ASPHODELACEAE	*Bulbine stolonifera*	LC	P
ASPHODELACEAE	*Bulbine vittatifolia*	LC	P
ASPHODELACEAE	*Bulbinella ciliolata*	LC	P
ASPHODELACEAE	*Bulbinella latifolia* subsp. *latifolia*	LC	P
FABACEAE	*Calobota angustifolia*	-	
FABACEAE	*Calobota cinerea*	LC	
FABACEAE	*Calobota halenbergensis*	LC	
FABACEAE	*Calobota sericea*	LC	
CYPERACEAE	*Carex divisa*	-	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Carpobrotus edulis* subsp. *edulis*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Cephalophyllum goodii*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Cephalophyllum pillansii*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Cephalophyllum rigidum*	LC	P
SCROPHULARIACEAE	*Chaenostoma revolutum*	LC	
POACEAE	*Chaetobromus involucratus* subsp. *dregeanus*	LC	
GIGASPERMACEAE	*Chamaebryum pottioides*	-	
SINOPTERIDACEAE	*Cheilanthes capensis*	LC	
SINOPTERIDACEAE	*Cheilanthes deltoidea*	LC	
SINOPTERIDACEAE	*Cheilanthes dinteri*	-	
PTERIDACEAE	*Cheilanthes hirta*	-	
SINOPTERIDACEAE	*Cheilanthes kunzei*	LC	
SINOPTERIDACEAE	*Cheilanthes multifida* var. *multifida*	LC	
SINOPTERIDACEAE	*Cheilanthes namaquensis*	LC	
SINOPTERIDACEAE	*Cheilanthes rawsonii*	LC	
SINOPTERIDACEAE	*Cheilanthes robusta*	LC	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Cheiridopsis denticulata*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Cheiridopsis derenbergiana*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Cheiridopsis meyeri*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Cheiridopsis namaquensis*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Cheiridopsis pillansii*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Cheiridopsis pilosula*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Cheiridopsis robusta*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Cheiridopsis rostrata*	VU	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Cheiridopsis schlechteri*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Cheiridopsis* sp.	-	P

AIZOACEAE/ MESEMBRYANTHEMACEAE	*Cheiridopsis speciosa*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Cheiridopsis turbinata*	LC	P
CHENOPODIACEAE	*Chenopodium glaucum*	-	
CHENOPODIACEAE	*Chenopodium murale* var. *murale*	-	
GENTIANACEAE	*Chironia baccifera*	LC	
POACEAE	*Chloris virgata*	LC	
ANTHERICACEAE	*Chlorophytum crassinerve*	LC	P
ANTHERICACEAE	*Chlorophytum namaquense*	LC	P
ANTHERICACEAE	*Chlorophytum undulatum*	LC	P
ASTERACEAE	*Chrysanthemoides monilifera* subsp. *canescens*	LC	
ASTERACEAE	*Chrysanthemoides monilifera* subsp. *pisifera*	LC	
ASTERACEAE	*Chrysocoma ciliata*	LC	
ASTERACEAE	*Chrysocoma coma-aurea*	LC	
ASTERACEAE	*Chrysocoma longifolia*	LC	
ASTERACEAE	*Chrysocoma oblongifolia*	LC	
ASTERACEAE	*Chrysocoma* sp.	-	
ASTERACEAE	*Cineraria canescens* var. *canescens*	LC	
CUCURBITACEAE	*Citrullus lanatus*	LC	
POACEAE	*Cladoraphis spinosa*	LC	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Cleretum papulosum* subsp. *papulosum*	LC	P
ROSACEAE	*Cliffortia ruscifolia* var. *ruscifolia*	LC	
EUPHORBIACEAE	*Clutia daphnoides*	LC	
BORAGINACEAE	*Codon royenii*	LC	
BORAGINACEAE	*Codon schenckii*	LC	
COLCHICACEAE	*Colchicum circinatum* subsp. *circinatum*	LC	P
COLCHICACEAE	*Colchicum dregei*	LC	P
COLCHICACEAE	*Colchicum poeltianum*	LC	P
COLCHICACEAE	*Colchicum volutare*	LC	P
COLCHICACEAE	*Colchicum walteri*	LC	P
SCROPHULARIACEAE	*Colpias mollis*	LC	
BURSERACEAE	*Commiphora cervifolia*	LC	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Conicosia elongata*	LC	P
APIACEAE	*Conium chaerophylloides*	LC	P
APIACEAE	*Conium sphaerocarpum*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Conophytum bilobum* subsp. *bilobum* var. *bilobum*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Conophytum bilobum* subsp. *bilobum* var. *elishae*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Conophytum blandum*	NT	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Conophytum breve*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Conophytum flavum* subsp. *flavum*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Conophytum khamiesbergense*	VU	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Conophytum pageae*	LC	P

AIZOACEAE/ MESEMBRYANTHEMACEAE	*Conophytum pellucidum*	LC	P	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Conophytum roodiae* subsp. *roodiae*	LC	P	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Conophytum* sp.	-	P	
ORCHIDACEAE	*Corycium crispum*	LC	P	II
ASTERACEAE	*Cotula barbata*	LC		
ASTERACEAE	*Cotula bipinnata*	LC		
ASTERACEAE	*Cotula coronopifolia*	LC		
ASTERACEAE	*Cotula laxa*	LC		
ASTERACEAE	*Cotula leptalea*	LC		
ASTERACEAE	*Cotula microglossa*	LC		
ASTERACEAE	*Cotula* sp.	-		
ASTERACEAE	*Cotula tenella*	LC		
ASTERACEAE	*Cotula thunbergii*	LC		
CRASSULACEAE	*Cotyledon orbiculata* var. *oblonga*	LC		
CRASSULACEAE	*Cotyledon orbiculata* var. *orbiculata*	LC		
CRASSULACEAE	*Cotyledon* sp.	-		
CRASSULACEAE	*Crassula aphylla*	LC	P	
CRASSULACEAE	*Crassula atropurpurea* var. *atropurpurea*	LC	P	
CRASSULACEAE	*Crassula atropurpurea* var. *cultriformis*	LC	P	
CRASSULACEAE	*Crassula atropurpurea* var. *purcellii*	LC	P	
CRASSULACEAE	*Crassula atropurpurea* var. *watermeyeri*	LC	P	
CRASSULACEAE	*Crassula brevifolia* subsp. *brevifolia*	LC	P	
CRASSULACEAE	*Crassula columnaris* subsp. *columnaris*	LC	P	
CRASSULACEAE	*Crassula cotyledonis*	LC	P	
CRASSULACEAE	*Crassula decumbens* var. *brachyphylla*	**NT**	P	
CRASSULACEAE	*Crassula dichotoma*	LC	P	
CRASSULACEAE	*Crassula elegans* subsp. *elegans*	LC	P	
CRASSULACEAE	*Crassula exilis* subsp. *exilis*	**RARE**	P	
CRASSULACEAE	*Crassula glomerata*	LC	P	
CRASSULACEAE	*Crassula hirsuta*	LC	P	
CRASSULACEAE	*Crassula macowaniana*	LC	P	
CRASSULACEAE	*Crassula muscosa* var. *muscosa*	LC	P	
CRASSULACEAE	*Crassula muscosa* var. *obtusifolia*	LC	P	
CRASSULACEAE	*Crassula namaquensis* subsp. *namaquensis*	LC	P	
CRASSULACEAE	*Crassula natans* var. *minus*	LC	P	
CRASSULACEAE	*Crassula nudicaulis* var. *nudicaulis*	LC	P	
CRASSULACEAE	*Crassula roggeveldii*	**RARE**	P	
CRASSULACEAE	*Crassula rudolfii*	LC	P	
CRASSULACEAE	*Crassula* sp.	-	P	
CRASSULACEAE	*Crassula strigosa*	LC	P	
CRASSULACEAE	*Crassula subaphylla* var. *subaphylla*	LC	P	
CRASSULACEAE	*Crassula tenuipedicellata*	LC	P	
CRASSULACEAE	*Crassula thunbergiana* subsp. *minutiflora*	**RARE**	P	
CRASSULACEAE	*Crassula tomentosa* var. *glabrifolia*	LC	P	

CRASSULACEAE	*Crassula tomentosa* var. *tomentosa*	LC	P	
CRASSULACEAE	*Crassula umbellata*	LC	P	
CRASSULACEAE	*Crassula vaillantii*	-	P	
SCROPHULARIACEAE	*Cromidon confusum*	LC		
SCROPHULARIACEAE	*Cromidon corrigioloides*	LC		
CUCURBITACEAE	*Cucumis africanus*	LC		
TECOPHILAEACEAE	*Cyanella hyacinthoides*	LC	P	
TECOPHILAEACEAE	*Cyanella lutea*	LC	P	
POACEAE	*Cymbopogon pospischilii*	-		
POACEAE	*Cynodon dactylon*	LC		
CYPERACEAE	*Cyperus longus* var. *longus*	LC		
CYPERACEAE	*Cyperus marginatus*	LC		
LOBELIACEAE	*Cyphia crenata* var. *angustifolia*	LC		
FUMARIACEAE	*Cysticapnos vesicaria* subsp. *vesicaria*	LC		
APIACEAE	*Dasispermum capense*	LC	P	
APIACEAE	*Dasispermum tenue*	LC	P	
APIACEAE	*Deverra denudata* subsp. *aphylla*	LC	P	
CARYOPHYLLACEAE	*Dianthus holopetalus*	LC	P	
CARYOPHYLLACEAE	*Dianthus kamisbergensis*	LC	P	
SCROPHULARIACEAE	*Diascia diffusa*	LC	P	
SCROPHULARIACEAE	*Diascia minutiflora*	LC	P	
SCROPHULARIACEAE	*Diascia namaquensis*	LC	P	
SCROPHULARIACEAE	*Diascia runcinata*	LC	P	
SCROPHULARIACEAE	*Diascia tanyceras*	LC	P	
ASTERACEAE	*Dicerothamnus rhinocerotis*	LC		
ASTERACEAE	*Dicoma capensis*	LC		
ASTERACEAE	*Didelta carnosa* var. *carnosa*	LC		
ASTERACEAE	*Didelta spinosa*	LC		
POTTIACEAE	*Didymodon australasii*	-		
URTICACEAE	*Didymodoxa capensis* var. *capensis*	LC		
ASTERACEAE	*Dimorphotheca fruticosa*	LC		
ASTERACEAE	*Dimorphotheca polyptera*	LC		
ASTERACEAE	*Dimorphotheca sinuata*	LC		
ASTERACEAE	*Dimorphotheca* sp.	-		
ASTERACEAE	*Dimorphotheca tragus*	LC		
RUTACEAE	*Diosma acmaeophylla*	LC		
RUTACEAE	*Diosma ramosissima*	LC		
EBENACEAE	*Diospyros austro-africana* var. *austro-africana*	LC		
EBENACEAE	*Diospyros austro-africana* var. *rubriflora*	LC		
EBENACEAE	*Diospyros ramulosa*	LC		
HYACINTHACEAE	*Dipcadi ciliare*	LC		
HYACINTHACEAE	*Dipcadi crispum*	LC		
ORCHIDACEAE	*Disa spathulata* subsp. *spathulata*	DD	P	II
SCROPHULARIACEAE	*Dischisma clandestinum*	LC		
SCROPHULARIACEAE	*Dischisma spicatum*	LC		

SAPINDACEAE	*Dodonaea viscosa* var. *angustifolia*	LC	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Dorotheanthus bellidiformis* subsp. *hestermalensis*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Dorotheanthus* sp.	-	P
HYACINTHACEAE	*Drimia cuscutoides*	LC	
HYACINTHACEAE	*Drimia exuviata*	LC	
HYACINTHACEAE	*Drimia intricata*	LC	
HYACINTHACEAE	*Drimia marginata*	LC	
HYACINTHACEAE	*Drimia multifolia*	LC	
HYACINTHACEAE	*Drimia physodes*	LC	
HYACINTHACEAE	*Drimia pulchromarginata*	LC	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Drosanthemum calycinum*	**NT**	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Drosanthemum floribundum*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Drosanthemum framesii*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Drosanthemum hispidum*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Drosanthemum latipetalum*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Drosanthemum lique*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Drosanthemum* sp.	-	P
PLUMBAGINACEAE	*Dyerophytum africanum*	LC	
POACEAE	*Ehrharta barbinodis*	LC	
POACEAE	*Ehrharta calycina*	LC	
POACEAE	*Ehrharta delicatula*	LC	
POACEAE	*Ehrharta longiflora*	LC	
POACEAE	*Ehrharta melicoides*	LC	
POACEAE	*Ehrharta pusilla*	LC	
POACEAE	*Ehrharta triandra*	LC	
POLYGONACEAE	*Emex australis*	-	
HYPOXIDACEAE	*Empodium flexile*	LC	
HYPOXIDACEAE	*Empodium veratrifolium*	**EN**	
POACEAE	*Enneapogon desvauxii*	LC	
POACEAE	*Enneapogon scaber*	LC	
ERICACEAE	*Erica plukenetii* subsp. *plukenetii*	LC	P
ASTERACEAE	*Eriocephalus africanus* var. *africanus*	LC	
ASTERACEAE	*Eriocephalus africanus* var. *paniculatus*	LC	
ASTERACEAE	*Eriocephalus brevifolius*	LC	
ASTERACEAE	*Eriocephalus ericoides* subsp. *ericoides*	LC	
ASTERACEAE	*Eriocephalus macroglossus*	LC	
ASTERACEAE	*Eriocephalus microcephalus*	LC	
ASTERACEAE	*Eriocephalus microphyllus* var. *microphyllus*	LC	
ASTERACEAE	*Eriocephalus microphyllus* var. *pubescens*	LC	
ASTERACEAE	*Eriocephalus punctulatus*	LC	
ASTERACEAE	*Eriocephalus* sp.	-	
ERIOSPERMACEAE	*Eriospermum alcicorne*	LC	

ERIOSPERMACEAE	*Eriospermum capense* subsp. *capense*	LC		
ERIOSPERMACEAE	*Eriospermum cervicorne*	LC		
ERIOSPERMACEAE	*Eriospermum descendens*	LC		
ERIOSPERMACEAE	*Eriospermum deserticolum*	LC		
ERIOSPERMACEAE	*Eriospermum folioliferum*	LC		
ERIOSPERMACEAE	*Eriospermum multifidum*	LC		
ERIOSPERMACEAE	*Eriospermum paradoxum*	LC		
ERIOSPERMACEAE	*Eriospermum parvifolium*	LC		
ERIOSPERMACEAE	*Eriospermum pusillum*	**RARE**		
ERIOSPERMACEAE	*Eriospermum* sp.	-		
GERANIACEAE	*Erodium cicutarium*	-		
GERANIACEAE	*Erodium moschatum*	-		
SAPINDACEAE	*Erythrophysa alata*	LC		
EBENACEAE	*Euclea lancea*	LC		
EBENACEAE	*Euclea tomentosa*	LC		
EUPHORBIACEAE	*Euphorbia brachiata*	LC	P	II
EUPHORBIACEAE	*Euphorbia caterviflora*	LC	P	II
EUPHORBIACEAE	*Euphorbia chersina*	LC	P	II
EUPHORBIACEAE	*Euphorbia crispa*	LC	P	II
EUPHORBIACEAE	*Euphorbia decussata*	LC	P	II
EUPHORBIACEAE	*Euphorbia dregeana*	LC	P	II
EUPHORBIACEAE	*Euphorbia ephedroides* var. *ephedroides*	LC	P	II
EUPHORBIACEAE	*Euphorbia filiflora*	LC	P	II
EUPHORBIACEAE	*Euphorbia mauritanica* var. *corallothamnus*	-	P	II
EUPHORBIACEAE	*Euphorbia mauritanica* var. *mauritanica*	LC	P	II
EUPHORBIACEAE	*Euphorbia mauritanica* var. *namaquensis*	LC	P	II
EUPHORBIACEAE	*Euphorbia rudis*	LC	P	II
EUPHORBIACEAE	*Euphorbia* sp.	-	P	II
ASTERACEAE	*Euryops brevipapposus*	LC		
ASTERACEAE	*Euryops dregeanus*	LC		
ASTERACEAE	*Euryops marlothii*	**RARE**		
ASTERACEAE	*Euryops multifidus*	LC		
ASTERACEAE	*Euryops namaquensis*	**VU**		
ASTERACEAE	*Euryops subcarnosus* subsp. *vulgaris*	LC		
ASTERACEAE	*Euryops tenuissimus* subsp. *tenuissimus*	LC		
ASTERACEAE	*Felicia australis*	LC		
ASTERACEAE	*Felicia bergeriana*	LC		
ASTERACEAE	*Felicia brevifolia*	LC		
ASTERACEAE	*Felicia clavipilosa* subsp. *clavipilosa*	LC		
ASTERACEAE	*Felicia dubia*	LC		
ASTERACEAE	*Felicia filifolia* subsp. *filifolia*	LC		
ASTERACEAE	*Felicia filifolia* subsp. *schaeferi*	LC		
ASTERACEAE	*Felicia hirsuta*	LC		
ASTERACEAE	*Felicia merxmuelleri*	LC		
ASTERACEAE	*Felicia microsperma*	LC		

ASTERACEAE	*Felicia namaquana*	LC	
ASTERACEAE	*Felicia scabrida*	LC	
ASTERACEAE	*Felicia tenella* subsp. *longifolia*	LC	
ASTERACEAE	*Felicia tenera*	LC	
IRIDACEAE	*Ferraria ferrariola*	LC	P
IRIDACEAE	*Ferraria macrochlamys* subsp. *macrochlamys*	-	P
IRIDACEAE	*Ferraria uncinata*	LC	P
IRIDACEAE	*Ferraria variabilis*	LC	P
CYPERACEAE	*Ficinia argyropa*	LC	
CYPERACEAE	*Ficinia brevifolia*	LC	
CYPERACEAE	*Ficinia laevis*	LC	
CYPERACEAE	*Ficinia nigrescens*	LC	
MORACEAE	*Ficus cordata* subsp. *cordata*	LC	
MORACEAE	*Ficus ilicina*	LC	
MORACEAE	*Ficus ingens*	LC	
POACEAE	*Fingerhuthia africana*	LC	
FISSIDENTACEAE	*Fissidens rufescens*	-	
APOCYNACEAE	*Fockea comaru*	LC	P
APOCYNACEAE	*Fockea sinuata*	LC	P
URTICACEAE	*Forsskaolea candida*	LC	
ASTERACEAE	*Foveolina dichotoma*	LC	
FRANKENIACEAE	*Frankenia pulverulenta*	LC	
FRANKENIACEAE	*Frankenia repens*	LC	
IRIDACEAE	*Freesia viridis*	LC	P
FUNARIACEAE	*Funaria bergiana*	-	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Galenia africana*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Galenia collina*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Galenia crystallina* var. *crystallina*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Galenia cymosa*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Galenia fruticosa*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Galenia namaensis*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Galenia sarcophylla*	LC	P
RUBIACEAE	*Galium* sp.	-	
RUBIACEAE	*Galium tomentosum*	LC	
ASTERACEAE	*Gazania heterochaeta*	LC	
ASTERACEAE	*Gazania krebsiana* subsp. *arctotoides*	LC	
ASTERACEAE	*Gazania leiopoda*	LC	
ASTERACEAE	*Gazania lichtensteinii*	LC	
ASTERACEAE	*Gazania tenuifolia*	LC	
AMARYLLIDACEAE	*Gethyllis lanuginosa*	LC	P
AMARYLLIDACEAE	*Gethyllis* sp.	-	P
IRIDACEAE	*Gladiolus equitans*	LC	P
IRIDACEAE	*Gladiolus orchidiflorus*	LC	P

IRIDACEAE	*Gladiolus saccatus*	LC	P
IRIDACEAE	*Gladiolus salteri*	**RARE**	P
IRIDACEAE	*Gladiolus scullyi*	LC	P
THYMELAEACEAE	*Gnidia meyeri*	LC	
THYMELAEACEAE	*Gnidia nitida*	LC	
THYMELAEACEAE	*Gnidia* sp.	-	
APOCYNACEAE	*Gomphocarpus cancellatus*	-	P
APOCYNACEAE	*Gomphocarpus filiformis*	LC	P
APOCYNACEAE	*Gomphocarpus fruticosus* subsp. *fruticosus*	-	P
FUNARIACEAE	*Goniomitrium africanum*	-	
ASTERACEAE	*Gorteria diffusa* subsp. *calendulacea*	LC	
ASTERACEAE	*Gorteria diffusa* subsp. *diffusa*	LC	
PROTEACEAE	*Grevillea robusta*	-	
MALVACEAE	*Grewia flava*	LC	
NEURADACEAE	*Grielum humifusum* var. *humifusum*	LC	
NEURADACEAE	*Grielum sinuatum*	LC	
GRIMMIACEAE	*Grimmia laevigata*	-	
GRIMMIACEAE	*Grimmia pulvinata*	-	
ASTERACEAE	*Gymnodiscus linearifolia*	LC	
AMARYLLIDACEAE	*Haemanthus amarylloides* subsp. *polyanthus*	LC	P
AMARYLLIDACEAE	*Haemanthus crispus*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Hallianthus planus*	LC	P
ASTERACEAE	*Haplocarpha* sp.	-	
ASPHODELACEAE	*Haworthia reticulata* var. *reticulata*	LC	P
SCROPHULARIACEAE	*Hebenstretia dentata*	LC	
SCROPHULARIACEAE	*Hebenstretia fastigiosa*	LC	
SCROPHULARIACEAE	*Hebenstretia integrifolia*	LC	
SCROPHULARIACEAE	*Hebenstretia parviflora*	LC	
SCROPHULARIACEAE	*Hebenstretia robusta*	LC	
SCROPHULARIACEAE	*Hebenstretia* sp.	-	
ASTERACEAE	*Helichrysum hebelepis*	LC	
ASTERACEAE	*Helichrysum herniarioides*	LC	
ASTERACEAE	*Helichrysum leontonyx*	LC	
ASTERACEAE	*Helichrysum litorale*	LC	
ASTERACEAE	*Helichrysum micropoides*	LC	
ASTERACEAE	*Helichrysum obtusum*	LC	
ASTERACEAE	*Helichrysum oxybelium*	LC	
ASTERACEAE	*Helichrysum revolutum*	LC	
ASTERACEAE	*Helichrysum tinctum*	LC	
ASTERACEAE	*Helichrysum tomentosulum* subsp. *aromaticum*	LC	
ASTERACEAE	*Helichrysum zeyheri*	LC	
BRASSICACEAE	*Heliophila amplexicaulis*	LC	
BRASSICACEAE	*Heliophila arenaria* var. *acocksii*	LC	
BRASSICACEAE	*Heliophila carnosa*	LC	

BRASSICACEAE	*Heliophila cornuta* var. *cornuta*	LC		
BRASSICACEAE	*Heliophila cornuta* var. *squamata*	LC		
BRASSICACEAE	*Heliophila crithmifolia*	LC		
BRASSICACEAE	*Heliophila deserticola* var. *deserticola*	LC		
BRASSICACEAE	*Heliophila lactea*	LC		
BRASSICACEAE	*Heliophila namaquana*	LC		
BRASSICACEAE	*Heliophila pinnata*	LC		
BRASSICACEAE	*Heliophila seselifolia* var. *nigellifolia*	LC		
BRASSICACEAE	*Heliophila* sp.	-		
BRASSICACEAE	*Heliophila thunbergii* var. *macrostylis*	LC		
BRASSICACEAE	*Heliophila thunbergii* var. *thunbergii*	LC		
BRASSICACEAE	*Heliophila variabilis*	LC		
SCROPHULARIACEAE	*Hemimeris racemosa*	LC		
MALVACEAE	*Hermannia althaeifolia*	LC		
MALVACEAE	*Hermannia cuneifolia* var. *cuneifolia*	LC		
MALVACEAE	*Hermannia cuneifolia* var. *glabrescens*	LC		
MALVACEAE	*Hermannia disermifolia*	LC		
MALVACEAE	*Hermannia gariepina*	LC		
MALVACEAE	*Hermannia marginata*	LC		
MALVACEAE	*Hermannia meyeriana*	-		
MALVACEAE	*Hermannia minutiflora*	LC		
MALVACEAE	*Hermannia paucifolia*	LC		
MALVACEAE	*Hermannia pfeilii*	LC		
MALVACEAE	*Hermannia pulchella*	LC		
MALVACEAE	*Hermannia pulverata*	LC		
MALVACEAE	*Hermannia* sp.	-		
MALVACEAE	*Hermannia stricta*	LC		
MALVACEAE	*Hermannia trifoliata*	LC		
MALVACEAE	*Hermannia trifurca*	LC		
AMARANTHACEAE	*Hermbstaedtia glauca*	LC		
IRIDACEAE	*Hesperantha bachmannii*	LC	P	
IRIDACEAE	*Hesperantha flexuosa*	LC	P	
IRIDACEAE	*Hesperantha radiata*	LC	P	
AMARYLLIDACEAE	*Hessea breviflora*	LC	P	
ASTERACEAE	*Hirpicium alienatum*	LC		
ASTERACEAE	*Hirpicium echinus*	LC		
ORCHIDACEAE	*Holothrix schlechteriana*	LC	P	II
ARALIACEAE	*Hydrocotyle* sp.	-		
ASTERACEAE	*Hymenolepis parviflora*	LC		
OROBANCHACEAE	*Hyobanche barklyi*	LC		
OROBANCHACEAE	*Hyobanche glabrata*	LC		
OROBANCHACEAE	*Hyobanche sanguinea*	LC		
MOLLUGINACEAE	*Hypertelis salsoloides* var. *salsoloides*	LC		
DENNSTAEDTIACEAE	*Hypolepis sparsisora*	LC		
HYPOXIDACEAE	*Hypoxis* sp.	-		

ASTERACEAE	*Ifloga molluginoides*	LC	
ASTERACEAE	*Ifloga* sp.	LC	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Ihlenfeldtia excavata*	LC	P
FABACEAE	*Indigofera heterophylla*	LC	
FABACEAE	*Indigofera meyeriana*	LC	
FABACEAE	*Indigofera nigromontana*	LC	
FABACEAE	*Indigofera pungens*	LC	
FABRONIACEAE	*Ischyrodon lepturus*	-	
RESTIONACEAE	*Ischyrolepis sieberi*	LC	P
RESTIONACEAE	*Ischyrolepis* sp.	-	P
CYPERACEAE	*Isolepis brevicaulis*	LC	
CYPERACEAE	*Isolepis capensis*	LC	
IRIDACEAE	*Ixia scillaris* var. *scillaris*	LC	P
SCROPHULARIACEAE	*Jamesbrittenia amplexicaulis*	LC	P
SCROPHULARIACEAE	*Jamesbrittenia aridicola*	LC	P
SCROPHULARIACEAE	*Jamesbrittenia atropurpurea* subsp. *atropurpurea*	LC	P
SCROPHULARIACEAE	*Jamesbrittenia fruticosa*	LC	P
SCROPHULARIACEAE	*Jamesbrittenia maxii*	LC	P
SCROPHULARIACEAE	*Jamesbrittenia namaquensis*	LC	P
SCROPHULARIACEAE	*Jamesbrittenia pedunculosa*	LC	P
SCROPHULARIACEAE	*Jamesbrittenia* sp.	-	P
JUNCACEAE	*Juncus acutus* subsp. *leopoldii*	LC	
JUNCACEAE	*Juncus bufonius*	-	
PARMELIACEAE	*Karoowia perspersa*	-	
POACEAE	*Karroochloa schismoides*	LC	
POACEAE	*Karroochloa tenella*	LC	
ACHARIACEAE	*Kiggelaria africana*	LC	
ASTERACEAE	*Kleinia longiflora*	LC	
HYACINTHACEAE	*Lachenalia anguinea*	LC	P
HYACINTHACEAE	*Lachenalia carnosa*	LC	P
HYACINTHACEAE	*Lachenalia concordiana*	**RARE**	P
HYACINTHACEAE	*Lachenalia kliprandensis*	**RARE**	P
HYACINTHACEAE	*Lachenalia mutabilis*	LC	P
HYACINTHACEAE	*Lachenalia obscura*	LC	P
HYACINTHACEAE	*Lachenalia undulata*	LC	P
HYACINTHACEAE	*Lachenalia verticillata*	**RARE**	P
HYACINTHACEAE	*Lachenalia violacea* var. *glauca*	LC	P
HYACINTHACEAE	*Lachenalia violacea* var. *violacea*	LC	P
POACEAE	*Lagurus* sp.	-	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Lampranthus amoenus*	**EN**	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Lampranthus aureus*	**EN**	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Lampranthus godmaniae*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Lampranthus otzenianus*	LC	P

AIZOACEAE/ MESEMBRYANTHEMACEAE	*Lampranthus* sp.	-	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Lampranthus uniflorus*	LC	P
IRIDACEAE	*Lapeirousia anceps*	LC	P
IRIDACEAE	*Lapeirousia exilis*	LC	P
IRIDACEAE	*Lapeirousia fabricii*	LC	P
IRIDACEAE	*Lapeirousia littoralis* subsp. *littoralis*	LC	P
IRIDACEAE	*Lapeirousia pyramidalis* subsp. *pyramidalis*	LC	P
IRIDACEAE	*Lapeirousia silenoides*	LC	P
ASTERACEAE	*Lasiopogon micropoides*	LC	
ASTERACEAE	*Lasiospermum brachyglossum*	LC	
LECIDEACEAE	*Lecidea tragorum*	-	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Leipoldtia klaverensis*	**EN**	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Leipoldtia laxa*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Leipoldtia schultzei*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Leipoldtia* sp.	-	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Leipoldtia uniflora*	LC	P
FABACEAE	*Leobordea longiflora*	LC	
FABACEAE	*Leobordea pentaphylla*	LC	
FABACEAE	*Leobordea polycephala*	**EN**	
FABACEAE	*Leobordea quinata*	LC	
BRASSICACEAE	*Lepidium africanum* subsp. *africanum*	LC	
BRASSICACEAE	*Lepidium africanum* subsp. *divaricatum*	LC	
BRASSICACEAE	*Lepidium desertorum*	LC	
POACEAE	*Leptochloa fusca*	LC	
POTTIACEAE	*Leptophascum leptophyllum*	-	
FABACEAE	*Lessertia argentea*	LC	SP
FABACEAE	*Lessertia brachypus*	LC	SP
FABACEAE	*Lessertia brachystachya*	LC	SP
FABACEAE	*Lessertia capitata*	LC	SP
FABACEAE	*Lessertia diffusa*	LC	SP
FABACEAE	*Lessertia fruticosa*	LC	SP
FABACEAE	*Lessertia* sp.	-	SP
FABACEAE	*Lessertia spinescens*	LC	SP
FABACEAE	*Lessertia stenoloba*	LC	SP
ASTERACEAE	*Leysera gnaphalodes*	LC	
ASTERACEAE	*Leysera tenella*	LC	
MOLLUGINACEAE	*Limeum africanum* subsp. *africanum*	LC	
PLUMBAGINACEAE	*Limonium dregeanum*	LC	
PLUMBAGINACEAE	*Limonium scabrum* var. *avenaceum*	LC	
BORAGINACEAE	*Lobostemon echioides*	LC	
BORAGINACEAE	*Lobostemon* sp.	-	
POACEAE	*Lophochloa pumila*	-	
ASTERACEAE	*Lopholaena cneorifolia*	LC	

ASTERACEAE	*Lopholaena* sp.	-	
FABACEAE	*Lotononis benthamiana*	LC	
FABACEAE	*Lotononis falcata*	LC	
FABACEAE	*Lotononis leptoloba*	LC	
FABACEAE	*Lotononis parviflora*	LC	
FABACEAE	*Lotononis quinata*	LC	
FABACEAE	*Lotononis rostrata* subsp. *namaquensis*	LC	
FABACEAE	*Lotononis* sp.	-	
SOLANACEAE	*Lycium amoenum*	LC	
SOLANACEAE	*Lycium cinereum*	LC	
SOLANACEAE	*Lycium ferocissimum*	LC	
SOLANACEAE	*Lycium horridum*	LC	
SOLANACEAE	*Lycium oxycarpum*	LC	
SCROPHULARIACEAE	*Lyperia tristis*	LC	
MALVACEAE	*Malva parviflora* var. *parviflora*	-	
CHENOPODIACEAE	*Manochlamys albicans*	LC	
SCROPHULARIACEAE	*Manulea altissima* subsp. *glabricaulis*	LC	P
SCROPHULARIACEAE	*Manulea decipiens*	LC	P
SCROPHULARIACEAE	*Manulea exigua*	**VU**	P
SCROPHULARIACEAE	*Manulea gariepina*	LC	P
SCROPHULARIACEAE	*Manulea nervosa*	LC	P
SCROPHULARIACEAE	*Manulea pusilla*	LC	P
SCROPHULARIACEAE	*Manulea silenoides*	LC	P
SCROPHULARIACEAE	*Manulea* sp.	-	P
APIACEAE	*Marlothiella gummifera*	-	P
HYACINTHACEAE	*Massonia bifolia*	LC	
HYACINTHACEAE	*Massonia depressa*	LC	
HYACINTHACEAE	*Massonia echinata*	LC	
CELASTRACEAE	*Maytenus oleoides*	LC	
MELIANTHACEAE	*Melianthus pectinatus* subsp. *gariepinus*	LC	
MELIANTHACEAE	*Melianthus pectinatus* subsp. *pectinatus*	LC	
FABACEAE	*Melolobium candicans*	LC	
FABACEAE	*Melolobium humile*	LC	
FABACEAE	*Melolobium macrocalyx* var. *macrocalyx*	LC	
OLEACEAE	*Menodora juncea*	LC	
LAMIACEAE	*Mentha longifolia* subsp. *capensis*	LC	
LAMIACEAE	*Mentha longifolia* subsp. *wissii*	LC	
POACEAE	*Merxmuellera stricta*	LC	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Mesembryanthemum articulatum*	-	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Mesembryanthemum baylissii*	-	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Mesembryanthemum brevicarpum*	-	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Mesembryanthemum crystallinum*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Mesembryanthemum guerichianum*	LC	P
AIZOACEAE/	*Mesembryanthemum nodiflorum*	LC	P

MESEMBRYANTHEMACEAE			
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Mesembryanthemum* sp.	-	P
SCROPHULARIACEAE	*Microdon polygaloides*	LC	
APOCYNACEAE	*Microloma armatum* var. *armatum*	LC	P
APOCYNACEAE	*Microloma calycinum*	LC	P
APOCYNACEAE	*Microloma incanum*	LC	P
APOCYNACEAE	*Microloma namaquense*	LC	P
APOCYNACEAE	*Microloma sagittatum*	LC	P
MOLLUGINACEAE	*Mollugo cerviana* var. *cerviana*	LC	
MOLLUGINACEAE	*Mollugo namaquensis*	LC	
ACANTHACEAE	*Monechma divaricatum*	LC	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Monilaria obconica*	**VU**	P
ASTERACEAE	*Monoculus hyoseroides*	LC	
ASTERACEAE	*Monoculus monstrosus*	LC	
LOBELIACEAE	*Monopsis debilis* var. *gracilis*	LC	
MONTINIACEAE	*Montinia caryophyllacea*	LC	
LORANTHACEAE	*Moquiniella rubra*	LC	
IRIDACEAE	*Moraea bolusii*	LC	P
IRIDACEAE	*Moraea brevituba*	LC	P
IRIDACEAE	*Moraea falcifolia*	LC	P
IRIDACEAE	*Moraea fugacissima*	LC	P
IRIDACEAE	*Moraea fugax* subsp. *filicaulis*	LC	P
IRIDACEAE	*Moraea fugax* subsp. *fugax*	LC	P
IRIDACEAE	*Moraea herrei*	LC	P
IRIDACEAE	*Moraea inconspicua*	LC	P
IRIDACEAE	*Moraea indecora*	**VU**	P
IRIDACEAE	*Moraea intermedia*	-	P
IRIDACEAE	*Moraea margaretae*	LC	P
IRIDACEAE	*Moraea miniata*	LC	P
IRIDACEAE	*Moraea nana*	LC	P
IRIDACEAE	*Moraea pallida*	LC	P
IRIDACEAE	*Moraea schlechteri*	LC	P
IRIDACEAE	*Moraea serpentina*	LC	P
IRIDACEAE	*Moraea* sp.	-	P
IRIDACEAE	*Moraea tortilis*	LC	P
POLYGALACEAE	*Muraltia rigida*	LC	
POLYGALACEAE	*Muraltia spinosa*	LC	
SCROPHULARIACEAE	*Nemesia affinis*	LC	P
SCROPHULARIACEAE	*Nemesia anisocarpa*	LC	P
SCROPHULARIACEAE	*Nemesia azurea*	LC	P
SCROPHULARIACEAE	*Nemesia ligulata*	LC	P
SCROPHULARIACEAE	*Nemesia* sp.	-	P
RUBIACEAE	*Nenax cinerea*	LC	
ASTERACEAE	*Norlindhia amplectens*	LC	
POLYGALACEAE	*Nylandtia spinosa*	LC	

AIZOACEAE/ MESEMBRYANTHEMACEAE	*Octopoma connatum*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Octopoma subglobosum*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Odontophorus angustifolius* subsp. *angustifolius*	**RARE**	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Odontophorus nanus*	LC	P
ASTERACEAE	*Oedera sedifolia*	LC	
SCROPHULARIACEAE	*Oftia revoluta*	LC	
ASTERACEAE	*Oncosiphon grandiflorum*	LC	
ASTERACEAE	*Oncosiphon suffruticosum*	LC	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Oophytum nanum*	LC	P
APOCYNACEAE	*Orbea namaquensis*	LC	P
HYACINTHACEAE	*Ornithogalum hispidum* subsp. *hispidum*	LC	P
HYACINTHACEAE	*Ornithogalum multifolium*	LC	P
HYACINTHACEAE	*Ornithogalum nannodes*	LC	P
HYACINTHACEAE	*Ornithogalum pruinosum*	LC	P
HYACINTHACEAE	*Ornithogalum rupestre*	LC	P
HYACINTHACEAE	*Ornithogalum secundum*	LC	P
HYACINTHACEAE	*Ornithogalum* sp.	-	P
HYACINTHACEAE	*Ornithogalum thyrsoides*	LC	P
HYACINTHACEAE	*Ornithogalum xanthochlorum*	LC	P
COLCHICACEAE	*Ornithoglossum parviflorum* var. *parviflorum*	LC	
COLCHICACEAE	*Ornithoglossum viride*	LC	
COLCHICACEAE	*Ornithoglossum vulgare*	LC	
COLCHICACEAE	*Ornithoglossum zeyheri*	LC	
ASTERACEAE	*Osteospermum acanthospermum*	LC	
ASTERACEAE	*Osteospermum grandiflorum*	LC	
ASTERACEAE	*Osteospermum karrooicum*	LC	
ASTERACEAE	*Osteospermum pinnatum* var. *pinnatum*	LC	
ASTERACEAE	*Osteospermum rigidum* var. *elegans*	LC	
ASTERACEAE	*Osteospermum* sp.	-	
ASTERACEAE	*Osteospermum spinescens*	LC	
FABACEAE	*Otholobium arborescens*	LC	
ASTERACEAE	*Othonna abrotanifolia*	LC	
ASTERACEAE	*Othonna amplexifolia*	LC	
ASTERACEAE	*Othonna arbuscula*	LC	
ASTERACEAE	*Othonna auriculifolia*	LC	
ASTERACEAE	*Othonna carnosa* var. *carnosa*	LC	
ASTERACEAE	*Othonna chromochaeta*	LC	
ASTERACEAE	*Othonna coronopifolia*	LC	
ASTERACEAE	*Othonna cylindrica*	LC	
ASTERACEAE	*Othonna diversifolia*	**RARE**	
ASTERACEAE	*Othonna euphorbioides*	?	
ASTERACEAE	*Othonna floribunda*	LC	
ASTERACEAE	*Othonna furcata*	LC	

ASTERACEAE	*Othonna graveolens*	LC		
ASTERACEAE	*Othonna incisa*	LC		
ASTERACEAE	*Othonna lobata*	LC		
ASTERACEAE	*Othonna macrophylla*	LC		
ASTERACEAE	*Othonna obtusiloba*	LC		
ASTERACEAE	*Othonna perfoliata*	LC		
ASTERACEAE	*Othonna ramulosa*	LC		
ASTERACEAE	*Othonna sedifolia*	LC		
ASTERACEAE	*Othonna* sp.	-		
ASTERACEAE	*Othonna sparsiflora*	-		
OXALIDACEAE	*Oxalis ambigua*	LC	P	
OXALIDACEAE	*Oxalis annae*	LC	P	
OXALIDACEAE	*Oxalis beneprotecta*	LC	P	
OXALIDACEAE	*Oxalis campylorrhiza*	LC	P	
OXALIDACEAE	*Oxalis comosa*	LC	P	
OXALIDACEAE	*Oxalis dregei*	LC	P	
OXALIDACEAE	*Oxalis exserta*	**RARE**	P	
OXALIDACEAE	*Oxalis flava*	LC	P	
OXALIDACEAE	*Oxalis flaviuscula*	LC	P	
OXALIDACEAE	*Oxalis furcillata* var. *caulescens*	LC	P	
OXALIDACEAE	*Oxalis furcillata* var. *furcillata*	LC	P	
OXALIDACEAE	*Oxalis grammopetala*	LC	P	
OXALIDACEAE	*Oxalis helicoides* var. *helicoides*	LC	P	
OXALIDACEAE	*Oxalis luteola*	LC	P	
OXALIDACEAE	*Oxalis namaquana*	LC	P	
OXALIDACEAE	*Oxalis obliquifolia*	LC	P	
OXALIDACEAE	*Oxalis obtusa*	LC	P	
OXALIDACEAE	*Oxalis pes-caprae* var. *pes-caprae*	LC	P	
OXALIDACEAE	*Oxalis pulchella* var. *pulchella*	DD	P	
OXALIDACEAE	*Oxalis* sp.	-	P	
ANACARDIACEAE	*Ozoroa concolor*	LC	SP	
ANACARDIACEAE	*Ozoroa dispar*	LC	SP	
APOCYNACEAE	*Pachypodium namaquanum*	LC	SP	II
SAPINDACEAE	*Pappea capensis*	LC		
THYMELAEACEAE	*Passerina galpinii*	LC		
APOCYNACEAE	*Pectinaria articulata* subsp. *articulata*	**RARE**	P	
ASTERACEAE	*Pegolettia retrofracta*	LC		
GERANIACEAE	*Pelargonium acetosum*	LC	SP	
GERANIACEAE	*Pelargonium alternans*	LC	SP	
GERANIACEAE	*Pelargonium aridicola*	LC	SP	
GERANIACEAE	*Pelargonium barklyi*	LC	SP	
GERANIACEAE	*Pelargonium carnosum* subsp. *carnosum*	LC	SP	
GERANIACEAE	*Pelargonium ceratophyllum*	LC	SP	
GERANIACEAE	*Pelargonium crithmifolium*	LC	SP	
GERANIACEAE	*Pelargonium dasyphyllum*	LC	SP	

GERANIACEAE	*Pelargonium echinatum*	LC	SP
GERANIACEAE	*Pelargonium fissifolium*	LC	SP
GERANIACEAE	*Pelargonium fulgidum*	LC	SP
GERANIACEAE	*Pelargonium grandicalcaratum*	LC	SP
GERANIACEAE	*Pelargonium incrassatum*	LC	SP
GERANIACEAE	*Pelargonium klinghardtense*	LC	SP
GERANIACEAE	*Pelargonium longiflorum*	LC	SP
GERANIACEAE	*Pelargonium moniliforme*	LC	SP
GERANIACEAE	*Pelargonium nanum*	LC	SP
GERANIACEAE	*Pelargonium parviflorum*	-	SP
GERANIACEAE	*Pelargonium praemorsum* subsp. *praemorsum*	LC	SP
GERANIACEAE	*Pelargonium pulchellum*	LC	SP
GERANIACEAE	*Pelargonium radicatum*	LC	SP
GERANIACEAE	*Pelargonium radulifolium*	LC	SP
GERANIACEAE	*Pelargonium ramosissimum*	LC	SP
GERANIACEAE	*Pelargonium rapaceum*	LC	SP
GERANIACEAE	*Pelargonium redactum*	LC	SP
GERANIACEAE	*Pelargonium scabrum*	LC	SP
GERANIACEAE	*Pelargonium sericifolium*	LC	SP
GERANIACEAE	*Pelargonium* sp.	-	SP
GERANIACEAE	*Pelargonium spinosum*	LC	SP
GERANIACEAE	*Pelargonium triste*	LC	SP
SCROPHULARIACEAE	*Peliostomum leucorrhizum*	LC	
SCROPHULARIACEAE	*Peliostomum virgatum*	LC	
POACEAE	*Pentaschistis airoides* subsp. *airoides*	LC	
POACEAE	*Pentaschistis capillaris*	LC	
POACEAE	*Pentaschistis patula*	-	
POACEAE	*Pentaschistis* sp.	-	
POACEAE	*Pentaschistis tomentella*	LC	
ASTERACEAE	*Pentzia incana*	LC	
POACEAE	*Phalaris minor*	-	
MOLLUGINACEAE	*Pharnaceum albens*	LC	
MOLLUGINACEAE	*Pharnaceum aurantium*	LC	
MOLLUGINACEAE	*Pharnaceum confertum* var. *confertum*	LC	
MOLLUGINACEAE	*Pharnaceum croceum*	LC	
MOLLUGINACEAE	*Pharnaceum incanum*	LC	
RHAMNACEAE	*Phylica cylindrica*	VU	P
RHAMNACEAE	*Phylica montana*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Phyllobolus decurvatus*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Phyllobolus delus*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Phyllobolus oculatus*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Phyllobolus roseus*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Phyllobolus sinuosus*	LC	P

AIZOACEAE/ MESEMBRYANTHEMACEAE	*Phyllobolus sinuosus*	LC	P
SCROPHULARIACEAE	*Phyllopodium anomalum*	LC	P
SCROPHULARIACEAE	*Phyllopodium collinum*	LC	P
SCROPHULARIACEAE	*Phyllopodium maxii*	DD	P
SCROPHULARIACEAE	*Phyllopodium* sp.	-	P
APOCYNACEAE	*Piaranthus geminatus* subsp. *decorus*	LC	P
AYTONIACEAE	*Plagiochasma rupestre* var. *rupestre*	-	
PLANTAGINACEAE	*Plantago cafra*	LC	
DITRICHACEAE	*Pleuridium nervosum*	-	
SCROPHULARIACEAE	*Polycarena capensis*	NT	
SCROPHULARIACEAE	*Polycarena pubescens*	LC	
SCROPHULARIACEAE	*Polycarena tenella*	LC	
POLYGALACEAE	*Polygala ephedroides*	LC	
POLYGALACEAE	*Polygala scabra*	LC	
POLYGALACEAE	*Polygala virgata* var. *decora*	LC	
POLYGALACEAE	*Polygala virgata* var. *virgata*	LC	
POLYGONACEAE	*Polygonum aviculare*	-	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Polymita albiflora*	LC	P
POACEAE	*Polypogon monspeliensis*	-	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Prenia pallens* subsp. *lancea*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Prenia pallens* subsp. *lutea*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Prenia pallens* subsp. *namaquensis*	LC	P
POTTIACEAE	*Pseudocrossidium crinitum*	-	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Psilocaulon coriarium*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Psilocaulon dinteri*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Psilocaulon junceum*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Psilocaulon* sp.	-	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Psilocaulon subnodosum*	LC	P
ASTERACEAE	*Pteronia ciliata*	LC	
ASTERACEAE	*Pteronia cinerea*	LC	
ASTERACEAE	*Pteronia divaricata*	LC	
ASTERACEAE	*Pteronia glabrata*	LC	
ASTERACEAE	*Pteronia glauca*	LC	
ASTERACEAE	*Pteronia incana*	LC	
ASTERACEAE	*Pteronia leptospermoides*	LC	
ASTERACEAE	*Pteronia ovalifolia*	LC	
ASTERACEAE	*Pteronia scariosa*	LC	
ASTERACEAE	*Pteronia* sp.	-	
ASTERACEAE	*Pteronia undulata*	LC	
APOCYNACEAE	*Quaqua cincta*	RARE	P
APOCYNACEAE	*Quaqua multiflora*	LC	P
MALVACEAE	*Radyera urens*	LC	

ASTERACEAE	*Rhynchopsidium pumilum*	LC	
RICCIACEAE	*Riccia albomarginata*	-	
RICCIACEAE	*Riccia cavernosa*	-	
RICCIACEAE	*Riccia concava*	-	
RICCIACEAE	*Riccia cupulifera*	-	
RICCIACEAE	*Riccia furfuracea*	-	
RICCIACEAE	*Riccia namaquensis*	-	
RICCIACEAE	*Riccia nigrella*	-	
RICCIACEAE	*Riccia schelpei*	-	
RICCIACEAE	*Riccia* sp.	-	
RICCIACEAE	*Riccia tomentosa*	-	
RICCIACEAE	*Riccia villosa*	-	
RICCIACEAE	*Riccia vitrea*	-	
IRIDACEAE	*Romulea citrina*	LC	P
IRIDACEAE	*Romulea namaquensis*	**NT**	P
POLYGONACEAE	*Rumex cordatus*	LC	
POLYGONACEAE	*Rumex lanceolatus*	LC	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Ruschia aggregata*	DD	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Ruschia aspera*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Ruschia brakdamensis*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Ruschia breekpoortensis*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Ruschia brevibracteata*	DD	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Ruschia brevifolia*	DD	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Ruschia caroli*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Ruschia cradockensis* subsp. *cradockensis*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Ruschia elineata*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Ruschia erecta*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Ruschia extensa*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Ruschia goodiae*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Ruschia laxiflora*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Ruschia lerouxiae*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Ruschia muelleri*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Ruschia robusta*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Ruschia senaria*	?	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Ruschia* sp.	-	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Ruschia stricta*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Ruschia viridifolia*	LC	P
SALICACEAE	*Salix mucronata* subsp. *mucronata*	LC	

CHENOPODIACEAE	*Salsola aphylla*	LC		
CHENOPODIACEAE	*Salsola kali*	-		
CHENOPODIACEAE	*Salsola namibica*	-		
LAMIACEAE	*Salvia dentata*	LC		
LAMIACEAE	*Salvia disermas*	LC		
LAMIACEAE	*Salvia lanceolata*	LC		
GERANIACEAE	*Sarcocaulon herrei*	LC		
GERANIACEAE	*Sarcocaulon l'heritieri*	LC		
GERANIACEAE	*Sarcocaulon patersonii*	LC		
ORCHIDACEAE	*Satyrium erectum*	LC	P	II
DIPSACACEAE	*Scabiosa columbaria*	LC		
POACEAE	*Schismus barbatus*	LC		
POACEAE	*Schismus inermis*	LC		
POACEAE	*Schismus scaberrimus*	LC		
POACEAE	*Schmidtia kalahariensis*	LC		
CYPERACEAE	*Schoenoplectus senegalensis*	LC		
CYPERACEAE	*Scirpoides dioecus*	LC		
ANACARDIACEAE	*Searsia burchellii*	LC		
ANACARDIACEAE	*Searsia horrida*	LC		
ANACARDIACEAE	*Searsia incisa* var. *incisa*	LC		
ANACARDIACEAE	*Searsia lancea*	LC		
ANACARDIACEAE	*Searsia pendulina*	LC		
ANACARDIACEAE	*Searsia populifolia*	LC		
ANACARDIACEAE	*Searsia undulata*	LC		
SCROPHULARIACEAE	*Selago albida*	LC		
SCROPHULARIACEAE	*Selago divaricata*	LC		
SCROPHULARIACEAE	*Selago glabrata*	LC		
SCROPHULARIACEAE	*Selago glutinosa* subsp. *glutinosa*	LC		
SCROPHULARIACEAE	*Selago morrisii*	LC		
SCROPHULARIACEAE	*Selago namaquensis*	LC		
SCROPHULARIACEAE	*Selago pinguicula*	LC		
SCROPHULARIACEAE	*Selago* sp.	-		
SCROPHULARIACEAE	*Selago speciosa*	LC		
SCROPHULARIACEAE	*Selago verna*	LC		
ASTERACEAE	*Senecio abruptus*	LC		
ASTERACEAE	*Senecio arenarius*	LC		
ASTERACEAE	*Senecio cardaminifolius*	LC		
ASTERACEAE	*Senecio cinerascens*	LC		
ASTERACEAE	*Senecio cotyledonis*	LC		
ASTERACEAE	*Senecio glaberrimus*	LC		
ASTERACEAE	*Senecio glabrifolius*	LC		
ASTERACEAE	*Senecio glutinarius*	DD		
ASTERACEAE	*Senecio laxus*	LC		
ASTERACEAE	*Senecio maydae*	LC		
ASTERACEAE	*Senecio niveus*	LC		

ASTERACEAE	*Senecio parvifolius*	LC	
ASTERACEAE	*Senecio piptocoma*	LC	
ASTERACEAE	*Senecio repandus*	LC	
ASTERACEAE	*Senecio sisymbriifolius*	LC	
ASTERACEAE	*Senecio* sp.	-	
ASTERACEAE	*Senecio speciosus*	LC	
POACEAE	*Setaria pumila*	LC	
CARYOPHYLLACEAE	*Silene bellidioides*	LC	
CARYOPHYLLACEAE	*Silene burchellii* var. *angustifolia*	-	
CARYOPHYLLACEAE	*Silene clandestina*	-	
CARYOPHYLLACEAE	*Silene undulata*	LC	
ZYGOPHYLLACEAE	*Sisyndite spartea*	LC	
SOLANACEAE	*Solanum burchellii*	LC	
SOLANACEAE	*Solanum capense*	LC	
SOLANACEAE	*Solanum giftbergense*	LC	
SOLANACEAE	*Solanum guineense*	LC	
SOLANACEAE	*Solanum nigrum*	-	
SOLANACEAE	*Solanum rigescens*	LC	
SOLANACEAE	*Solanum tomentosum* var. *coccineum*	LC	
CARYOPHYLLACEAE	*Spergularia media*	-	
CARYOPHYLLACEAE	*Spergularia* sp.	-	
POACEAE	*Sphenopus divaricatus*	-	
HYPOXIDACEAE	*Spiloxene scullyi*	LC	
LAMIACEAE	*Stachys flavescens*	LC	
LAMIACEAE	*Stachys rugosa*	LC	
ASTERACEAE	*Stilpnogyne bellidioides*	LC	
POACEAE	*Stipagrostis brevifolia*	LC	
POACEAE	*Stipagrostis namaquensis*	LC	
POACEAE	*Stipagrostis obtusa*	LC	
POACEAE	*Stipagrostis zeyheri* subsp. *macropus*	LC	
POACEAE	*Stipagrostis zeyheri* subsp. *zeyheri*	LC	
AMARYLLIDACEAE	*Strumaria merxmuelleriana*	RARE	P
AMARYLLIDACEAE	*Strumaria truncata*	LC	P
THYMELAEACEAE	*Struthiola leptantha*	LC	
CHENOPODIACEAE	*Suaeda fruticosa*	LC	
FABACEAE	*Sutherlandia frutescens*	LC	SP
FABACEAE	*Sutherlandia microphylla*	LC	SP
POTTIACEAE	*Syntrichia chisosa*	-	
POTTIACEAE	*Syntrichia fragilis*	-	
POTTIACEAE	*Syntrichia leucostega* var. *leucostega*	-	
POTTIACEAE	*Syntrichia ruralis*	-	
IRIDACEAE	*Syringodea longituba* var. *longituba*	-	P
TAMARICACEAE	*Tamarix usneoides*	LC	
LORANTHACEAE	*Tapinanthus oleifolius*	LC	
SCROPHULARIACEAE	*Teedia lucida*	LC	

FABACEAE	*Tephrosia dregeana* var. *dregeana*	LC	
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Tetragonia arbuscula*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Tetragonia calycina*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Tetragonia decumbens*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Tetragonia fruticosa*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Tetragonia glauca*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Tetragonia microptera*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Tetragonia namaquensis*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Tetragonia reduplicata*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Tetragonia robusta*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Tetragonia sarcophylla*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Tetragonia schenckii*	-	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Tetragonia* sp.	-	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Tetragonia spicata*	LC	P
SANTALACEAE	*Thesium lineatum*	LC	
SANTALACEAE	*Thesium polycephalum*	LC	
SANTALACEAE	*Thesium spinosum*	LC	
POTTIACEAE	*Tortula splachnoides*	-	
ASPHODELACEAE	*Trachyandra bulbinifolia*	LC	P
ASPHODELACEAE	*Trachyandra falcata*	LC	P
ASPHODELACEAE	*Trachyandra flexifolia*	LC	P
ASPHODELACEAE	*Trachyandra jacquiniana*	LC	P
ASPHODELACEAE	*Trachyandra laxa* var. *laxa*	LC	P
ASPHODELACEAE	*Trachyandra patens*	LC	P
ASPHODELACEAE	*Trachyandra revoluta*	LC	P
ASPHODELACEAE	*Trachyandra tortilis*	LC	P
AIZOACEAE/ MESEMBRYANTHEMACEAE	*Trianthema parvifolia* var. *parvifolia*	LC	P
POACEAE	*Tribolium echinatum*	LC	
POACEAE	*Tribolium utriculosum*	LC	
ZYGOPHYLLACEAE	*Tribulus terrestris*	LC	
ZYGOPHYLLACEAE	*Tribulus zeyheri* subsp. *zeyheri*	LC	
BORAGINACEAE	*Trichodesma africanum*	LC	
ASTERACEAE	*Trichogyne paronychioides*	LC	
ASTERACEAE	*Trichogyne polycnemoides*	LC	
JUNCAGINACEAE	*Triglochin bulbosa*	LC	
ASTERACEAE	*Tripteris microcarpa* subsp. *microcarpa*	LC	
ASTERACEAE	*Tripteris oppositifolia*	LC	
ASTERACEAE	*Tripteris pinnatilobata*	LC	P
ASTERACEAE	*Tripteris sinuata* var. *linearis*	LC	
ASTERACEAE	*Tripteris sinuata* var. *sinuata*	LC	

ASTERACEAE	*Tripteris spathulata*	?	
POACEAE	*Triraphis ramosissima*	LC	
IRIDACEAE	*Tritonia karooica*	LC	P
ASTERACEAE	*Troglophyton capillaceum* subsp. *capillaceum*	LC	
ASTERACEAE	*Troglophyton leptomerum*	LC	
CRASSULACEAE	*Tylecodon paniculatus*	LC	P
CRASSULACEAE	*Tylecodon ventricosus*	LC	P
CRASSULACEAE	*Tylecodon wallichii* subsp. *ecklonianus*	LC	P
CRASSULACEAE	*Tylecodon wallichii* subsp. *wallichii*	LC	P
ASTERACEAE	*Ursinia anthemoides* subsp. *anthemoides*	LC	
ASTERACEAE	*Ursinia anthemoides* subsp. *versicolor*	LC	
ASTERACEAE	*Ursinia anthemoides* subsp. *versicolor*	LC	
ASTERACEAE	*Ursinia cakilefolia*	LC	
ASTERACEAE	*Ursinia calenduliflora*	LC	
ASTERACEAE	*Ursinia chrysanthemoides*	LC	
ASTERACEAE	*Ursinia discolor*	LC	
ASTERACEAE	*Ursinia nana* subsp. *nana*	LC	
CARYOPHYLLACEAE	*Vaccaria hispanica* var. *hispanica*	-	
VISCACEAE	*Viscum capense*	LC	
VISCACEAE	*Viscum capense* subsp. *hoolei*	LC	
VISCACEAE	*Viscum continuum*	LC	
VISCACEAE	*Viscum pauciflorum*	LC	
POTTIACEAE	*Vrolijkheidia peraristata*	-	
POACEAE	*Vulpia bromoides*	-	
CAMPANULACEAE	*Wahlenbergia acaulis*	LC	
CAMPANULACEAE	*Wahlenbergia annularis*	LC	
CAMPANULACEAE	*Wahlenbergia asparagoides*	VU	
CAMPANULACEAE	*Wahlenbergia cernua*	LC	
CAMPANULACEAE	*Wahlenbergia divergens*	DD	
CAMPANULACEAE	*Wahlenbergia ecklonii*	LC	
CAMPANULACEAE	*Wahlenbergia lasiocarpa*	LC	
CAMPANULACEAE	*Wahlenbergia oligotricha*	DD	
CAMPANULACEAE	*Wahlenbergia oxyphylla*	LC	
CAMPANULACEAE	*Wahlenbergia paniculata*	LC	
CAMPANULACEAE	*Wahlenbergia prostrata*	LC	
CAMPANULACEAE	*Wahlenbergia roelliflora*	DD	
CAMPANULACEAE	*Wahlenbergia* sp.	-	
CAMPANULACEAE	*Wahlenbergia thunbergiana*	LC	
FABACEAE	*Wiborgia fusca* subsp. *fusca*	LC	
FABACEAE	*Wiborgia incurvata*	LC	
FABACEAE	*Wiborgia monoptera*	LC	
FABACEAE	*Wiborgia mucronata*	LC	
FABACEAE	*Wiborgia sericea*	LC	
PARMELIACEAE	*Xanthomaculina hottentotta*	-	
PARMELIACEAE	*Xanthoparmelia chalybaeizans*	-	

IRIDACEAE	*Xenoscapa fistulosa*	LC	P
SCROPHULARIACEAE	*Zaluzianskya benthamiana*	LC	
SCROPHULARIACEAE	*Zaluzianskya peduncularis*	LC	
SCROPHULARIACEAE	*Zaluzianskya pusilla*	LC	
ZYGOPHYLLACEAE	*Zygophyllum divaricatum*	**EN**	
ZYGOPHYLLACEAE	*Zygophyllum flexuosum*	LC	
ZYGOPHYLLACEAE	*Zygophyllum foetidum*	LC	
ZYGOPHYLLACEAE	*Zygophyllum fulvum*	LC	
ZYGOPHYLLACEAE	*Zygophyllum leptopetalum*	LC	
ZYGOPHYLLACEAE	*Zygophyllum lichtensteinianum*	LC	
ZYGOPHYLLACEAE	*Zygophyllum morgsana*	LC	
ZYGOPHYLLACEAE	*Zygophyllum pubescens*	LC	
ZYGOPHYLLACEAE	*Zygophyllum retrofractum*	LC	
ZYGOPHYLLACEAE	*Zygophyllum simplex*	LC	
ZYGOPHYLLACEAE	*Zygophyllum spinosum*	LC	

Clarification of symbols:

Red data list (RDL) categories are as follows: Least Concern (LC), Near Threatened (NT), Vulnerable (VU), Rare (RARE), Data deficient (DD), Endangered (EN), Critically Endangered (CR), Extinct in the Wild (EW) and Extinct (EX). Species Not Evaluated are left blank. These categories indicate the conservation importance of a species based on an expert evaluation of the species.

Northern Cape Nature Conservation Act (NCNCA) lists some of the plant species as Specially Protected (SP) and Protected (P). An Invasive (I) species is also indicated.

Convention on International Trade in Endangered Species (CITES) Appendix I includes species threatened with extinction. Trade in specimens of these species is permitted only under exceptional circumstances. Appendix II includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilisation incompatible with their survival. Appendix III contains species that are protected in at least one country, which has asked other CITES Parties for assistance in controlling the trade.

Appendix B: GPS readings

Brunsvigia bosmaniae

Point	GPS Reading			
1	2°93'94.8"	S	17°53'48.5"	E
2	29°39'47.7"	S	17°53'47."	E
3	29°39'47.1"	S	17°53'46.9"	E
4	29°39'44.4"	S	17°53'47.2"	E
5	29°39'46.3"	S	17°53'47.4"	E
6	29°39'45.6"	S	17°53'46.1"	E
7	29°39'45.9"	S	17°53'45.6"	E
8	29°39'46.2"	S	17°53'45.9"	E
9	29°39'46.1"	S	17°53'44.9"	E
10	29°39'45.8"	S	17°53'44.8"	E
11	29°39'45."	S	17°53'43.3"	E
12	29°39'45.1"	S	17°53'43.1"	E
13	29°39'45.40"	S	17°53'48.7"	E
14	29°39'45.20"	S	17°53'49.3"	E
15	29°39'46.5"	S	17°53'50.7"	E
16	29°39'51.0"	S	17°53'46.6"	E
17	29°39'50.5"	S	17°53'45.3"	E
18	29°39'51.3"	S	17°53'45.10"	E
19	29°39'50.7"	S	17°53'44.4"	E
20	29°39'51.5"	S	17°53'43.9"	E
21	29°39'51.5"	S	17°53'43.6"	E
22	29°39'51.8"	S	17°53'43.4"	E
23	29°39'51.3"	S	17°53'43.6"	E

Haemanthus crispus

Point	GPS Reading			
1	29°39'47.4"	S	17°53'46.7"	E
2	29°39'45."	S	17°53'43.8"	E
3	29°39'48.30"	S	17°53'50.8"	E
4		S		E

Prosopis glandulosa

Point	GPS Reading			
1	29°39'45.7"	S	29°39'42.7"	E
2	29°39'45.7"	S	17°53'42.5"	E
3	29°39'45.50"	S	17°53'42.1"	E
4	29°39'45.5"	S	17°53'42.8"	E
5	29°39'42.9"	S	17°53'50.7"	E

Appendix C: *Curriculum vitae* and summary of expertise, Dr Helga van der Merwe

PERSONAL INFORMATION

Surname	Van der Merwe
First names	Helga
Maiden name	Rösch
Identity Number	7303020177086
Date of Birth	2 March 1973
Sex	Female
Marital Status	Married
Nationality	South African
Home Language	English
Other Language(s)	Afrikaans
Fully Bilingual	Yes
Criminal Offences	None
Health	Good
Driver's Licence	Code 08 or EB
Church	NG Church
Home Address	Soekop Calvinia, 8190
Telephone Numbers	027 3412578
Postal Address	P.O. Box 1 Calvinia 8190

EDUCATIONAL QUALIFICATIONS

Last School Attended	Pretoria High School for Girls, Pretoria
Highest Standard Passed	Matric
Subjects Passed on	English (C), Afrikaans (B),
Higher grade	Science (C), Biology (B), Mathematics (C), Geography (C).
Extramural Activities	Tennis, Ecology club, First aid club, Photography club

HIGHER EDUCATION

University Attended	University of Pretoria
Degrees Obtained	BSc – Botany and Genetics BSc(Hons) - Botany (Ecology) (cum laude) MSc - Botany (Ecology) (cum laude) PhD – Plant Science
Other Subjects Passed	Chemistry 1 Physics and Mathematics 1 (first Semester) Zoology 2
Awards/Certificates	Margaretha Mes-commemorative award for Botany South African National Parks – Contribution made to conservation and the establishment of National Parks in Namaqualand

Bursaries	1991 - 1994 City Council of Pretoria
	Suid Afrikaanse Munisipale Vereniging
	1994 - FRD Hons degree bursary
	1995 - FRD MSc degree bursary
	1996 - FRD MSc degree bursary
	2008 – NRF PhD degree bursary
	2009 – NRF PhD degree bursary

TITLE BSc (HONS) PROJECT

Predicting competitive ability of Namaqualand species by using plant traits.

TITLE OF MSc THESIS

Life history strategies of Namaqualand pioneer plant species.

TITLE OF PhD THESIS

Patterns of plant diversity in the Hantam-Tanqua-Roggveld subregion of the Succulent Karoo, South Africa.

EMPLOYMENT HISTORY

- Student (1991 - 1996) – University of Pretoria
- Temporary Part-time Research Assistant (1990-1993) – University of Pretoria
- Tutor for Biology (First Semester 1995) – University of Pretoria
- Tutor for Botany (Second Semester 1995) – University of Pretoria
- Tutor for Biology (First Semester 1996) – University of Pretoria
- Preparation of Biology and Botany practicals (when technical assistants were on excursion or on leave) – University of Pretoria
- Senior Nature Conservation Scientist – Northern Cape Nature Conservation (April 1997 – June 2004)
- Temporary Full-time Research Officer - University of Pretoria (July 2004 – June 2008). I secured funding for a project in the Hantam-Tanqua-Roggeveld. These external funds received from the Critical Ecosystem Partnership Fund through the SKEP initiative were used to fund this position.
- Part-time PhD student at the Department of Plant Science, University of Pretoria (2006 – 2009)
- Student assistantship – University of Pretoria (August 2009 – December 2009)
- Botanical surveys, specialist reporting and compilation of a field guide (May 2008 – until present)

MEMBERSHIPS

Golden Key International Honour Society – Membership upon invitation, granted to the 15% of academic achievers in their field of study. Membership number – 6790927.

South African Council for Natural Scientific Professions – Registered in the field of Botanical Science. Membership number 400193/10.

South African Association of Botanists

Botanical Society of South Africa

CHARACTER REFERENCES

Prof. M.W. van Rooyen (Gretel)

Department of Botany

University of Pretoria

Tel: (012) 4202009
(Thesis Supervisor - University of Pretoria)

Mrs. H. Theron (Huibrey)
Tel: (027) 3412571
(Friend)

PUBLICATIONS

RÖSCH, H., VAN ROOYEN, M.W. & THERON G.K. 1997. Predicting competitive interactions between pioneer plant species by using plant traits (*Journal of Vegetation Science* (8):489-494).

RÖSCH, H., VAN ROOYEN, M.W. & THERON G.K. 1997. Community level competition between five Namaqualand pioneer plant species (*South African Journal of Botany* 63(1): 1-3).

RÖSCH, H., VAN ROOYEN, M.W. & THERON G.K. 1997. Competitive effect and response of ten Namaqualand ephemeral plant species at two nutrient levels (*South African Journal of Botany* 63(4): 210-215).

RÖSCH, H. 1999. Exploring Namaqualand (*Veld & Flora* 85(3): 114-116).

RÖSCH, H. 2001. The identification and description of the management units of the Goegap Nature Reserve (*Koedoe* 44(1): 17 – 30).

CILLIERS, C., THERON, H., RÖSCH, H. & LE ROUX, A. 2002. *Succulent Karoo Ecosystem Plan, Sub-regional report, Hantam/Tanqua/Roggeveld*. Succulent Karoo Ecosystem Plan report, Critical Ecosystem Partnership Fund.

VAN DER MERWE, H. 2007. Floral spectacle in the Succulent Karoo (*Veld & Flora* 93(2): 78-81.

VAN DER MERWE, H., VAN ROOYEN, M.W. & VAN ROOYEN, N. 2008. Vegetation map of the Hantam-Tanqua-Roggeveld (*Veld & Flora* 94 (3): 132-133).

VAN DER MERWE, H., VAN ROOYEN, M.W. & VAN ROOYEN, N. 2008. Vegetation of the Hantam-Tanqua-Roggeveld subregion, South Africa. Part 1. Fynbos Biome-related vegetation (*Koedoe* 50(1): 61-71).

VAN DER MERWE, H., VAN ROOYEN, M.W. & VAN ROOYEN, N. 2008. Vegetation of the Hantam-Tanqua-Roggeveld subregion, South Africa Part 2. Succulent Karoo Biome-related vegetation (*Koedoe* 50(1): 160-183).

VAN DER MERWE, H. & VAN ROOYEN, M.W. 2011. Vegetation trends following fire in the Roggeveld, Mountain Renosterveld, South Africa (*South African Journal of Botany* 77: 127-136).

VAN ROOYEN, M.W., HENSTOCK, R., VAN ROOYEN, N. & VAN DER MERWE, H. 2010. Diversity and flowering displays on old fields in the Namaqua National Park, South Africa (*Koedoe* 52(1), Art. # 1004, 7

pages. DOI: 10.4102/Koedoe.v52i1.1004).

VAN DER MERWE, H. & VAN ROOYEN, M.W. 2011. Life form spectra in the Hantam-Tanqua-Roggeveld, Succulent Karoo, South Africa (*South African Journal of Botany* 77: 371-380).

VAN DER MERWE, H. & VAN ROOYEN, M.W. 2011. Species-area relationships in the Hantam-Tanqua-Roggeveld, Succulent Karoo, South Africa (*Biodiversity and conservation* 20:1183-1201).

VAN DER MERWE, H. & VAN ROOYEN, M.W. Guiding conservation efforts in the Hantam-Tanqua-Roggeveld (South Africa) using diversity parameters (*Koedoe* 53(1), Art. #1018, 9 pages. Doi: 10.4102/Koedoe.v53i1.1018.

VAN DER MERWE, H. & VAN ROOYEN, M.W. Life form and species diversity on abandoned croplands, Roggeveld, South Africa African. (*Journal of Range and Forage Science* 28: 99-110).

CONTRIBUTIONS TO CHAPTERS IN BOOKS

HOFFMAN, M. T., SCHMIEDEL, U., JÜRGENS, N. (2010) [Eds.]: Biodiversity in southern Africa. Volume 3: Implications for landuse and management. – XII + 226 pp. + CD-ROM, Klaus Hess Publishers, Göttingen & Windhoek.

FIELD GUIDE PUBLISHED

Wild flowers of the Roggeveld and Tanqua. 2010. Helga van der Merwe in collaboration with Gretel van Rooyen.

CONGRESS PAPERS AND POSTERS

RÖSCH, H., VAN ROOYEN, M.W. & THERON G.K. 1995. Predicting competitive ability of Namaqualand species by using plant traits. (Poster - SAAB)

RÖSCH, H., VAN ROOYEN, M.W. & THERON G.K. 1995. Predicting competitive ability of Namaqualand species by using plant traits. (Poster and Presentation - Arid Zone Ecology Forum)

RÖSCH, H., VAN ROOYEN, M.W. & THERON G.K. 1996. Multivariate analysis of thirty Namaqualand pioneer plant species. (Poster - SAAB)

RÖSCH, H. 1997. Multivariate analysis of thirty Namaqualand pioneer plant species using plant traits. (Paper presented -Namaqualand workshop)

RÖSCH, H. 2000. Management units identified on Goegap Nature Reserve. (Poster – AZEF)

CONSERVATION INTERNATIONAL, 2002. SKEP (Succulent Karoo Ecosystem Plan). (Poster – AZEF)

BROODRYK, N.L., VAN ROOYEN, M.W., VAN DER MERWE, H. & LE ROUX, A. 2006. Long-term monitoring of the vegetation in the Goegap Nature Reserve in Namaqualand, South Africa. (Poster – South African Environmental Observation Network – SAEON – Summit & workshop)

VAN DER MERWE, H., VAN ROOYEN, M.W. & VAN ROOYEN, N. 2006. Vegetation of the Hantam-Tanqua-Roggeveld. (Poster presentation – AZEF)

BROODRYK, N.L., VAN ROOYEN, M.W., VAN DER MERWE, H. & LE ROUX, A. 2006. Long-term monitoring of the vegetation in the Goegap Nature Reserve in Namaqualand, South Africa. (Poster presentation – AZEF)

VAN DER MERWE, H. & VAN ROOYEN, M.W. 2007. Patterns of plant diversity in the Hantam-Tanqua-Roggeveld. (Poster presentation– AZEF)

VAN DER MERWE, H. & VAN ROOYEN, M.W. 2009. Plant diversity parameters in the Hantam-Tanqua Roggeveld. (Poster presentation – SAAB)

CONGRESSES ATTENDED

1995 – South African Association of Botanists, Bloemfontein.
1995 - Arid Zone Ecology Forum, Kimberley.
1996 - SAAB South African Association of Botanists, Stellenbosch.
1997 – Arid Zone Ecology Forum, Prince Albert
1997 – Namaqualand workshop
1999 – Arid Zone Ecology Forum, Van Rhynsdorp
2000 – Arid Zone Ecology Forum, Kakamas
2001 – Arid Zone Ecology Forum, Calitzdorp
2001 – Indigenous Plant Use Forum, Kimberley
2002 – Indigenous Plant Use Forum, George
2002 – Arid Zone Ecology Forum, Middelburg Eastern Cape (Vice-chairperson)
2003 – Arid Zone Ecology Forum, Kathu (Vice-chairperson)
2004 – Royal Society / BIOTA Colloquium, Victoria West
2006 – Arid Zone Ecology Forum, Kamieskroon
2007 – Arid Zone Ecology Forum, Sutherland
2009 – SAAB South African Association of Botanists, Stellenbosch
2011 – Arid Zone Ecology Forum, Nieuwoudtville

PRESS RELEASES

Boere wees op die uitkyk vir skelms – May 2000

Landowners beware – May 2000

Navorsingsprojek in die Hantam, Tankwa en Roggeveld area – July 2004

Die Universiteit van Pretoria loods 'n navorsingsprojek in die Hantam, Tankwa en Roggeveld area – July 2004

DEPARTMENTAL REPORTS PRODUCED AT NORTHERN CAPE NATURE CONSERVATION

Revision of floral monitoring techniques on Goegap Nature Reserve – 1998.

Project operational plan: Quantification of the herbaceous component on Goegap Nature Reserve – 1998.

Project operational plan: The use of large herbivore exclosures to determine grazing capacity on Goegap Nature Reserve – 1998.

The use of mammal exclosures to determine grazing pressure on Goegap Nature Reserve – 1998 report – 1999.

Goegap Nature Reserve management units – 2000.

Quantification of the herbaceous component on Goegap Nature Reserve – Year 2000 (Internal report series no. 2).

Veld Condition Assessment on Goegap Nature Reserve – Year 2002 (Internal report series no. 3.).

Description of the vegetation on Oorlogskloof Nature Reserve. (Internal report series no. 7).

NUMEROUS BOTANICAL/ECOLOGICAL SPECIALIST REPORTS HAVE BEEN COMPILED AS PART OF ENVIRONMENTAL IMPACT ASSESSMENTS AND VEGETATION SURVEYS IN THE ARID AREAS OF SOUTH AFRICA.

Appendix D: Declaration of independence

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/
NEAS Reference Number:	DEAT/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010

PROJECT TITLE

BOTANICAL INPUT INTO A BASIC ASSESSMENT REPORT FOR THE PROPOSED SPRINGBOK MALL: FINAL REPORT

Specialist:	Dr Helga van der Merwe		
Contact person:	Dr Helga van der Merwe		
Postal address:	P.O. Box 1, Calvinia		
Postal code:	8190	Cell:	No reception
Telephone:	027 3412578	Fax:	027 3412578
E-mail:	soekop@hantam.co.za		
Professional affiliation(s) (if any)	South African Association of Botanists South African Council for Natural Scientific Professions (registration no.400193/10) Botanical Society of Southern Africa Golden Key International Honour Society (membership no. 6790927)		

Project Consultant:	Pieter Badenhorst Professional Services		
Contact person:	Pieter Badenhorst		
Postal address:	P.O. Box 1058, Wellington		
Postal code:	7654	Cell:	0827763422
Telephone:	0827769722	Fax:	0866721916
E-mail:	pbps@iafrica.com		

4.2 The specialist appointed in terms of the Regulations

I, **Helga van der Merwe** , declare that –

General declaration:

- I act as the independent specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.

H van der Merwe

Signature of the specialist:

Name of company (if applicable):

29 August 2013

Date:

Appendix D2: Services Report

africa

head office
PO Box 13273, Mowbray, 7705
South Africa
The Old Biscuit Mill Unit A201(B)
373-375 Albert Road Woodstock
T +27 (0)21 447 0575
F +27 (0)86 639 6771
info@udsafrica.co.za

enquiries
Cobus Louw 082 493 3242
members:
A Khan PrEng
JW Wessels PrEng
D Coetzee PrLArch
R Khan
JN Louw PrCPM
offices:
Clanwilliam, Strand, Stellenbosch,
Vredendal, Bonnievale, Durbanville,
Woodstock, Moorreesburg, Paarl

Reg no. 2003/043709/23
urban development solutions

Date: 25 February 2013

ATTENTION: Mr M dos Reis (mario@hvprop.co.za)

Harry Viljoen Properties
4th Floor
The Cliffs
Tyger Falls
Bellville

Dear Sir,

RE: NAMAKWA MALL, ERVEN 2883 & 3437, SPRINGBOK: CIVIL ENGINEERING SERVICES REPORT

The proposed development will entail the construction of a shopping centre with a gross letable area of 23 369m² on erven 2883 and 3437 in Springbok.

The site is located to the south-eastern side of Springbok and is bordered by the N7 national road on the western side, Kokerboom Road to the south, the R355 to the east and Voortrekker Street to the north. The site has an average slope of 1:20 from east to west towards the N7 national road.
This report summarizes the current situation with regards to the provision of basic civil engineering services to the development.

Design Standards of New Services
Design of services will be in accordance with the "Guidelines for the provision of engineering services and amenities in residential townships", the UTG7 publication "Geometric Design of Urban Local Residential Streets", and is also to satisfy the standards and requirements of the local authority.

Construction of the services will be specified to be in accordance with SABS 1200.

Civil Engineering Services Required
The various internal services and their connections to the existing services are described in the subsections that follow.

Water
The demand for portable water for the proposed development is estimated at 93.5 kl/day with a peak demand of 4.37 l/s.

Water to the development can be supplied from the existing 160mm dia. water mains in Voortrekker Street. A 110mm dia. connection will be adequate to provide for the domestic needs.

The existing reservoir storage capacity is inadequate to accommodate the new shopping centre development and a 187kl on-site storage facility will have to be provided by the developer to provide 48 hour storage capacity.

Sewer
The average daily sewer run-off from the proposed development is estimated at 74.8 kl/day, with a peak flow of 3.5 l/s.

The internal sewer network will connect to the existing sewer running along Voortrekker Street to the north of the site.

Stormwater:
The site drains towards the existing culverts underneath the N7 National Road in the north-western corner of the Erf. Due to the topography of the terrain, the site is receiving stormwater from higher laying properties adjacent to the eastern boundary of the site.

This stormwater running through the northern part of the site will be formalised and diverted along the northern boundary of the site into the existing culvert underneath the N7 National Road.

Roads:
The shopping centre will be serviced by two entrances for the existing roads adjacent to the site. Access will be from Voortrekker Street to the north and from the R355 to the east,

Bulk Earthworks
The site has a sufficient gradient to ensure proper drainage in terms of stormwater and sewer. However, bulk earthworks will be required to provide platforms for the building structure and parking areas.

Conclusion
From the above it is evident that it will be possible to provide the required civil engineering services for the proposed shopping centre development on Erven 2883 & 3437 in Springbok.

Yours faithfully

John Wessels Pr. Eng

Appendix D3: Traffic Report

Transport Impact Assessment

Namaqua Mall, Springbok

Northern Cape

March 2013

5th Floor, Imperial
Bank Terraces
Carl Cronje Drive
Tyger Waterfront
Bellville, 7550
(021) 914 6211 (T)
(021) 914 7403 (F)
e-mail: mail@itse.co.za

Summary Sheet

Report Type	Transport Impact Assessment
Title	Namaqua Mall, Springbok
Location	Northern Cape
Client	HV Property Developments (Pty) Ltd
Reference Number	ITS 3164
Project Team	Christoff Krogscheepers Pieter Arangie
Contact Details	Tel: 021 914 6211 & Fax: 021 914 7403
Date	March 2013
Report Status	Final
File Name:	G:\3164 Namaqua Mall, Springbok\Report\3164_NamaquaMallSpringbok_TIA_PA_2013-02-27.docx

This traffic impact study has been prepared in accordance with the National Department of Transport's 'Guidelines for Traffic Impact Studies' PR93/635 (1995) by a suitably qualified and registered professional traffic engineer. Details of any of the calculations on which the results in this report are based will be made available on request.

TABLE OF CONTENTS

Report - Summary Table

This traffic impact assessment is reported only in a summary table instead of a lengthy report to assist review and interpretation of the results. This summary table contains all the relevant information that is normally contained in a report. It should be sufficient for review and interpretation of the expected traffic impacts as well as the comprehension of the required measures to mitigate the traffic impact. If any more detail is required please contact the authors.

Appendices

List of Figures

List of Tables

Abbreviations

CM – Critical Movement

GLA – Gross Leasable Floor Area

HCM – Highway Capacity Manual

LOS – Level of Service

MOE – Measures of Efficiency

N1 – National Route 001

RAP&G – Road Access Policy and Guidelines

RMP – Road Master Plan

SARTSM – South African Roads Traffic Signs Manual

SATGR – South African Trip Generation Rates

SDP – Sight Development Plan

SQM – Square Meters (m^2)

SSD – Shoulder Sight Distance

STSD - Stopping Sight Distance

TIA - Traffic Impact Assessment

TIS - Traffic Impact Statement

V/C – Volume to Capacity Ratio

Transport Impact Assessment Namaqua Mall, Springbok, Northern Cape	
1. Purpose of Study	To determine the expected transportation impact of the proposed Namaqua Mall on the surrounding road network.
2. Locality *References: Figure 1*	Description: The proposed development site is located to the south of Voortrekker Street and to the east of the N7 in Springbok.
3. Land Use *References: Figure 2*	Existing Use: Vacant land Proposed use: Shopping Centre 23 369 m^2 GLA
4. Existing Access	The site currently has access off the R355. Refer to **Section 15** for proposed access.
5. Existing Roadways in Site Vicinity *References: Figure 2*	N7 (N7/7): National Road, one lane per direction, no median island, 120km/h speed limit, paved shoulders, no parking and no sidewalks. N14: National Road, one lane per direction, no median island, 60km/h speed limit in the site vicinity, paved shoulders, no parking and no sidewalks. (See **Photo 1** Appendix C) R355: Provincial Road one lane per direction, no median island, 60km/h speed limit in the site vicinity, gravel shoulders, no parking and no sidewalks. (See **Photo 2** Appendix C) Voortrekker Street: Municipal Street, one lane per direction, no median island, 60km/h speed limit, paved shoulders, no parking and no sidewalks. (See **Photo 3** Appendix C) Kokerboom Road: Municipal Street, one lane per direction, no median island, 60km/h speed limit, no shoulders, no parking and narrow sidewalks. (See **Photo 4** Appendix C)
6. Analyses Hours	Weekday p.m. peak hour (16:00 to 17:00) Weekend Saturday peak hour. (11:00 to 12:00).
7. Scenarios Analysed	2013 Existing conditions (counted demand) 2018 Background traffic conditions (existing traffic volumes escalated with a growth rate as discussed in Section 11 of this study) 2018 Total traffic conditions (background traffic volumes plus the development trips).
8. Study Intersections (existing control) *References: Figure 3*	1: Voortrekker Street/ President Street/ Development Access A (Two-way stop) 2: Voortrekker Street/ R355 (Two-way stop) 3: R355/ Development Access B (Future int.) 4: R355/ Kokerboom Road (4-way stop) 5: Kokerboom Road/ N7 Interchange-Eastern terminal (Two-way stop) 6: Kokerboom Road/ N7 Interchange-Western terminal (Two-way stop)

9. Existing Intersection Operations *Reference: Figure 4&5 Table 1*	The capacity analysis is based on the existing lane configuration shown in **Figure 3** (Appendix A). All the study intersections operate at acceptable levels-of-service during both the Friday p.m. and Saturday peak hours.
10. Future Road Network Planning	At the time of completion of this study no information was available on any future road network planning in the site vicinity.
11. Background Traffic Conditions *Reference: Figure 6 & 7 Table 1*	**Growth Rate**: A growth rate of three percent per annum was applied to account for the general background traffic growth in this area. The capacity analysis is based on the existing lane configuration shown in **Figure 3** (Appendix A) All the study intersections will continue to operate at acceptable levels-of-service during both the a.m. and p.m. peak hours.
12. Trip Generation Rates *Reference: Table 3*	The South African Trip Generation Rates, DOT 1995 recommended the following average rates for a shopping centre with a total GLA of 23 369m². Friday p.m. trip rate: 5.78 trips/100m^2 GLA. Saturday trip rate: 9.98 trips/100m^2 GLA. However, these rates are for shopping centres in large metropolitan areas and surveys done at similar developments in smaller towns indicated much lower trip generation rates. It is recommended that the following surveyed rate be used to determine the trip generation for the proposed Namaqua Mall development; Friday p.m. trip rate: 4.41 trips/100m^2 GLA. Saturday trip rate: 5.06 trips/100m^2 GLA
13. Trip Distribution *Reference: Figure 8*	20% of trips north along the N7 20% of trips north along the Inry Street 5% of trips north along the President Street 10% of trips south along the N7 35% of trips west along Voortrekker Street 10% of trips east along the N14
14. Development Trips *Reference: Table 4 Figure 9*	Based on the trip generation rates suggested in the DoT Trip Generation Manual the Namaqua Mall can generate the following trips: Friday p.m. peak hour total trips: 1 350 Trips (675 Inbound/ 675 Outbound) Saturday peak hour total trips: 2 332 Trips (1 166 Inbound/ 1 166 Outbound). However, these trips are relatively high estimates and it is unlikely that the Mall will ever generate these volumes. Based on the recommended trip generation rate surveyed at other similar developments it is expected that the Namaqua Mall will generate the following tirps: Friday p.m. peak hour total trips: 1 030 Trips (515 Inbound/ 515 Outbound) Saturday peak hour total trips: 1 183 Trips (556 Inbound/ 627 Outbound).

15. Access to Site	Number of Accesses: Two Main Access (Access A on the SDP) This is the main access to the Namaqua Mall off Voortrekker Street located at the President Street intersection. A new northbound approach at the existing T-intersection will provide access to the Mall via a servitude road over the neighbouring property. To improve safety at the intersection it is recommended that dedicated east and westbound right-turn lanes should be provided along Voortrekker Street at the intersection. Secondary/Delivery Access (Access B on the SDP) This is a secondary access off the link road between the N14 and Kokerboom Road (R355) that will also serve as a delivery access. This access is proposed at a spacing of approximately 120 meters to the north of the Kokerboom Road intersection. Single lanes on all approaches will be sufficient from a safety and operational perspective. RAG&P and Compliance to Guidelines: According to the Urban Transport Guidelines (UTG 5, PTA, RSA, 1988) the required shoulder site distance (SSD) for a passenger car approaching a 7.5m wide road with a speed limit of 60km/h is 120m. The required SSD for a single unit truck is 180m. The available SSD in both directions at all three access is in excess of 200m, which is adequate. See **Photo 5** to **Photo 8**, Appendix C for the available SSD at the accesses.
16. Total Traffic Conditions *References: Figure 12,Table 2*	The capacity analysis is based on the recommended future lane configuration shown in **Figure 11** (Appendix A) For the 2018 Total conditions the estimated development trips were added to the 2018 Background traffic volumes. All the study intersections will continue to operate at acceptable levels-of-service during both the Friday p.m. and Saturday peak hours. Based on the RAG's guidelines for the provision of turning lanes, dedicated eastbound and westbound right-turn lanes are recommended along Voortrekker Street at the President Street/Access A intersection to improve safety at the intersection.
17. NMT	There are partial sidewalks in the site vicinity and pedestrians and cyclists mostly use the shoulders and/or the road surface. It is recommended that hard surfaced sidewalks be provided along the site frontages with Voortrekker Street and the link road between Voortrekker Street (N14) and Kokerbooom Road. Well defined walkway should also be provided on site.
18. Public Transport	Existing Facilities: There are no dedicated Bus or min-bus taxi lay-bys in the site vicinity. Proposed Facilities: It is recommended that taxi lay-bys should be provided along both sides of Voortrekker Street downstream of the main access intersection.
19. Parking	Required rates and references: According to the Department of Transport off-site parking indices the rate for Shopping Centres typically applied by local authorities is 6 bays per 100m² GLA. However, these rates typically apply to the larger metropolitan areas. Recent surveys in smaller towns in a rural environment indicate that the parking rate can be as low as 3 bays per 100m² depending on the demographics of the area. The SDP shows parking provided at a rate of 5 bays per 100m² GLA, which is sufficient.

20. Conclusion & Recommendations	It is proposed to develop the Namaqua Mall with approximately 23 369m² GLA on Erf 2883 in Springbok. Access is proposed via two accesses, i.e. main access off Voortrekker Street at the President Street intersection with a secondary access off the link road (R355) between Voortrekker Street and Kokerboom Road spaced approximately 120 metres to the north of the Kokerboom Road intersection. Dedicated eastbound and westbound right-turn lanes are recommended along Voortrekker Street at the main access intersection. The Namaqua Mall development is expected to generate approximately 1 030 vehicular trips (515 in/ 515 out) during the typical Friday p.m. peak hour and approximately 1 183 vehicular trips (556 in/ 627 out) during the typical Saturday peak hour. All the study intersections will operate at acceptable levels-of-service during both the Friday p.m. and Saturday peak hours and the surrounding road network has sufficient spare capacity to accommodate the additional trips associated with the proposed Namaqua Mall. Sidewalks should be provided along the site frontages with Voortrekker Street and the link road (R355) between Voortrekker Street and the Kokerboom Road intersection. Well defined walkways should also be provided on site. Minibus taxi lay-bys should be provided along both sides of Voortrekker Street downstream of the main access intersection.

REFERENCES

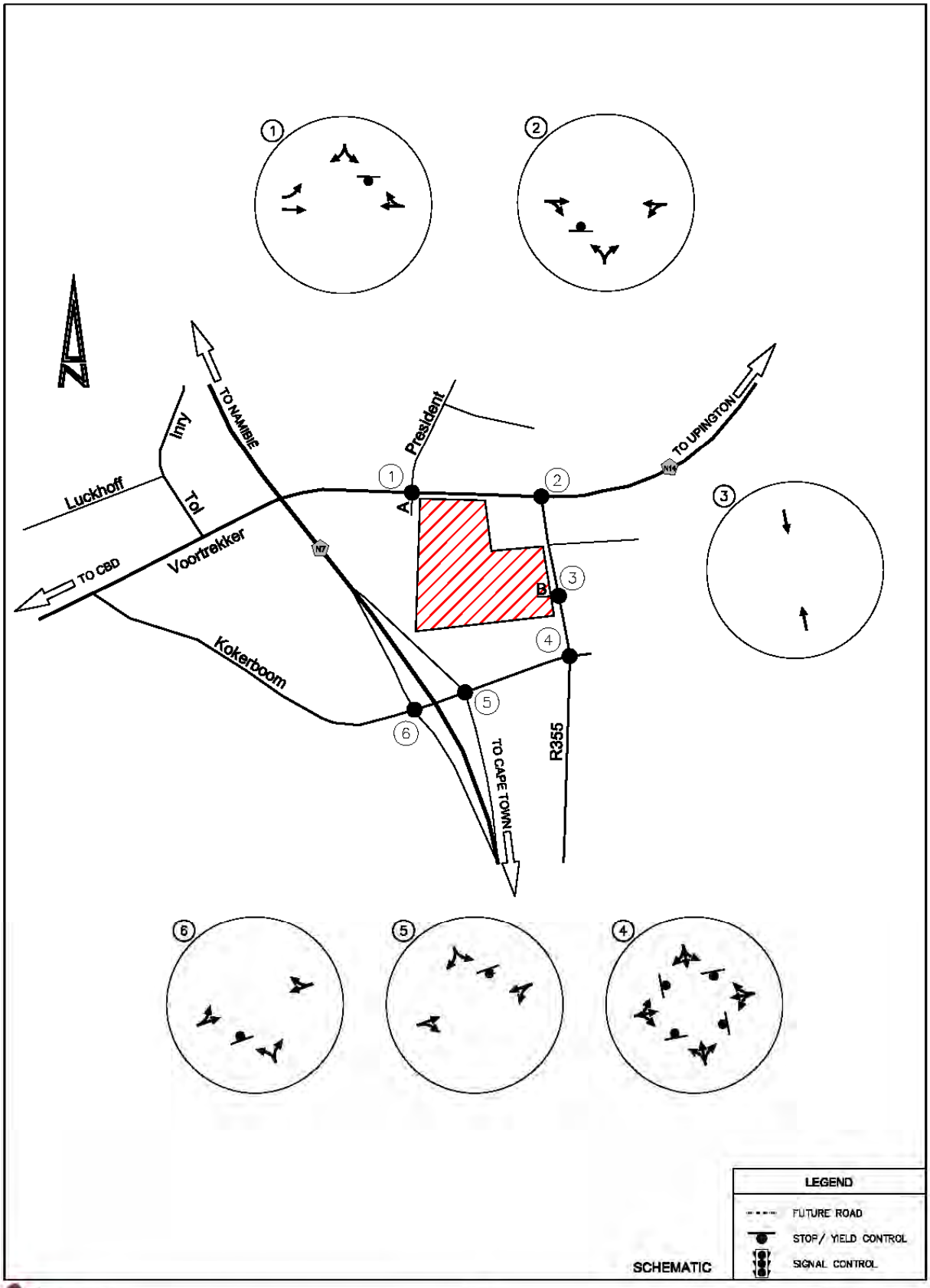
- Provincial Administration: Western Cape, Department of Economic Affairs, Agriculture and Tourism: Transport Branch, Road Access Guidelines and Policies, 2002.
- Department of Transport, Guidelines for Traffic Impact Studies, Report No. PR 93/645, Pretoria, 1995.
- Department of Transport, South African Trip Generation Rates, Report No. RR 92/228, Pretoria, 1995.
- Institute of Transportation Engineers. Trip Generation, 6th Edition. 1997.
- Transportation Research Board. Highway Capacity Manual, Special Report No. 209. 2000.

Appendix A

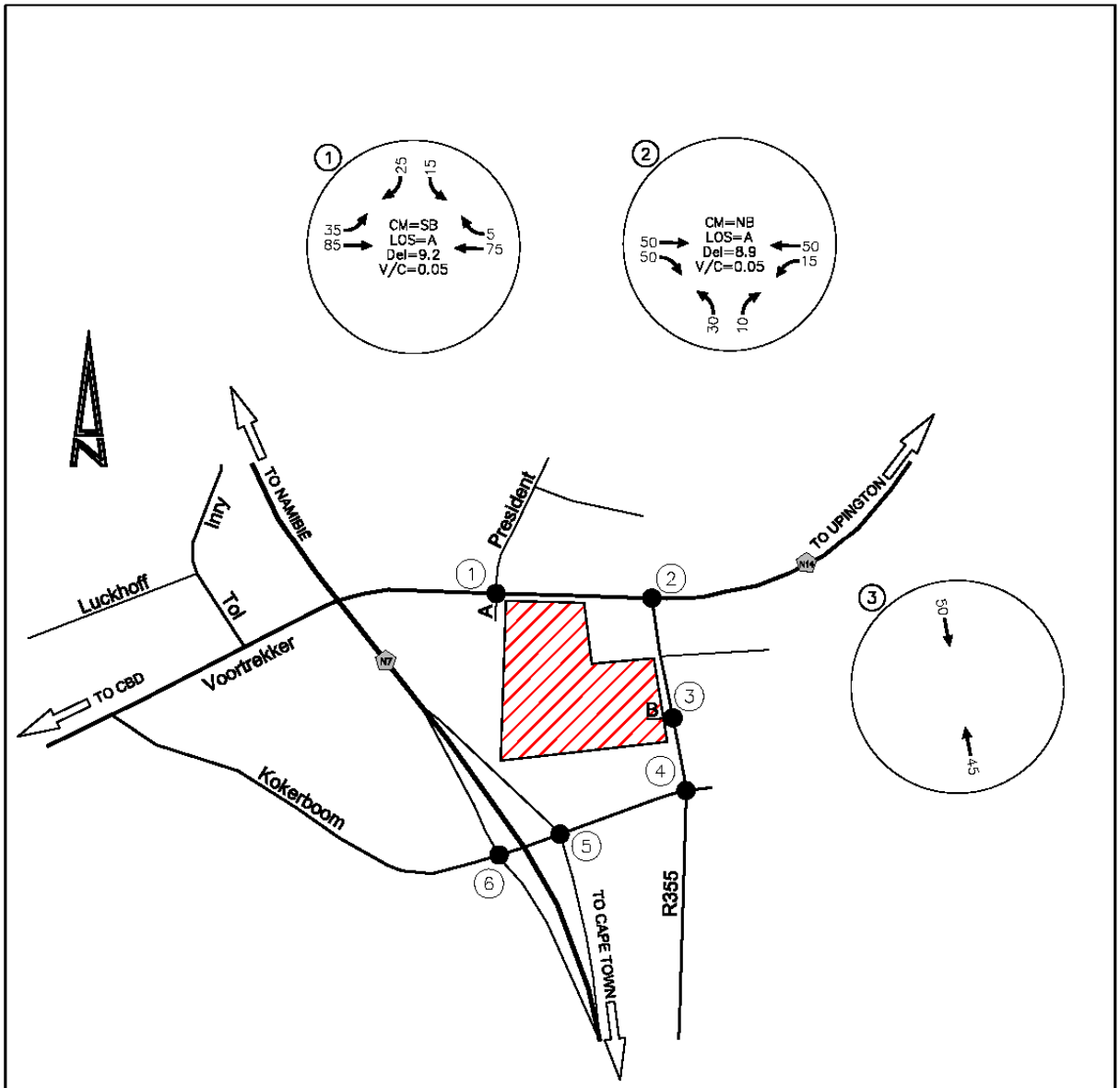
Figures

PROJECT:	FIGURE:	NUMBER:
NAMAQUA MALL, SPRINGBOK	LOCALITY PLAN	1

PROJECT:	FIGURE:	NUMBER:
NAMAQUA MALL, ERF 2883, SPRINGBOK	SITE DEVELOPMENT PLAN	2



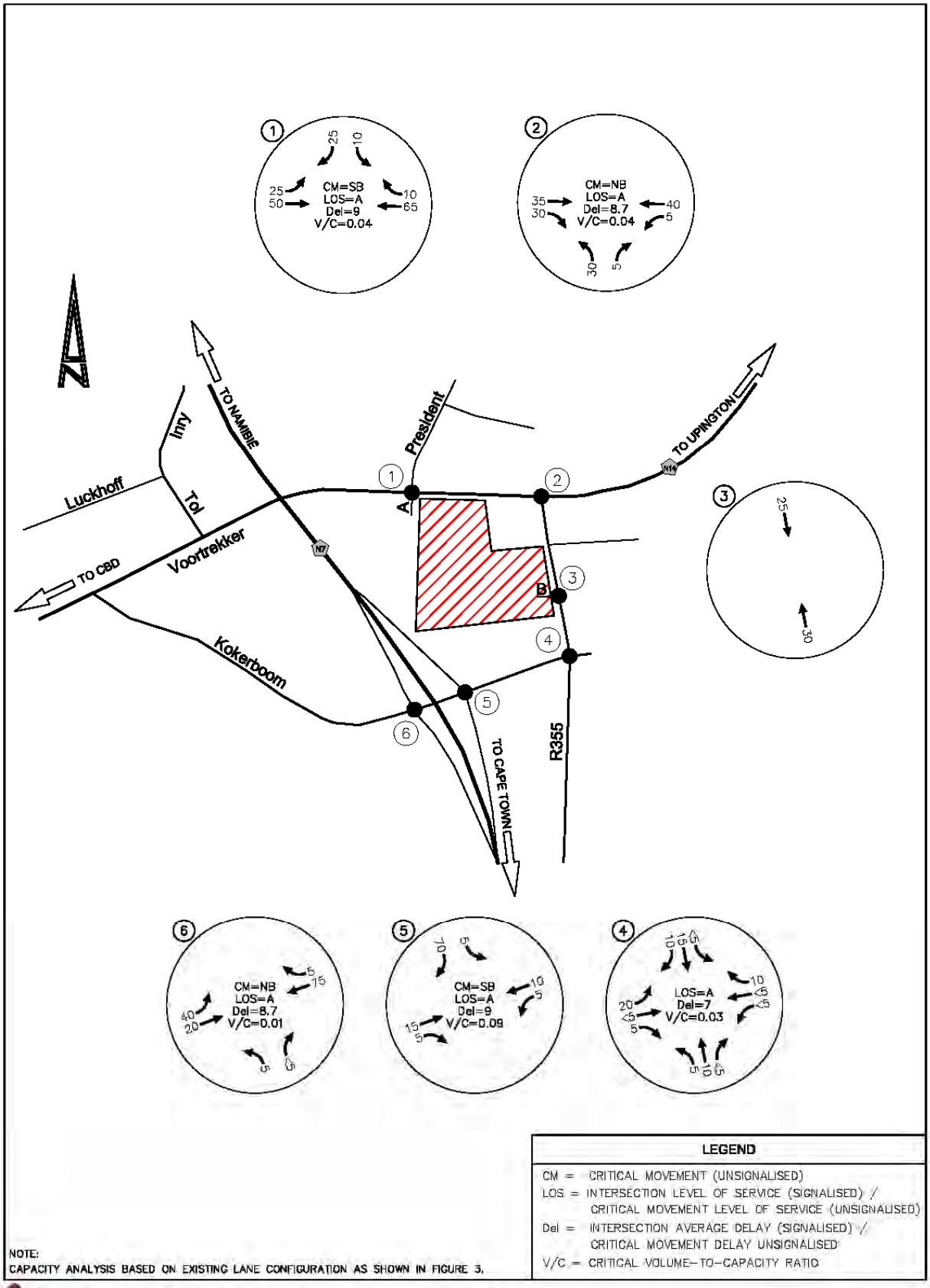
PROJECT:	FIGURE:	NUMBER:
NAMAQUA MALL ERF 2883, SPRINGBOK	EXISTING LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES	3



LEGEND	
CM =	CRITICAL MOVEMENT (UNSIGNALISED)
LOS =	INTERSECTION LEVEL OF SERVICE (SIGNALISED) / CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALISED)
Del =	INTERSECTION AVERAGE DELAY (SIGNALISED) / CRITICAL MOVEMENT DELAY UNSIGNALISED
V/C =	CRITICAL VOLUME-TO-CAPACITY RATIO

NOTE:
CAPACITY ANALYSIS BASED ON EXISTING LANE CONFIGURATION AS SHOWN IN FIGURE 3.

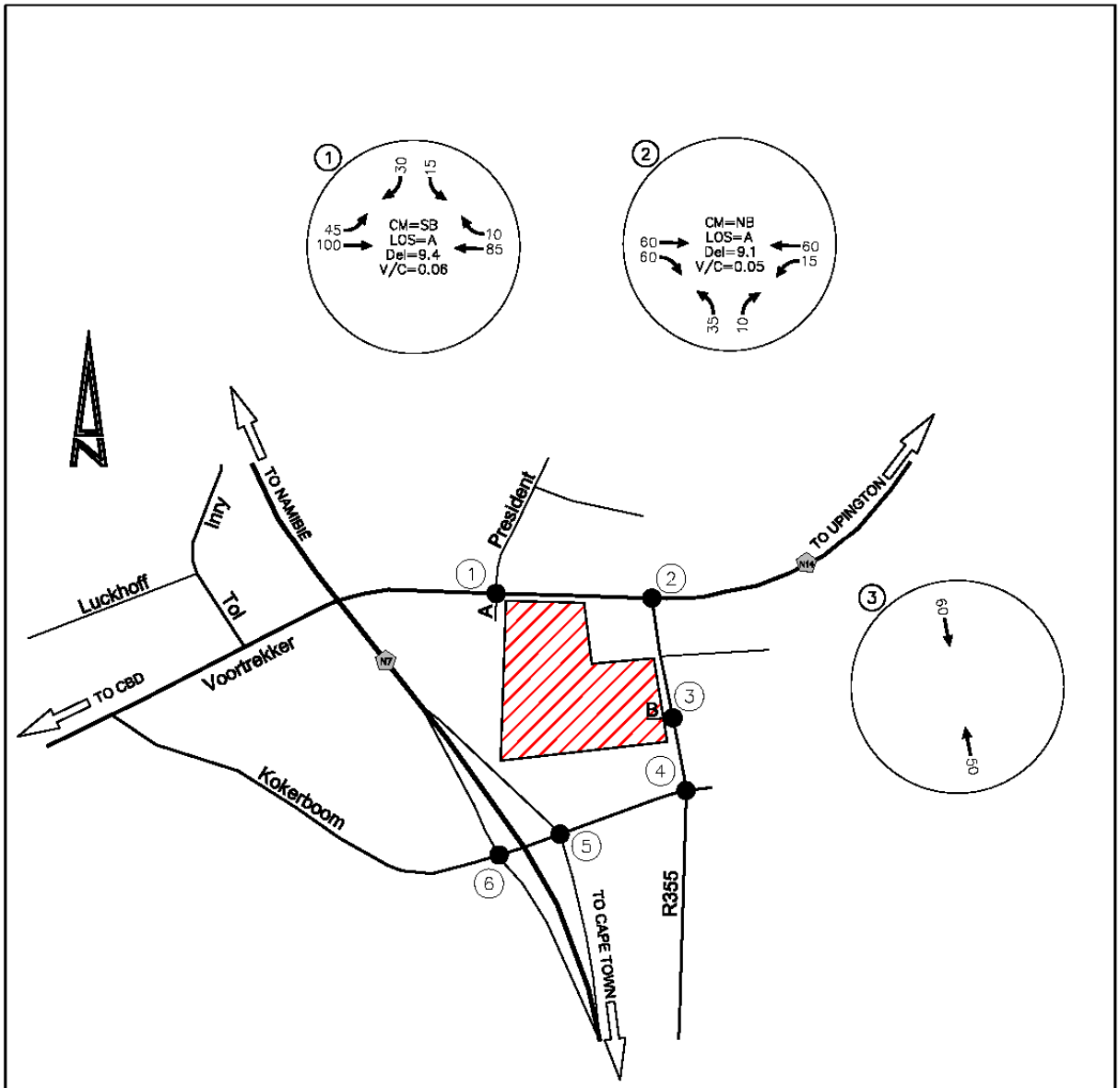
PROJECT:	FIGURE:	NUMBER:
NAMAQUA MALL ERF 2883, SPRINGBOK	EXISTING TRAFFIC CONDITIONS PM PEAK HOUR	4



LEGEND	
CM =	CRITICAL MOVEMENT (UNSIGNALISED)
LOS =	INTERSECTION LEVEL OF SERVICE (SIGNALISED) / CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALISED)
Del =	INTERSECTION AVERAGE DELAY (SIGNALISED) / CRITICAL MOVEMENT DELAY UNSIGNALISED
V/C =	CRITICAL VOLUME-TO-CAPACITY RATIO

NOTE:
CAPACITY ANALYSIS BASED ON EXISTING LANE CONFIGURATION AS SHOWN IN FIGURE 3.

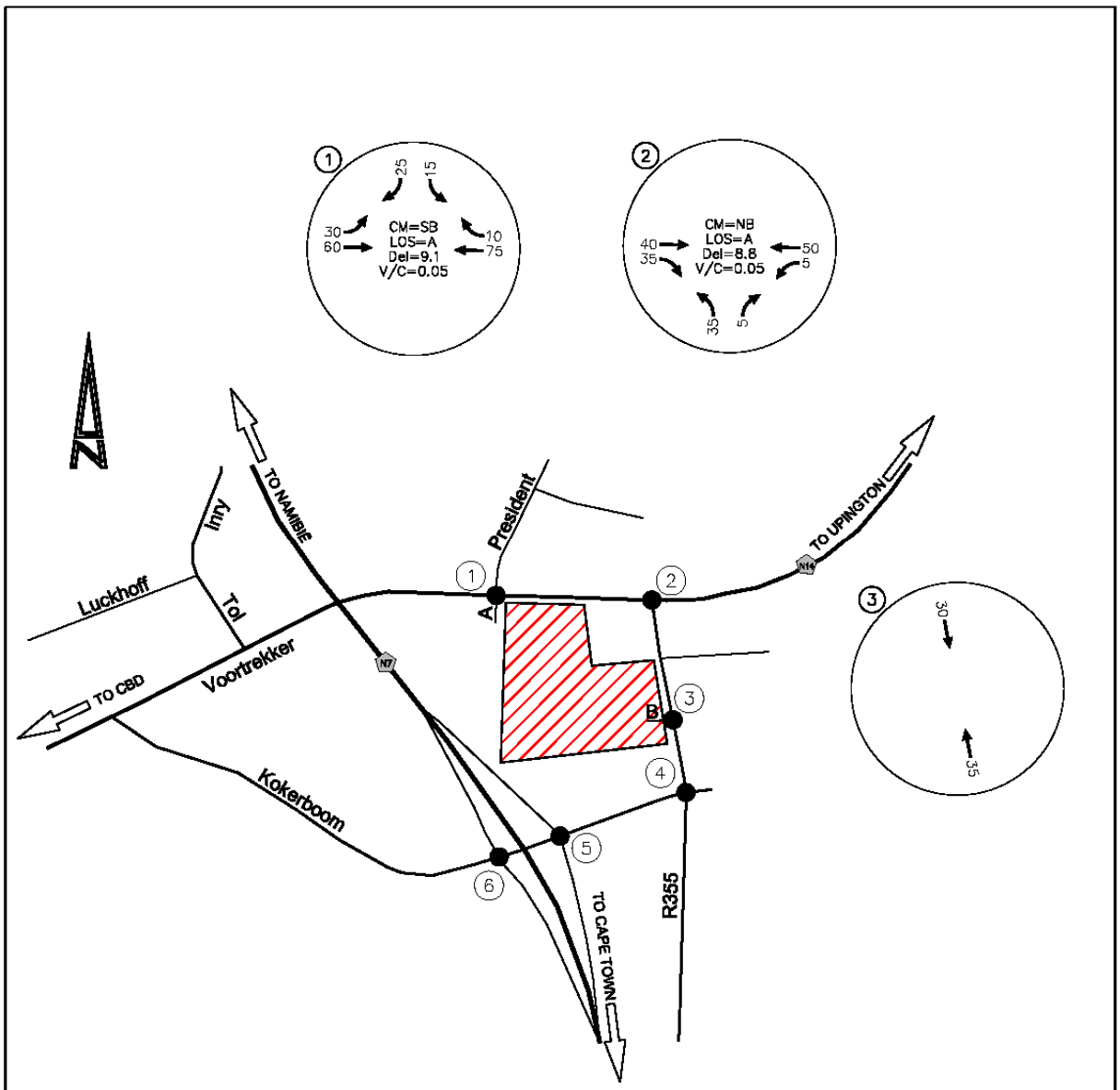
PROJECT:	FIGURE:	NUMBER:
NAMAQUA MALL ERF 2883, SPRINGBOK	EXISTING TRAFFIC CONDITIONS SATURDAY PEAK HOUR	5



LEGEND	
CM =	CRITICAL MOVEMENT (UNSIGNALISED)
LOS =	INTERSECTION LEVEL OF SERVICE (SIGNALISED) / CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALISED)
Del =	INTERSECTION AVERAGE DELAY (SIGNALISED) / CRITICAL MOVEMENT DELAY UNSIGNALISED
V/C =	CRITICAL VOLUME-TO-CAPACITY RATIO

NOTE:
CAPACITY ANALYSIS BASED ON EXISTING LANE CONFIGURATION AS SHOWN IN FIGURE 3.

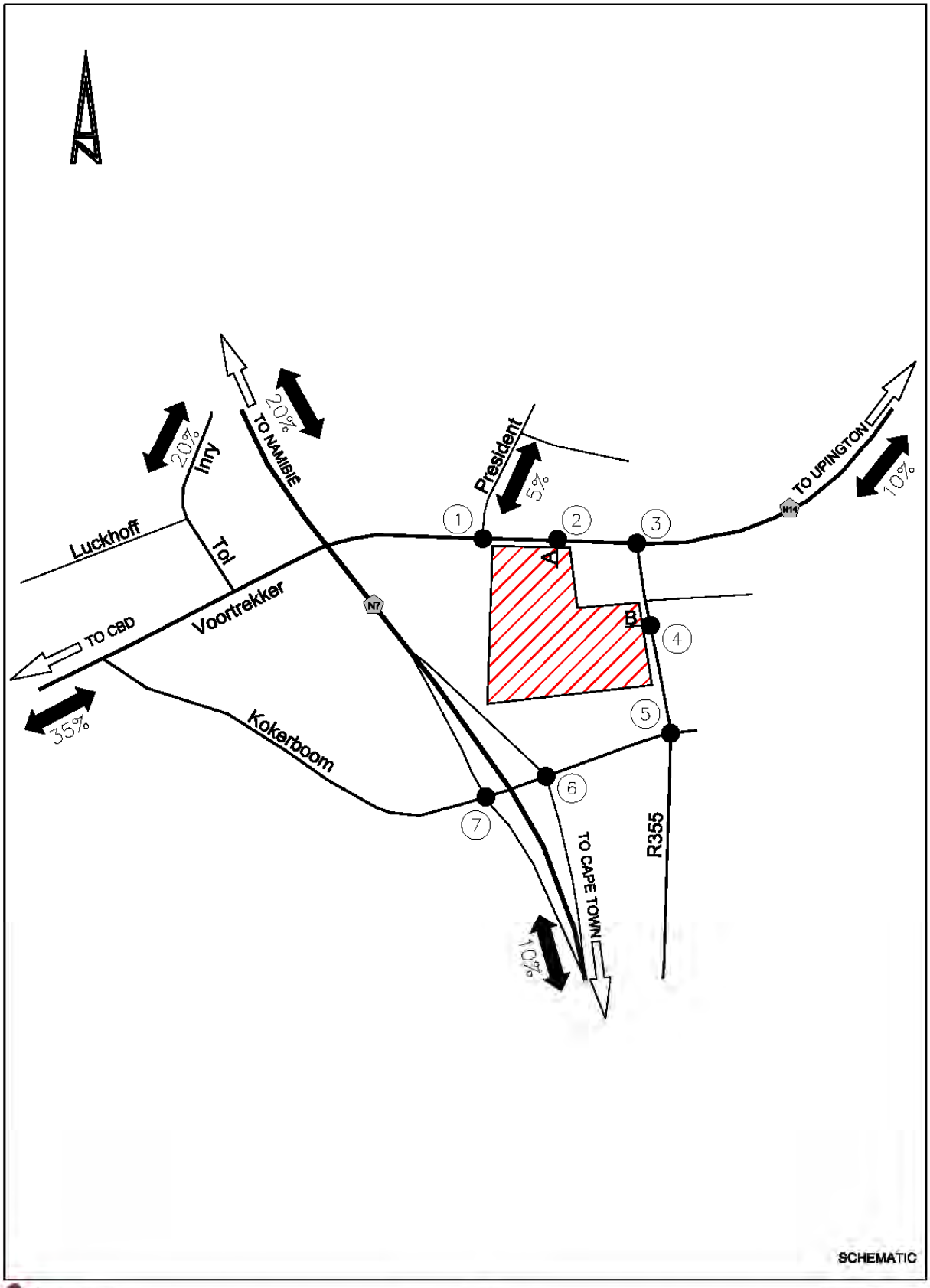
PROJECT:	FIGURE:	NUMBER:
NAMAQUA MALL ERF 2883, SPRINGBOK	2018 BACKGROUND TRAFFIC CONDITIONS PM PEAK HOUR	6



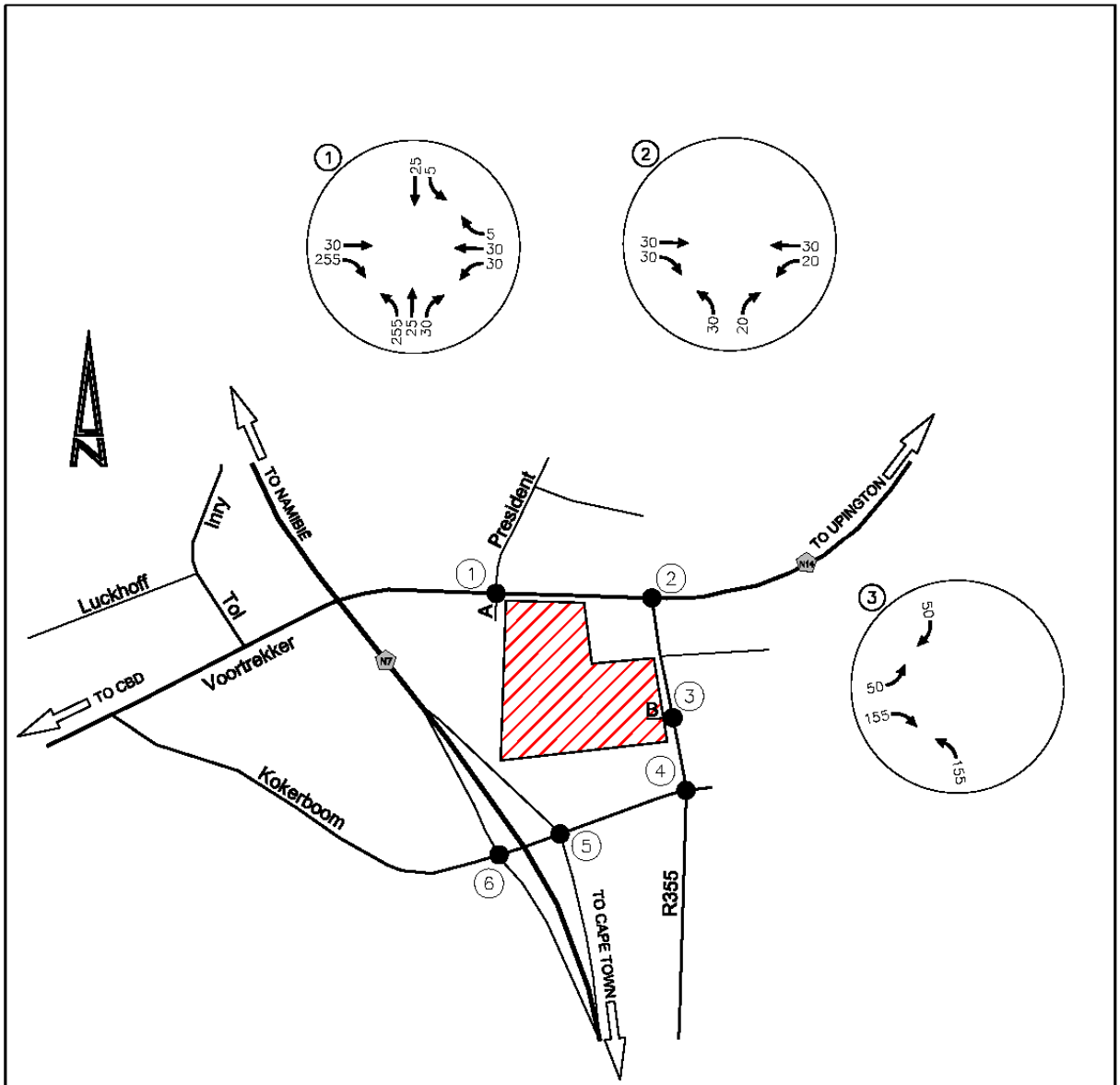
LEGEND	
CM =	CRITICAL MOVEMENT (UNSIGNALISED)
LOS =	INTERSECTION LEVEL OF SERVICE (SIGNALISED) / CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALISED)
Del =	INTERSECTION AVERAGE DELAY (SIGNALISED) / CRITICAL MOVEMENT DELAY UNSIGNALISED
V/C =	CRITICAL VOLUME-TO-CAPACITY RATIO

NOTE:
CAPACITY ANALYSIS BASED ON EXISTING LANE CONFIGURATION AS SHOWN IN FIGURE 3.

PROJECT:	FIGURE:	NUMBER:
NAMAQUA MALL ERF 2883, SPRINGBOK	2018 BACKGROUND TRAFFIC CONDITIONS SATURDAY PEAK HOUR	7



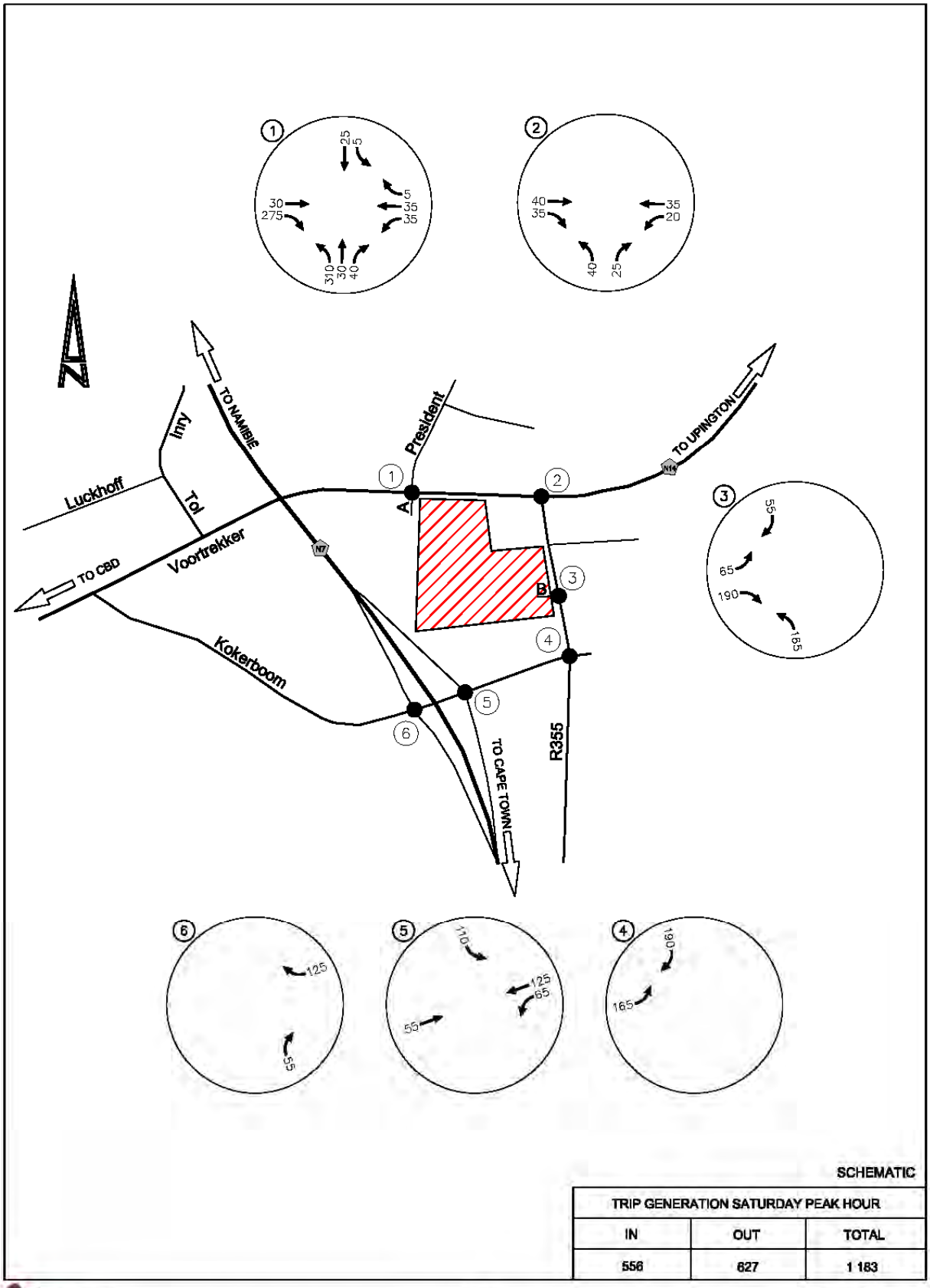
PROJECT:	FIGURE:	NUMBER:
NAMAQUA MALL ERF 2883, SPRINGBOK	EXPECTED TRIP DISTRIBUTION	8



SCHEMATIC

TRIP GENERATION PM PEAK HOUR		
IN	OUT	TOTAL
515	515	1 030

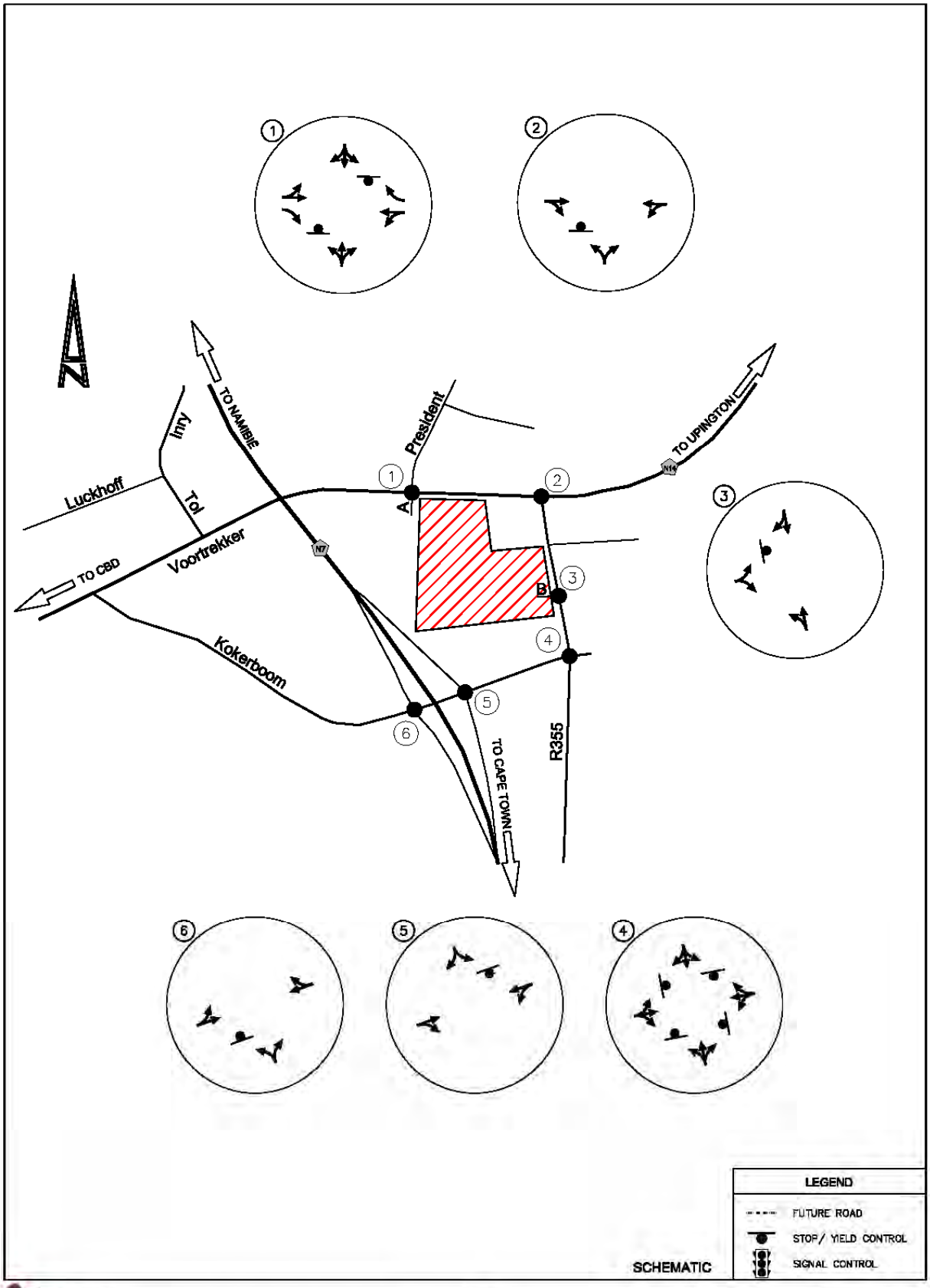
PROJECT:	FIGURE:	NUMBER:
NAMAQUA MALL ERF 2883, SPRINGBOK	ESTIMATED SITE GENERATED TRIPS PM PEAK HOUR	9



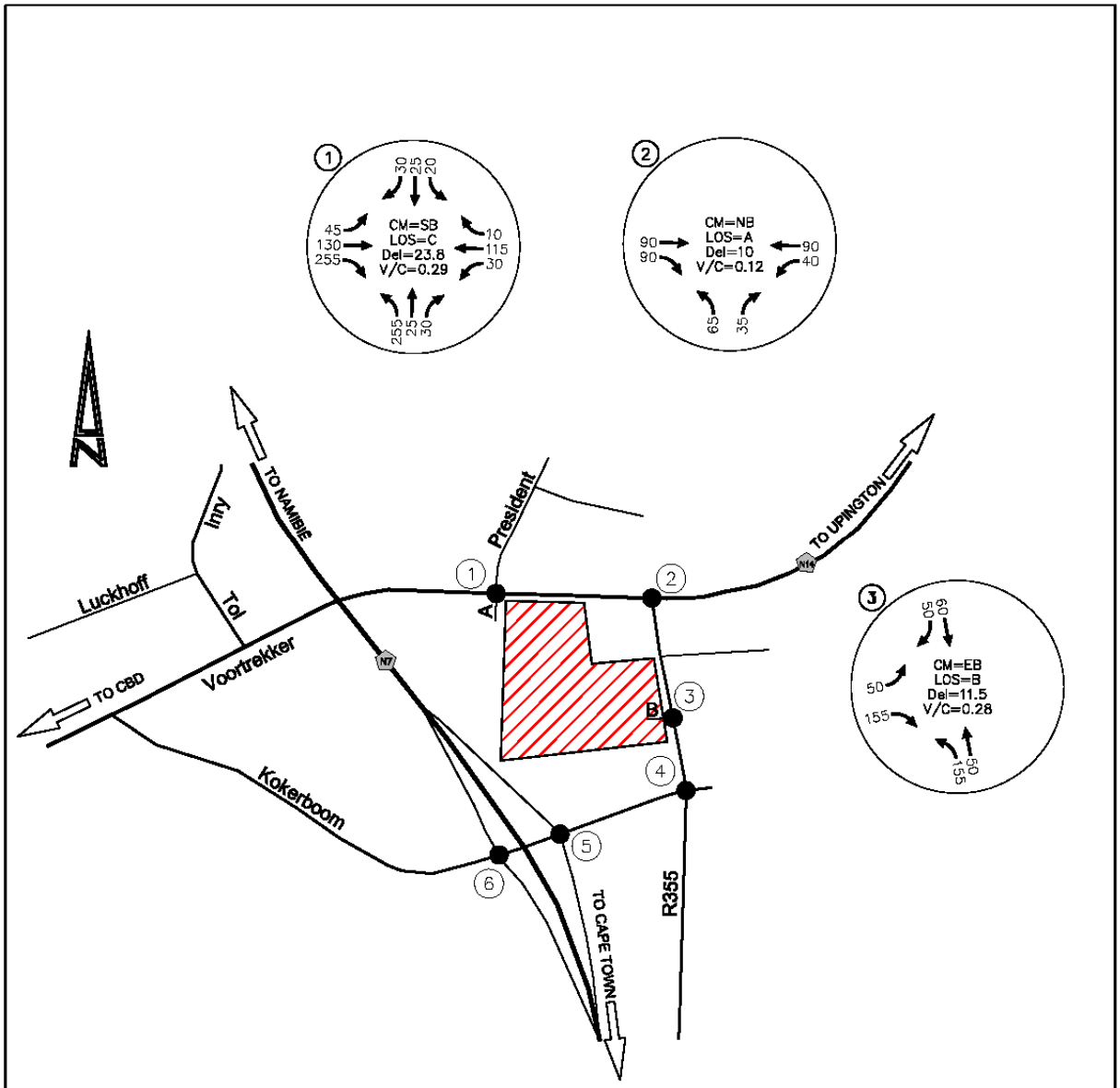
SCHEMATIC

TRIP GENERATION SATURDAY PEAK HOUR		
IN	OUT	TOTAL
556	627	1 183

PROJECT:	FIGURE:	NUMBER:
NAMAQUA MALL ERF 2883, SPRINGBOK	ESTIMATED SITE GENERATED TRIPS SATURDAY PEAK HOUR	10



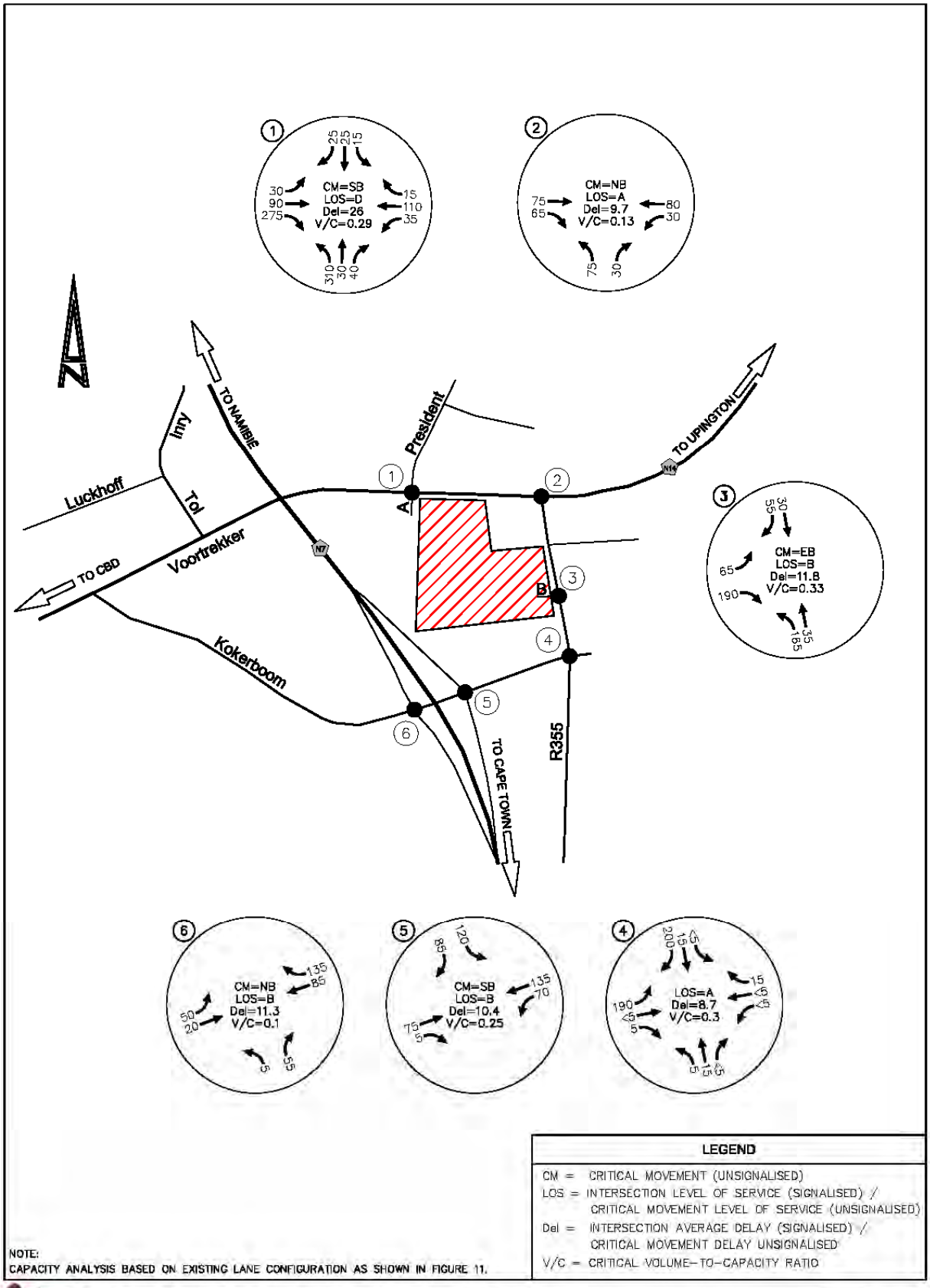
PROJECT:	FIGURE:	NUMBER:
NAMAQUA MALL ERF 2883, SPRINGBOK	RECOMMENDED FUTURE LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES	11



LEGEND	
CM =	CRITICAL MOVEMENT (UNSIGNALISED)
LOS =	INTERSECTION LEVEL OF SERVICE (SIGNALISED) / CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALISED)
Del =	INTERSECTION AVERAGE DELAY (SIGNALISED) / CRITICAL MOVEMENT DELAY UNSIGNALISED
V/C =	CRITICAL VOLUME-TO-CAPACITY RATIO

NOTE:
CAPACITY ANALYSIS BASED ON EXISTING LANE CONFIGURATION AS SHOWN IN FIGURE 11.

PROJECT:	FIGURE:	NUMBER:
NAMAQUA MALL ERF 2883, SPRINGBOK	2018 TOTAL TRAFFIC CONDITIONS PM PEAK HOUR	12



LEGEND	
CM =	CRITICAL MOVEMENT (UNSIGNALISED)
LOS =	INTERSECTION LEVEL OF SERVICE (SIGNALISED) / CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALISED)
Del =	INTERSECTION AVERAGE DELAY (SIGNALISED) / CRITICAL MOVEMENT DELAY UNSIGNALISED
V/C =	CRITICAL VOLUME-TO-CAPACITY RATIO

NOTE:
CAPACITY ANALYSIS BASED ON EXISTING LANE CONFIGURATION AS SHOWN IN FIGURE 11.

PROJECT:	FIGURE:	NUMBER:
NAMAQUA MALL ERF 2883, SPRINGBOK	2018 TOTAL TRAFFIC CONDITIONS SATURDAY PEAK HOUR	13

Appendix B

Tables

Table 1: Comparison between 2013 Existing and 2018 Background Traffic Conditions

Number	Intersection	2013 Existing Traffic Conditions						2018 Background Traffic Conditions					
		PM Peak Hour			Saturday Peak Hour			PM Peak Hour			Saturday Peak Hour		
		LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C
1	Voortrekker Street/ President Street/Development Access A	A	9.2	0.05	A	9.0	0.04	A	9.4	0.06	A	9.1	0.05
2	Voortrekker Street/ R355/ N14	A	8.9	0.05	A	8.7	0.04	A	9.1	0.05	A	8.8	0.05
3	R355/ Development Access B	Future Intersection											
4	R355/ Kokerboom Road	A	7.1	0.06	A	7.0	0.03	A	7.1	0.07	A	7.0	0.04
5	Kokerboom Road/ N7 Interchange Eastern Terminal	A	9.1	0.10	A	9.0	0.09	A	9.2	0.12	A	9.1	0.10
6	Kokerboom Road/ N7 Interchange Western Terminal	B	8.8	0.01	A	8.7	0.01	A	8.9	0.01	A	8.8	0.01

LOS – Level-of-Service, Delay in seconds per vehicle, V/C – Volume-to-capacity Ratio.
Data for Two-way Stop is for Critical Movement
Data for Signals & All-Way Stop is average of all approaches

Table 2: Comparison between 2018 Background and Total Traffic Conditions

Number	Intersection	2018 Background Traffic Conditions						2018 Total Traffic Conditions					
		PM Peak Hour			Saturday Peak Hour			PM Peak Hour			Saturday Peak Hour		
		LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C
1	Voortrekker Street/ President Street/Development Access A	A	9.4	0.06	A	9.1	0.05	C	23.8	0.29	D	26.0	0.29
2	Voortrekker Street/ R355/ N14	A	9.1	0.05	A	8.8	0.05	A	10.0	0.12	A	9.7	0.13
3	R355/ Development Access B	Future Intersection						B	11.5	0.28	B	11.8	0.33
4	R355/ Kokerboom Road	A	7.1	0.07	A	7.0	0.04	A	8.7	0.29	A	8.7	0.30
5	Kokerboom Road/ N7 Interchange Eastern Terminal	A	9.2	0.12	A	9.1	0.10	B	10.3	0.24	B	10.4	0.25
6	Kokerboom Road/ N7 Interchange Western Terminal	A	8.9	0.01	A	8.8	0.01	B	11.5	0.10	B	11.3	0.10

LOS – Level-of-Service, Delay in seconds per vehicle, V/C – Volume-to-capacity Ratio.
Data for Two-way Stop is for Critical Movement
Data for Signals & All-Way Stop is average of all approaches

Table 3: Proposed Trip Generation Rates

Land Use	Units	Source	Size/ Volume	PM Peak Hour		
				Rate	In	Out
Shopping Centre	100 m^2	DOT820	23 369	5.78	50%	50%
Shopping Centre	100 m^2	ITS Survey	23 369	4.41	50%	50%
				Saturday Peak Hour		
Shopping Centre	100 m^2	DOT820	23 369	9.98	50%	50%
Shopping Centre	100 m^2	ITS Survey	23 369	5.06	47%	53%

Table 4: Estimated Peak Hour Trips

Land Use	Source	PM Peak Hour			Saturday Peak Hour		
		In	Out	Total	In	Out	Total
Shopping Centre	DOT820	675	675	**1350**	1 166	1 166	**2 332**
Shopping Centre	ITS Survey	515	515	**1030**	556	627	**1 183**

Appendix C

Photographs

Photo 1: Westbound view along N14 towards the Site

Photo 2 Westbound view along Voortrekker Str. towards President Str.

Photo 3: Southbound view along R355 towards the site

Photo 4: Westbound view along Kokerboom Road towards the N7

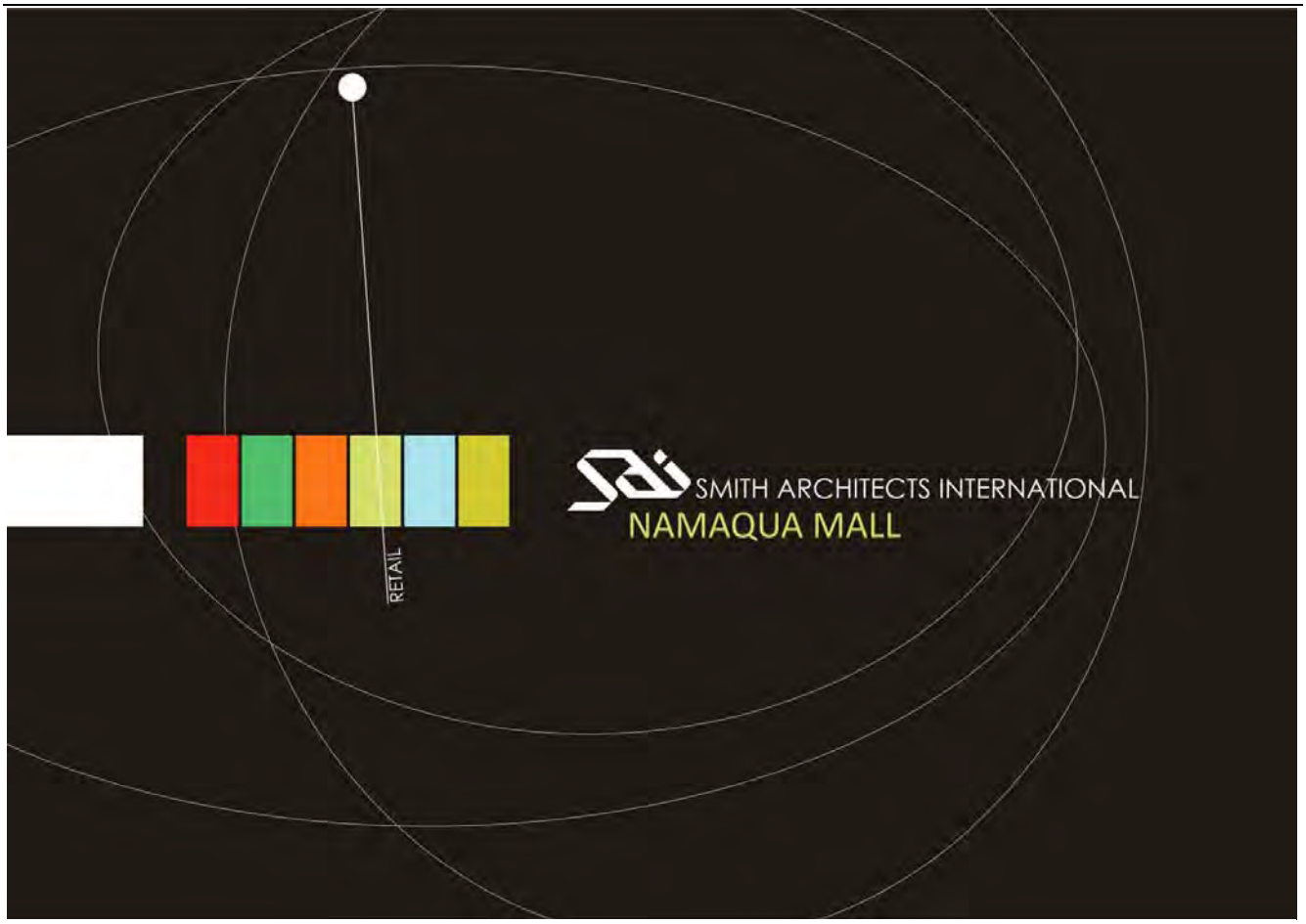
Photo 5: SSD to the west along Voortrekker Street from Main Access

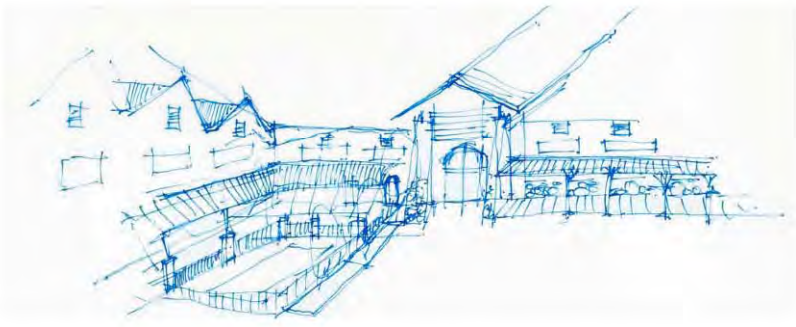
Photo 6 SSD to the east along Voortrekker Street from Main Access

Photo 7: SSD to the south along R355 from the Secondary Access

Photo 8: SSD to the north along R355 from the Secondary Access

Appendix D4: Architectural perspective report





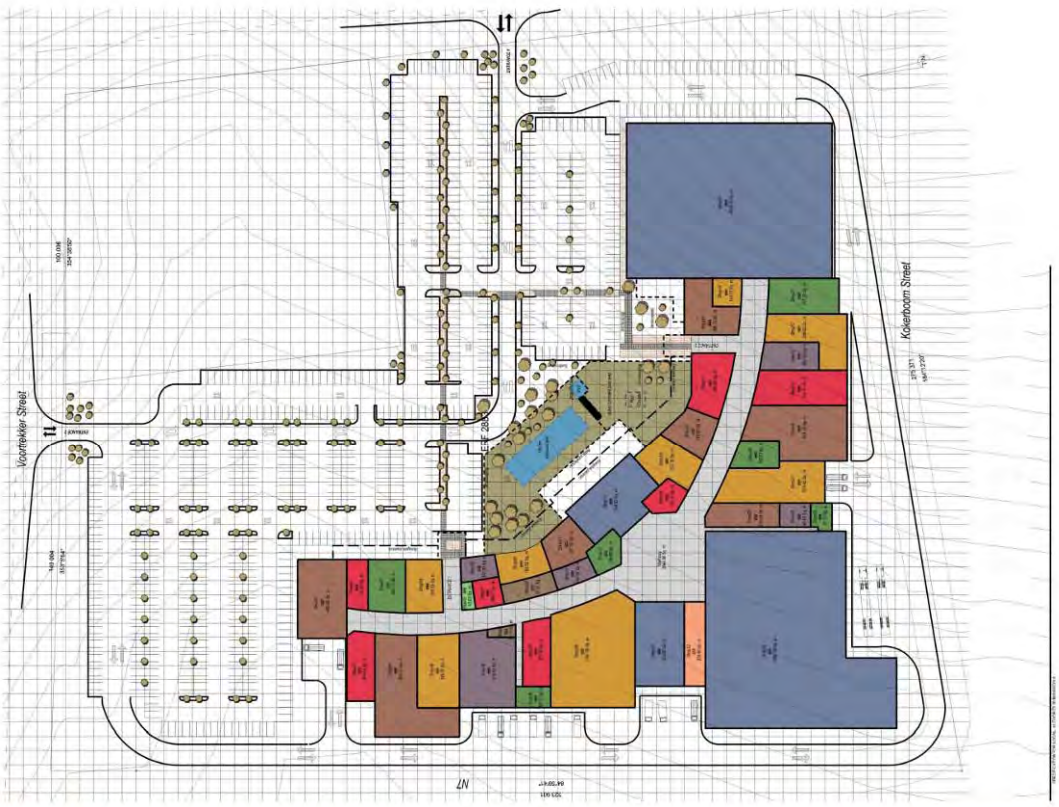
The landscape calls for a building that relates to it, as well as the vernacular architecture. Analysing the local area it was learned that a farm style architecture relates both to the landscape and surrounding buildings.

The concept of the development started off by converting the local natural material, relating directly to the landscape, into a building form that can accommodate a retail programme.

The look, feel and form giving of the building developed and took on the characteristics of old style farm architecture.


N7
N14
SITE
R355
SMITH ARCHITECTS INTERNATIONAL
.02 aerial
PROPERTIES


SMITH ARCHITECTS INTERNATIONAL
.03 site
PROPERTIES



SMITH ARCHITECTS INTERNATIONAL .04 plan

Erf 2883		65 022m²	
Subdevide Erf 3437		11 700m²	
Total		**76 722m²**	
Coverage		0	0.00%
Shop No.:		**Name:**	**Area:**
Shop	1	--	490m²
Shop	2	--	133m²
Shop	3	--	250m²
Shop	4	--	250m²
Shop	5	--	43m²
Shop	6	--	107m²
Shop	7	--	100m²
Shop	8	--	137m²
Shop	9	--	189m²
Shop	10	--	105m²
Shop	11	--	212m²
Shop	12	--	130m²
Shop	13	--	555m²
Shop	14	--	125m²
Shop	15	--	275m²
Shop	16	--	214m²
Shop	17	--	293m²
Shop	18	--	287m²
Shop	19	--	103m²
Shop	20	--	4 014m²
Shop	21	--	317m²
Shop	22	--	389m²
Shop	23	--	203m²
Shop	24	--	403m²
Shop	25	--	631m²
Shop	26	--	158m²
Shop	27	--	501m²
Shop	28	--	220m²
Shop	29	--	94m²
Shop	30	--	72m²
Shop	31	--	3 959m²
Shop	32	--	225m²
Shop	33	--	525m²
Shop	34	--	1 130m²
Shop	35	--	237m²
Shop	36	--	94m²
Shop	37	--	36m²
Shop	38	--	519m²
Shop	39	--	393m²
Shop	40	--	693m²
Shop	41	--	244m²

GLA (Gross Lettable Area)		**19054**
Walkway	--	**2 845m²**
GBA (Gross Building Area)		**21899**

Parking Calculations	
Total Parking Required for GLA at 4/100	762
Total Parking Required for GLA at 6/100	1143
Total Parking Provided	**1185**

Ground floor	**1185**
Loading bays	--

SMITH ARCHITECTS INTERNATIONAL .05 area schedule

SMITH ARCHITECTS INTERNATIONAL .06 context

natural stone

The sun in Springbok ensures for the true reflection of the landscape and all its colours.

It follows the contours of rock hills, reflecting light while producing strong shadows.

The strong contrast between light and shadows are not only represented in the building, but also in the rich texture of natural stone finish.

natural timber

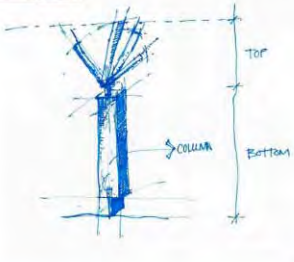
Timber will form an integral part of the building.

Exposing the timber structure adds to the detail of the building.

The roof structures will appear lighter and almost floating on the heavier rock walls.

Louvers made of timber will ensure for shadows on the walkways and interior of the building.

The timber adds to the nature of the landscape not only in colour but in the contrast between light and shadow.



SMITH ARCHITECTS INTERNATIONAL .07 material use + form giving

SMITH ARCHITECTS INTERNATIONAL .08 landscaping

SMITH ARCHITECTS INTERNATIONAL .09 aerial render


SMITH ARCHITECTS INTERNATIONAL
.10 render/perspective
PROPERTIES


namaqua
MALL
SMITH ARCHITECTS INTERNATIONAL
.11 render/perspective
PROPERTIES


namaqua
SMITH ARCHITECTS INTERNATIONAL
.12 pool area look
PROPERTIES

Appendix D5: Visual Statement

VISUAL STATEMENT

Draft Report

Proposed Namaqua Mall, Springbok

July 2013

Prepared for:
Harry Viljoen Properties
Tygervalley Waterfront

Prepared by:
Megan Anderson Landscape Architect
Stone Cottage ·Palmiet Farm · Elgin
021 859 4510 · 083 651 6419

EXECUTIVE SUMMARY

The proposed Namaqua Mall is situated on one of the few remaining open, unbuilt erven in Springbok. It is to the east of the N7, the more recently developed area of Springbok, as opposed to the historic settlement west of the N7.

The proposed site of development is on a gently sloping hillside with a northern aspect and is bound by residential development to the north and north east and workshops in the south east. To the south is an open erf and a road (R355) and to the west and open erf and the N7.

The Viewshed is the surrounding Koperberge, between 1 and 2,5kms from the site and the Zone of Visual Influence is limited to the upper slopes of the surrounding Koperberge including some residential areas and the immediately adjacent areas in the north east and east.

Receptors include adjacent residents and users of the N7, N14, R355 and Voortrekker Street.

The anticipated visual impacts include the change in character of the site from an unbuilt plot in the town to a built area and change of views from 2kms of the N7 as it passes through Springbok.

The significance of these impacts is medium, i.e. there will be a moderate alteration of the environment which can be reduced by implementing the appropriate mitigation measures.

Mitigation measures should include:

- appropriate landscaping using local materials as far as possible,
- planting large trees along the southern and western facades of the building to help screen the service areas from the N7 and R355 and soften the built environment,
- minimise signage on the southern and western facades of the building to the name of the Mall,
- minimise external lighting to low level street/parking lighting and as little as possible external lighting on the building.

The proposed development does not visually impact the overall scenic resources of the town of Springbok as it will be developed on the lower lying area, in keeping with the existing development, with the surrounding Koperberg Mountains maintaining there integrity.

1. Introduction

1.1 Background and Approach to the study

Harry Viljoen Properties (HVP) propose to develop the Namaqua Mall in Springbok. The proposed development requires authorization in terms of the NEMA regs and is in the process of a Basic Environmental Assessment.

Pieter Badenhorst Professional Services (PBPS) are undertaking the Basic Environmental Assessment and have to this end requested that Megan Anderson Landscape Architects (MALA) prepare a Visual Statement with respect to the possible visual impacts that Namaqua Mall may have.

1.2 Terms of Reference

The following terms of reference have been proposed

- Identify of issues raised in scoping phase, and site visit;
- Describe the receiving environment and the proposed project;
- Establish theview catchment area and receptors;
- Briefly indicate potential visual impacts, and possible mitigation measures
- Provide relevant photo-simulations from receptors e.g. N7, N14 and neighbouring residential areas

1.3 Methodology

A site visit and a photographic survey of the site and surrounds was undertaken. Receptors and the Viewshed were identified during the site visit.

A desktop mapping study was undertaken to map the viewshed and receptors

The findings of the above have been captured in this report and potential visual impacts identified with mitigation proposals.

1.4 Assumptions and Limitations

It is assumed that the information provided to MALA is correct.
The photo simulation (Photo Plate 18)provided by the architects is 90% - 95% accurate with the bulk and height being depicted but door and window details are not provided at this stage.

2. Proposed Development

2.1 Site location

The proposed Namaqua Mall is located in the in the town of Springbok in the Northern CapeProvince

The National Road, N7, between Cape Town and Namibia, bisects the town, with the old town being to the west and more recent development to the east.

The Namaqua Mall is to the east of the N7 on two erven, Erf 2883 and a subdivided portion of Erf 3437. A approximate area of 7,5ha.

The site is bound by Voortrekker Street to the north and the R355/N14 to the east. There is open space between the proposed mall development and the N7 to the west, as well as the road to the south, Kokerboom Street.

The site Location is illustrated in Figure 1 below.

Figure 2 – Top – plan of proposed Namaqua Mall Development, below, perspective of a part of the Namaqua Mall development.

2.2 Development Description

The proposed building is situated along the southern and western sections of the site, facing north and east. The proposed parking area is on the lower lying area to the north. Service access to the building is from the south and west with access to the site being off Voortrekker Road in the south and the R355/N14 in the east.

The proposed development includes 41 shops (19054 m²), walkways (2845m²), a swimming pool area and parking for approximately 1100 cars.

The development proposals are illustrated in Figure 2 below.

Figure 2 – Top – plan of proposed Namaqua Mall Development, below, perspective of a part of the Namaqua Mall development.

3. Visual Assessment of the Site and Proposed Development

3.1 Description of the affected area and scenic resources

The proposed Namaqua Mall site and development is within the town of Springbok, a small town situated within a narrow valley surrounded by granite domes,known as the Klein Koperberge.

Photo Plate 1 – View from south west corner of the valley (next to weather station) across the town of Springbok, surrounded by the Koperberge.

The area is a semi arid area with low growing vegetation, inclusive of succulent type plants, covering the rounded Klein Koperbergehills. It is dry and barren in the summer months but bursts into flower in the late winter and early spring, after good rains becoming the spectacular Namaqualand flower show many people travel to experience.

The town dates back to 1682 when European settlers started prospecting for copper in the mountains. It is to mining that Springbok owes it's origin with this really getting underway in the mid 19th century. The mining emphasis moved on to nearby town of Okiep by late 1800's and Springbok became the administrative, educational and commercial centre of the region.

The N7 between Cape Town and Namibia,bisects the town into west and east. Till recently, the settlement was to the west of the N7.More recently residential development has occurred to the east of the N7 and north of the N14, which runs through the town, as Voortrekker Road in an east west direction.

Photo Plate 2 – The N7, centre photo, bisects the town into the more recent developments in the east (rhs) and older development in the west (lhs).

The older development and town commercialcentre, hospital and school are found to the west of the N7

Photo Plate 3 – The 'older' part of the town of Springbok as seen from, and west of, the N7, with Voortrekker Road in the centre

More recent residential development has occurred to the east of the N7 road.

Photo Plate 4 – More recent residential development to the east of the N7, from where this photograph has been taken.

The proposed site of the Namaqua Mall development is on the eastern side of the N7, south of the N14/Voortrekker Road and is a currently undeveloped piece of land. It is on northwest facing lower slopes of a hill which bounds the town to the south east. The gradient is relatively gentle and vegetation typically sparse but yet provides a colourful display of daisies in the spring time (pers. comm. owner of B&B)

Photo Plate 5 – Proposed site of development on undeveloped land to the south east of Springbok and N7. N14/Voortrekker road runs along lhs of photo.

3.2 Visibility of the Proposed Development

3.2.1 View Catchment

The geographical area from which the project will theoretically be visible, or view catchment area, is dictated primarily by topography.

The view catchment of the site is defined by the surrounding granite hills which enclose the town of Springbok, as illustrated on the View Catchment drawing below.

Figure 3 – Viewshed of the proposed Namaqua Mall Development.

The Viewshed is relatively small as a result of the topography. To the north and south it is approximately 1km radius from the centre of the site. To the east approximately 2 kms where it crosses the N14 and to the west 2,5kms.

3.2.2 Zone of Visual Influence

Local features such as trees, landforms and buildings determine the Zone of Visual Influence (ZVI) of the site, i.e. the more relevant areas from which the proposed building will be seen.

In this instance structures such as the N7 bridge and it's associated embankments will reduce visibiltiy of the proposed development from Voortrekker Road immediately west thereof and the adjacent buildings on the lower lying valley floor. Similarly, large buildings will prevent views of the site from adjacent buildings and road.

Photo Plate 5 – View east from VoortrekkerRoad towards the site of the proposed Namaqua Mall development – which is screened by buildings at this point and lower down the road towards the N7 will be screened by the N7 bridge and associated embankments

The higher lying buildings such as the hospital will see the proposed development from a distance of approximately 1,5kms

Photo Plate 6 – View south east from the Hospital towards the site of the proposed Namaqua Mall development

More recent residential development, Simonsig, to the east of the N7, from where this photograph has been taken will see the proposed development. However, from most of this residential area,

views of the proposed development will be screened from the local roads by the houses and it is quite likely that more than 70% of the houses will not have views of the proposed site and development as they are screened by adjacent houses.

Photo Plate 7 – View south west from the more recent residential development towards the site of the proposed Namaqua Mall, one of the few areas in this residential area from where the proposed development will be visible

Photo Plate 8 – Another view south, from the more recent residential development, towards the site of the proposed Namaqua Mall, a more typical example of houses screening the site from this area.

The Zone of Visual Influence of the proposed development is substantially reduced by buildings, bridges, trees and landforms from within the Viewshed. The approximate areas that could see the development are illustrated on the Google picture below, Figure 4.

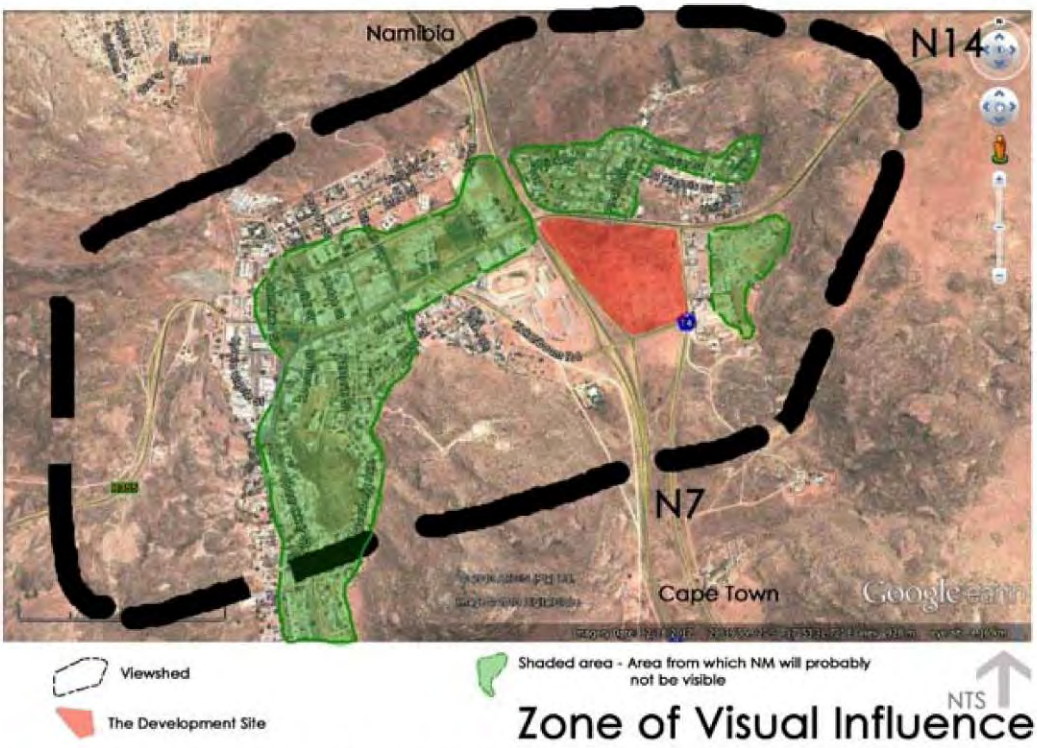


Figure 4 – Zone of Visual Influence of the Namaqua Mall

3.2.3 Receptors and Important View Corridors

The level of visual impact considered acceptable is dependent on the type of receptors.

- *High sensitivity – e.g. residential areas, nature reserves and scenic routes or trails;*
- *Moderate sensitivity – e.g. sporting or recreational areas, or places of work;*
- *Low sensitivity – e.g. industrial, or degraded areas.*

3.2.3.1 Receptors

As can be seen in the table above, the 'type' of receptors adds to the visual sensitivity of the site.

The receptors which will render the visual sensitivity of the site high will be those residential areas adjacent to the site which have views thereof, and the N7 and N14 roads which are scenic routes used by tourists.

Photo Plate 9 – Receptors which render the visual sensitivity of the site high – Simonsig residential area to the left, residential area to the east of the site – background of photo, the N14 pictured left of the photo and the N7 from where the photograph was take.

The receptors which will render the visual sensitivity of the site to be moderate are the users of the sports facilities immediately west of the N7 and those persons who will view the site and proposed development from their places of work.

Photo Plate 10: Sportsfields to west of N7 directly opposite the proposed Namaqua Mall development

The receptors which will render the visual sensitivity of the site to be low are industrial areas. The Springbok industrial area is close to the N7 on the western side of the N7.

Photo Plate 11: Springboks industrial area is immediately west of N7, in the vicintity of the N7 bridge

3.2.3.2 View Corridors

The N1, N14/Voortrekker Road and the R355 are view corridors in the Zone of Visual Influence which render the visual sensitivity of the site to be high.

The N7 which passes the site from north to south is adjacent to the proposed site at one place, however, it is a relatively short stretch of the N7, 2kms, from which the site will be visible. In particular, the site will be visible when travelling in a southerly direction.

Photo Plate 12: N7 view corridor passing the proposed site

The N14/Voortrekker Road passes the site from east to west and is adjacent to the northern boundary of the proposed site. Again it is a relatively short section of this road, 500m, from which the site will be visible.

Photo Plate 13: N14 view corridor approaching the site from the east

The N14 becomes Voortrekker Road immediately north east of the site. Views from here

Photo Plate 14: Voortrekker Road view corridor passes the site along its northern boundary

The R355 is a road which winds it way westward from Springbok. It is elevated above Springbok and provides views of the proposed site albeit 2kms away. The views will only be when driving eastward

Photo Plate 15: R355 view corridor approaching the site from the east

4. Potential Visual Impacts

The followingvisual impacts can be expected:

4.1 Change in the character of the site

The current site is an open field which is criss-crossed by footpaths and disturbed to some extent e.g. power lines along edges. It still however provides colour in late winter early spring when the Namaqualand vegetation bursts into flower and this experience is witnessed by receptors who live or drive along roads immediately adjacent to the site and those passing through Springbok on the N7.

The proposed development will result in the site taking on a predominantly built character with the building being in the south and west and the parking area being in the north and east.

Photo Plate 16: View across the proposed site of the NamaquaMall ,from the south east looking north west, currently an undeveloped tract of land with footpaths criss-crossing the area. This will become a predominantly built area

This proposed visual impact will be:

- restricted to within 2kms of the site, i.e. the extent of the impact will be local,
- the intensity (severity) thereof will be Medium, i.e. notable alteration of the scenic resources,
- the duration of the impact will be long term
- the probability of the impact occurring will be definite
- the significance of the impact occurring will beMedium - the impact will result in moderate alteration of the environment and can be reduced by implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated
- the status of the visual impact will be negative to neutral

Mitigation measures will include appropriate landscaping, (use of as far as possible local material) of the proposed development such that it enhances the site and receptors are provided with a scene that does not detract from the surrounding landscape.

4.2 Visibility from the N7

Two kilometers of the N7 passes close by the proposed Namaqua Mall site, which is to the east thereof. The views area across the predominantly undeveloped site towards the Koperberg Mountains in the south east and north east as seen in the photograph below (Photo Plate 17)

Photo Plate 17: View south east from the N7 across the proposed site of the Namaqua Mall, of open veld and the backdrop of the Kopperberge

The western (and southern when driving from south to north) façade of the proposed Namaqua Mall will be seen from the N7 as illustrated on the Photo below. A good portion of the veld which is on a separate erf, is retained in the foreground with the views of the Koperberg still visible in the background.

The photo simulation excludes the parking area, of which most will be to the east of the building, screened from the N7, with some to the north, between the building and Voortrekker Street (seen on the left of the photo) which will be visible from the N7. Service vehicles will be seen from the N7 west of the building as this is the service area.

Photo Plate 18: View south east from the N7 across the proposed site of the Namaqua Mall, of open veld and the backdrop of the Kopperberge

The proposed bulk of the building is well segmented to prevent one large façade, with shadows providing a mitigation measure for the visual impact to be experienced. To further mitigate the visual impact of the building from the N7, in particular the high facades and service area, landscaping with the use of potentially tall trees should be undertaken. For example, the *Ficus* trees along Voortrekker Street have the potential to grow tall and these will partly screen the building as seen from the N7. Similarly, some Acacia species will grow tall enough to partly screen the building.

Signage on this façade of the building must be minimal, perhaps the Name of the Mall only, and should be placed that it relates to tree planting with the latter managing to function as a screen without the

This proposed visual impact will be:

- restricted to within 2kms of the site, i.e. the extent of the impact will be local,
- the intensity (severity) thereof will be Medium, i.e. notable alteration of the scenic resources,
- the duration of the impact will be long term
- the probability of the impact occurring will be definite
- the significance of the impact occurring will be Medium - the impact will result in moderate alteration of the environment and can be reduced by implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated
- the status of the visual impact will be negative to neutral

4.3 Additional night lighting

Currently the site is unlit and with the proposed building this will change providing more light in the area.

Photo Plate 19: Night view north west across the site from the N7 across the proposed site of the Namaqua Mall, which is currently devoid of light and which will be lit once developed.

This proposed visual impact will be:

- restricted to within 2kms of the site, i.e. the extent of the impact will be local,
- the intensity (severity) thereof will be Medium, i.e. notable alteration of the scenic resources,
- the duration of the impact will be long term
- the probability of the impact occurring will be definite

- the significance of the impact occurring will be Medium - the impact will result in moderate alteration of the environment and can be reduced by implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated
- the status of the visual impact will be negative to neutral

Mitigation should include limited street/parking lighting to low level lighting and limited external lighting on the building.

5. Conclusions and Recommendations

The proposed Namaqua Mall development is within the town of Springbok on an open plot of land, surrounded on two sides by development and on the remaining sides by roads, the N7 and R355.

It is an area proposed for development with the local municipality supporting a Mall development.

While the development will result in a change in the visual landscape from an open veld to a built area, with the scale of a commercial facility, and while it will be visible from the 2kms of the N7, the scenic resources of the settlement of Springbok will be minimally affected if the proposed mitigation measures are implemented.

The current scenic resources of Springbok include a settlement in a small valley surrounded and enclosed by the Koperberg Mountains. This scene will remain once the proposed Namaqua Mall is constructed as the development is within the valley. The view and integrity of the surrounding Koperberg Mountains will be retained.

While there are existing buildings in Springbok the size of the larger proposed shops in the Mall, the massing of the shops in the Mall is unlike any development in Springbok. The form that is proposed, i.e. separate but linked buildings with setbacks providing shadows goes a long way in reducing the bulk of the building. This can be further reduced by appropriate landscaping.

It is recommended that a Registered Professional Landscape Architect is appointed to prepare a Landscape Development Plan which will include the required mitigation measures. Furthermore, a lighting specialist must be consulted to minimise the lighting impact of the proposed building including low level lighting in the parking area and along the roads.

Appendix D6: Heritage NID

NGWAO-BOSWA YA KAPA BOKONE

1 Roper Street
Kimberley North
KIMBERLEY, 8300

Moago: 1 Roper Street
Kimberly North KIMBERLEY, 8300

1 Roper Street
Kimberley North
KIMBERLEY,
8300

Isakhiwo : 1
Roper Street
Kimberle North
KIMBERLEY,
8300

Telephone:
+27 53 831 2537

Fax:
+27 53 833 1435

E-mail:
ratha.timothy@gmail.com

Notification of Intent to Develop

Section 38 of the National Heritage Resources Act (Act No. 25, 1999)

@@

Section 38 of the National Heritage Resources Act requires that any person who intends to undertake certain categories of development in the Northern Cape (see Part 1) must notify Heritage Northern Cape at the very earliest stage of initiating such a development and must furnish details of the location, nature and extent of the proposed development.

This form is designed to assist the developer to provide the necessary information to enable Heritage Western Cape to decide whether a Heritage Impact Assessment will be required.

Note: This form is to be completed when the proposed development does not fulfil the criteria for EIA as set out in the EIA regulations.
It may be completed as part of the EIA process to assist in establishing the requirements of Heritage Northern Cape with respect to the EIA.

1. **It is recommended that the form be completed by a professional familiar with heritage conservation issues.**
2. **The completion of Section 7 by heritage specialists is not mandatory, but is recommended in order to expedite decision-making at notification stage.**
3. **Section 7.1 must be completed by a professional archaeologist or palaeontologist.**
4. **Section 7.2 must be completed by a professional heritage practitioner with skills and experience appropriate to the nature of the property and the development proposals.**
5. **Should Section 7 be completed, each page of the form must be signed by the archaeologist/ palaeontologist and heritage practitioner**
6. **Additional information may be provided on separate sheets.**
7. **This form is available in electronic format so that it can be completed on computer.**

FOR OFFICIAL USE

PART 1: BASE INFORMATION

1.1 PROPERTY	
Name of property	
Street address or location *(e.g. off R44)*	N14 and Voortreker Steet, Springbok
Erf or farm number/s	Erf 2883 Springbok
Town or District	Springbok
Responsible Local Authority	Nama Khoi Municipality
Magisterial District	
Current use	vacant
Current zoning	Business
Predominant land use of surrounding properties	residential, church & N7 freeway
Extent of the property	76 722 sq.m

1.2 CATEGORY OF DEVELOPMENT (S. 38 (1))	X	*Brief description of the nature and extent of the proposed development or activity (See also Part 3.1)*
1. Construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier over 300m in length		The site is currently vacant and is intended to be developed with a shopping mall.
2. Construction of a bridge or similar structure exceeding 50 m in length		
3. Any development or activity that will change the character of a site–		
a) exceeding 5 000 m^2 in extent	x	
b) involving three or more existing erven or subdivisions thereof		
c) involving three or more erven or divisions thereof which have been consolidated within the past five years		
4. Rezoning of a site exceeding 10 000 m^2		
5. Other (state)		

1.3 INITIATION STAGE OF PROPOSED DEVELOPMENT		
Exploratory (e.g. viability study)		The site is inside the Urban Edge and currently zoned Business Zone . Development will therefore be as of right (ie no rezoning, departures or consent required). It is intended to erect a shopping mall 25 000 sq. m. in extent. It will be a single storey building max height 15m, with basement parking. Appropriate landscaping is envisaged (see attached plans). The plans are at the concept phase and further development details are unavailable.*Notes:*
Conceptual	x	
Outline proposals		
Draft / Sketch plans		
Other (state)		

PART 2: HERITAGE ISSUES

2.1 CONTEXT		
X	*(check box of all relevant categories)*	*Brief description/explanation*
	Urban environmental context	
	Rural environmental context	
	Natural environmental context	
Formal protection (NHRA)		
	Is the property part of a protected area (S. 28)?	
	Is the property part of a heritage area (S. 31)?	
Other		
	Is the property near to or visible from any protected heritage sites?	
	Is the property part of a conservation area or special area in terms of the Zoning Scheme?	
	Does the site form part of a historical settlement or townscape?	
	Does the site form part of a rural cultural landscape?	
	Does the site form part of a natural landscape of cultural significance?	
	Is the site within or adjacent to a scenic route?	
	Is the property within or adjacent to any other area which has special environmental or heritage protection?	
	Does the general context or any adjoining properties have cultural significance[1]?	

2.2 PROPERTY FEATURES AND CHARACTERISTICS		
X	*(check box if YES)*	*Brief description*
	Has the site been previously cultivated or developed?	
	Are there any significant landscape features on the property?	
	Are there any sites or features of geological significance on the property?	
	Does the property have any rocky outcrops on it?	
	Does the property have any fresh water sources (springs, streams, rivers) on or alongside it?	
	Does the property have any sea frontage?	
	Does the property form part of a coastal dune system?	
	Are there any marine shell heaps or scatters on the property?	
	Is the property or part thereof on land reclaimed from the sea?	

2.3 HERITAGE RESOURCES[2] ON THE PROPERTY		
X	*(check box if present on the property)*	*Name / List / Brief description*
Formal protections (NHRA)		
	National heritage site (S. 27)	
	Provincial heritage site (S. 27)	
	Provisional protection (s.29)	
	Place listed in heritage register (S. 30)	
General protections (NHRA)		
	structures older than 60 years (S. 34)	
	archaeological[3] site or material (S. 35)	
	palaeontological[4] site or material (S. 35)	
	graves or burial grounds (S. 36)	
	public monuments or memorials[5] (S. 37)	
Other		
	Any heritage resource identified in a heritage survey (state author and date of survey and survey grading/s)	
	Any other heritage resources (describe)	

2.4 PROPERTY HISTORY AND ASSOCIATIONS		
X	*(check box if YES)*	*Brief description/explanation*
	Provide a brief history of the property (e.g. when granted, previous owners and uses).	The site was subdivided from portion Erf 931 in 1988. The latter was itself subdivided from Portion of erf 531 in 1967, which in turn formed a portion of the original grant for the town of Springbok in 1840 (see attached SG plans). following the discovery of copper on the farm Melkboschkuil
	Is the property associated with any important persons or groups?	
	Is the property associated with any important events, activities or public memory?	
	Does the property have any direct association with the history of slavery?	
	Is the property associated with or used for living heritage[6]?	
	Are there any oral traditions attached to the property?	

2.6	SUMMARY OF CULTURAL SIGNIFICANCE OF THE PROPERTY (OR ANY PART OF THE PROPERTY) (S. 3(3))	
X	*(check box of all relevant categories)*	*Brief description/explanation*
	Important in the community or **pattern of South Africa's (or Western Cape's) history.**	
	Associated with the life or work of a **person, group or organisation** of importance in history.	
	Associated with the history of **slavery**.	
	Strong or special association with a particular community or cultural group for **social, cultural or spiritual** reasons	
	Exhibits particular **aesthetic** characteristics valued by a community or cultural group	
	Demonstrates a high degree of **creative or technical achievement** at a particular period	
	Has **potential to yield information** that will contribute to an understanding of natural or cultural heritage	
	Typical: Demonstrates the principal characteristics of a particular class of natural or cultural places	
	Rare: Possesses uncommon, rare or endangered aspects of natural or cultural heritage	
Please provide a brief **statement of significance**		

The property could not be deemed to be a heritage resource and should not be graded. A heritage assessment finds that:

- it is highly likely that nothing of intrinsic heritage significance exists. The affected portion of the site contains no structures older than 60 years, no structures of heritage significance, and the immediate landscape does not illustrate links to historic landscape patterns of significance. There is no direct significant association with an historic person, group or event.
- Given the history of the area, the disturbed nature of the site, and the lack of 'triggers' to suggest the possible presence of archaeological material of significance, it is suggested that an Archaeological Scoping report is not necessary.

The heritage resources in this region include:
- The 1685 mining shaft where copper was dicovered. This shaft is a procclaimed heritage resource together with smelting furnace built by the Cape Copper Mining Company in 1866. However both are situated to the north of the town en route to Okiep.

The Anglican Church, built in 1861, the Dutch Reformed Church, completed in 192, the Synagogue, completed in 1929, and Monument Koppie are located in the centre of the town at some distance from the property concerned.

The development of the property will not impact on heritage resources. It is therefore recommended that, in terms of section 38(2) of the NHRA (Act 25 of 1999), no further heritage-related studies or assessments be required.

PART 3: POTENTIAL IMPACT OF DEVELOPMENT

3.1 PROPOSED DEVELOPMENT	
Brief description of proposed development.	The site is inside the Urban Edge and currently zoned Business Zone . Development will therefore be as of right (ie no rezoning, departures or consent required). It is intended to erect a shopping mall 25 000 sq. m. in extent. It will be a single storey building max height 15m, with basement parking. Appropriate landscaping is envisaged (see attached plans). The plans are at the concept phase and further development details are unavailable.
Monetary value.	
Anticipated starting date.	
Anticipated duration of work.	
Does it involve change in land use?	
Extent of land coverage of the proposed development.	25 000sq.m.
Does it require the provision of additional services? (e.g. roads, sewerage, water, electricity)	
Does it involve excavation or earth moving?	yes
Does it involve landscaping?	yes
Does it involve construction work?	yes
What is the total floor area?	See attached plans
How many storeys including parking?	single
What is the maximum height above natural ground level?	15m
3.2 POTENTIAL IMPACT	
What impact will the proposed development have on the heritage values of the context of the property? (e.g. visibility, change in character)	Whilst the development will transform a vacant site, it will have no impact upon heritage values as the context is not considered to be heritage sensitive
Are any heritage resources listed in Part 2 affected by the proposed development? If so, how?	n/a
Please summarise any public/social benefits of the proposed development.	
The development will provide shopping and employment opportunities and construction related employment.	

PART 4: POLICY, PLANNING AND LEGAL CONTEXT

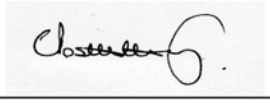
X	*(check box if YES)*	*Details/explanation*
x	Does the proposed development conform with regional and local planning policies? (e.g. SDF, Sectoral Plans)	In the Urban Edge, already zoned for business purposes
	Does the development require any departures or consent use in terms of the	

	Zoning Scheme?	
	Has an application been submitted to the planning authority?	
	Has their comment or approval been obtained? (attach copy)	
	Is planning permission required for any subdivision or consolidation?	
	Has an application been submitted to the planning authority?	
	Has their comment or approval been obtained? (attach copy)	
	Are there title deed restrictions linked to the property?	
	Does the property have any special conservation status?	
	Are there any other restrictions on the property?	
X	Is the proposed development subject to the EIA regulations of the Environment Conservation Act (Act 73 of 1989)?	
X	Has an application (or environmental checklist) been submitted to DECAS? What are the requirements of DECAS?	Basic Assessment in terms of NEMA
	At what stage in the IEM process is the application (scoping phase, EIA etc.)	Scoping
x	Has any assessment of the heritage impact of the proposed development been under-taken in terms of the EIA or planning process?	As per current report & attachment
	Are any such studies currently being undertaken?	
	Is approval from any other authority required?	
	Has permission for similar development on this site been refused by any authority in the past?	
	Have interested and affected bodies have been consulted? Please list them and attach any responses.	

PART 5: APPLICANT DETAILS

REGISTERED PROPERTY OWNER			
Name	Namaqua Mall (Pty) Ltd		
Address	Details as per attached Power of Attorney		
Telephone			
Fax			
E-mail			
Signature		Date	

DEVELOPER			
Name			
Address			
Telephone			
Fax			
E-mail			
Signature		Date	

PERSON RESPONSIBLE FOR COMPLETING THE FORM			
Name	Cindy Postlethwayt		
Address	7 Ritchie Ave, Kenilworth, Cape Town 7708		
Telephone	021 797 1005		
Fax			
E-mail	csnaude@absamail.co.za		
Field of expertise & qualifications	Heritage Practitioner, accredited member of Association for Professional Heritage Practitioners - APHP, MCRP		
Signature		Date	25 February 2013

PART 6: ATTACHMENTS

x	Plan, aerial photo and/or orthophoto clearly showing location and context of property.
x	Site plan or aerial photograph clearly indicating the position of all heritage resources and features.
x	Photographs of the site, showing its characteristics and heritage resources.
x	Relevant sketch proposals, development plans, architectural and engineering drawings and landscaping plans.
	Responses from other authorities.
	Responses from any interested and affected parties.
	Any archaeological reports or other reports that may have been carried out on the property or properties within the immediate area.
	Any other pertinent information to assist with decision-making.

PART 7. RECOMMENDATIONS BY HERITAGE SPECIALISTS

It is recommended that this section be completed in order to expedite the approval process.

7.1 RECOMMENDATIONS OF ARCHAEOLOGIST/PALAEONTOLOGIST		
Further investigation required	*Yes/No*	*Describe issues and concerns*
Palaeontology		
Pre-colonial archaeology		
Historical archaeology		
Industrial archaeology		
No further archaeological or palaeontological investigation		
Other recommendations (use additional pages if necessary)		

I have reviewed the property and the proposed development and this completed form and make the recommendations above.

Name of Archaeologist/Palaeontologist ……

Qualifications, field of expertise ……

Signature……Date……

7.2 RECOMMENDATIONS OF GENERALIST HERITAGE PRACTITIONER		
Further investigation required	*Yes/No*	*Describe issues and concerns*
Existing Conservation and Planning Documentation	No	
Planning	No	
Urban Design	No	
Built Environment	No	
Architecture	no	
Cultural Landscape	No	
Visual Impact	No	
History	No	
Archival		
Title Deeds Survey		
Published Information		
Oral History		
Social History		
Other specialist study (specify)	No	
Public Consultation	As per BA process	
Specialist Groups		
Neighbours		
Open House		
Public Meeting		
Public Advertisement		
Other		
No further specialist conservation studies required	No	
Heritage Impact Assessment required, to be co-ordinated by a generalist heritage practitioner	No	
Other recommendations (use additional pages if necessary)	n/a	

I have reviewed the property and the proposed development and this completed form and make the recommendations above.

Name of Heritage Practitioner Cindy Postlethwayt.

Qualifications, field of expertise ……

Signature……Date……..

Notes:

[1] Cultural significance means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.

[2] Heritage resource means any place or object of cultural significance.
"Place" includes –
(a) a site, area or region;
(b) a building or other structure which may include equipment, furniture, fittings and other articles associated with or connected with such building or other structure;
(c) a group of buildings or other structures [and associated equipment, fittings, etc];
(d) an open space, including a public square, street or park; and
(e) in relation to the management of a place, includes the immediate surroundings.

[3] Archaeological means —
(a) material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;
(b) rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
(c) wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa or in the maritime zone of the Republic, any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which Heritage Western Cape considers to be worthy of conservation; and
(d) features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

[4] Palaeontologicial means any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

[5] Public monuments and memorials means all monuments and memorials –
(a) erected on land belonging to any branch of ... government or on land belonging to any organisation funded by or established in terms of the legislation of such a branch of government; or
(b) which were paid for by public subscription, government funds, or a public-spirited or military organisation, and are on land belonging to any private individual.

[6] Living heritage means the intangible aspects of inherited culture, and may include cultural tradition, oral history, performance, ritual, popular memory, skills and techniques, indigenous knowledge systems and the holistic approach to nature, society and social relationships.

APPENDIX E: Public Participation Process

Appendix E1: I&AP List

Authorities

	Surname	Initials	Representing	Tel	Fax	email	Postbox	Town	Code	Reg
	Municipal Manager		Nama Khoi Municipality	027 718 8100	027 712 1635		P. O. Box 17	Springbok	8240	
	Cloete	S	Department of Water Affairs	053 830 8803	053 831 4534		Private Bag X6101	Kimberley	8300	
	De Kock	R	SANRAL	021 957 4607	021 946 1630		Private Bag X19, Belville	Cape Town	7530	
	Geldenhuys	C	Environment & Conservation – Northern Cape	027 718 9906	027 718 9907	c.geldenhuys@hotmail.com	Private Bag X1	Springbok	8240	

I&AP's

No	Erfno	Surname	Initials	Representing	Tel	Fax	email	Postbox	Town	Code	Reg	Info	Letter drop signaturee/ Postage
1	3553			Die Harm Burger Trust				P. O. Box 513	Springbok	8240			
2	931			Department of Public Works and Education and Arts and Culture				P. O. Box 3132	Kimberley	8300			
3	3455,3446,35447, 34454, 3455, 3456, 3457, 3458, 3461, 3444, 3443, 3442, 3448, 3449, 3450, 3451, 3452, 3453			Nama Khoi Municipality				P. O. Box 17	Springbok	8240			
4	4310			Springbok Congregation Jehovas Witness				P. O. Box 952	Springbok	8240			
5	1853	Coetzee	J.A					P. O. Box 171	Springbok	8240			
6	4438	Engelbrecht	J.M.					P. O. Box 780	Springbok	8240			
7	1724	Holtshausen	J.R.					P. O. Box 1031	Springbok	8240			
8	3755	Jacobson	M.					P. O. Box 755	Springbok	8240			
9	3558	Jansen	E.M					P. O. Box 114	Springbok	8240			
10	3756	Luttig	M.E.					P. O. Box 35	Springbok	8240			
11	4512 & 3556	Rich	B.J.					P. O. Box 352	Springbok	8240			
12	3557	Ruiters	S.G.					P. O. Box 123	Springbok	8240			
13	3555	Schmidt	J.H.					P. O. Box 966	Okiep				
14	3757	Van den Heever	P.P.					P. O. Box 168	Springbok	8240			
15		Van Dyk	V	Ward Councilor				P. O. Box 17	Springbok	8240			
16	3554	Williams	K					14 Harfield Court, Claremont	Kenilworth	7700			
17		Loubser	L	Stercorp Properties				P. O. Box 395	Wellington	7654			
18		Huisamen	A	Schreuder Attorneys				P. O. Box 15	Springbok	8240			

No	Erfno	Surname	Initials	Representing	Tel	Fax	email	Postbox	Town	Code	Reg	Info	Letter drop signaturee/ Postage
19		Newman	P	Radio NFM	073 923 5019		paulnewmanfm@gmail.com						
20		Van Der Byl	G.C.	Nama Khoi Municipality	082 8855335		Garth.vanderbyl@namakhoi.gov.za	Koenoebee straat 3, Simonsig Suid	Springbok	8240			
21		Basson	J. C.	Nama-Khoi Municiplaity	071 126 6766	027 718 1442	Madmax2131@gmail.com	6 Kingstraat	Springbok	8240			
22		Booysen	M		072 174 1985			Sable straat 25, Matjieskloof	Springbok	8240			
23		Cilliers	Pieter-Daan	CD Venter Landmeters	082 948 2601		pieterdaan@hotmail.com	22 Uniekstraat	Springbok	8240			
24		Van den Heever	F.E.	Namakwa District Municipality	027 712 8049	027 712 8040	frankvdh@namakwa-dm.gov.za	P. O. Box 564	Concordia	8271			
25		Hendriks	J.		027 712 8110		No-response						
26		Witbooi	A.J.		078 768 8367		annagraij@gmail.com	P. O. Box 716	Concordia	8271			
27		Stone	H.		082 901 9021	0277122366		P. O. Box 255	Concordia	8271			
28		De Wit	D.		082 8975826		ddo@cgrath.co.za	P. O. Box 35	Springbok	8240			
29		Ellis	D.		0832773368		dianne@weskusfilters.co.za						
30		De Koch	J.		0828705779		jannie@rekenaardienste.co.za						
31		Venter	C.D.	CD Venter Landmeters	0827723807		carel@cdvl.co.za	P. O. Box 62	Springbok	8240			
32				CD Venter Landmeters	082 904 6101		cdventer1@gmail.com						
33		Cloete	I.J.J.	NDM	0835578206		isaaccloete@gmail.com						
34		Williams	M	NKM	0828524875		margaretvisserw@yahoo.com						
35		Cloete	C.A.	NKM	0796393009		Claudia.cloete@namakhoi.gov.za						
36		Meissenheimer	P.M.	NKM	0843920998		pmeissenheimer@gmail.com						
37		Bowers	L. E.	NKM	0732409362		Bowerlusinda2@gmail.com						
38		Fielding	H		0829026257		No response						

Appendix E2: Advertisement

Appendix E2.1: Advertisement text

PUBLIC PARTICIPATION PROCESS/PUBLIEKE DEELNAME PROSES
Reference: NC/BA/05/NAM/NAM/SPR1/2013 (NCP/EIA/0000205/2013)
Proposed development of a Shopping Mall on Erf 2883, Springbok

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010.

English:

The proposed site is located within the town of Springbok in the Northern Cape. The site is located on the right hand side along the N7, from Cape Town towards Namibia. This site is bordered by the N14 and R355. Erf 2883 is 7.6ha in extent. More information will be made available in the Draft Basic Assessment Report which will be made available for public comment at the following facilities:

- Springbok Public Library, Namakwa Street, Springbok. Tel 027 718 8180
- Also available digitally on request from the EAP.

This advertisement also serves as notification that a Public Open Day will be held on Thursday the 04 April 2013 at the Springbok Skousaal from 15:00 until 19:00.

Afrikaans:
Die voorgestelde eiendom is geleë binne die dorp Springbok, in die Noord-Kaap. Die eiendom is geleë aan die regterkant van die N7 gesien vanaf Kaapstad oppad na Namibië. Die eiendom word begrens deur die N14 en R355. Erf 2883 is 7.6ha groot. Meer inligting is in die Basiese Assesseringsverslag, wat beskikbaar gestel sal word vir die publiek vir kommentaar by die volgende fasiliteite:

- Springbok Publieke Biblioteek, Namakwa straat, Springbok. Tel 027 718 8180
- Digitaal ook beskikbaar op versoek van die EAP.

Die advertensie dien ook as kennisgewing van die Publieke Opedag wat gehou sal word op Donderdag die 04 April 2013 by die Springbok Skousaal vanaf 15:00 tot 19:00.

The Basic Assessment Report will be available for public viewing from Thursday 04 April 2013, to the Monday 20 May 2013.

Under the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010. Activities were triggered under:

- Listing Notice 1 Activity 23.
- Listing Notice 3, Activity 12 and 13.

Details of EAP/OBP

Elanie Kühn
Pieter Badenhorst Professional Services
P O Box 1058, Wellington 7654
Tel: 076 584 0822; Fax: 0866721916; E-mail: elaniem@iafrica.com
Date of this Advertisement: 28 March 2013
In order to ensure that you are identified as an interested and/or affected party please submit your name, contact information and interest in the matter to the EAP before 17:00 on 20 May 2013. / Om te verseker dat jy geidentifiseer is as 'n belanghebbende en geaffekteerde party, stuur asseblief u naam, kontak besonderhede, gekose metode van korrespondensie en belangstelling in the die saak aan die OBP voor 17:00 op 20 Mei 2013.

Appendix E2.2: Proof of advertisement

NAMAKWA DISTRIKSMUNISIPALITEIT

KENNISGEWING NR. 18/2013

KONSEP 2013/2014 GEÏNTEGREERDE ONTWIKKELINGSPLAN (GOP)

KONSEP 2013/2014 BEGROTING

Kennis geskied hiermee ingevolge Regulasie 3 (4)(b) van die Plaaslike Regering: Munisipale Beplanning- en Prestasiebestuursregulasies, 2001, Artikel 21 van die Plaaslike Regering: Munisipale Stelselswet, 2000 (Wet 32 van 2000) en Artikel 22 van die Wet op Plaaslike Regering: Munisipale Finansiële Bestuur, 2003 (Wet 56 van 2003) dat die Konsep 2013/2014 GOP en die Konsep 2013/2014-begroting vir die Namakwa Distriksmunisipaliteit beskikbaar is vir die publiek se vertoë en kommentaar.

Die Konsep 2013/2014 GOP en Konsep 2013/2014-begroting is verkrygbaar op die webtuiste, www.namakwa-dm.gov.za en lê ook ter insae by die Munisipale Kantore van die Namakwa Distriksmunisipaliteit te:

- Springbok, Van Riebeeckstraat
- Calvinia, Stiglingstraat

Skriftelike kommentaar of vertoë oor die Konsep 2013/2014 GOP en die Konsep 2013/2014-begroting moet die Kantoor van die Munisipale Bestuurder vóór of om 12:00 op Dinsdag, 30 April 2013 bereik.

Navrae kan gerig word aan: Namakwa Distriksmunisipaliteit, Privaatsak X20, Springbok, 8240 of tel. 027 712 8000 of faks 027 712 8040, of per e-pos na info@namakwa-dm.gov.za.

M L BRANDT
MUNISIPALE BESTUURDER

PUBLIC PARTICIPATION PROCESS/PUBLIEKE DEELNAME PROSES
Reference: NC/BA/05/NAM/NAM/SPR1/2013(NCP/EIA/0000205/2013)
Proposed development of a Shopping Mall on Erf 2883.Springbok

Application for authorisation in terms of the National Environmental Management Act, 1998(Act No.107 of 1998,as amended and the Environmental Impact Assessment Regulations, 2010.

English:

The proposed site is located within the town of Springbok in the Northern Cape. The site is located on the right hand side along the N7, from Cape Town towards Namibia. This site is bordered by the N14 and R355. Erf 2883 is 7.6 ha in extent. More information will made available in the Draft Basic Assessment Report which will be made available for public comment at the following facilities:

* Springbok Public Library, Namakwa Street, Springbok. Tel 027 718 8180
* Also available digitally on request from the EAP.

This Advertisement also serves as notification that a Public Open Day will be held on Thursday the 04 April 2013 at the Springbok Skousaal from 15:00 until 19:00

Afrikaans:
Die voorgestelde eiendom is geleë binne die dorp Springbok, in die Noord-Kaap. Die eiendom is geleë aan die regterkant van die N7 gesien vanaf Kaapstad oppad na Namibië. Die eiendom word begrens deur die N14 en R355. Erf 2883 is 7.6ha groot. Meer inligting is in die Basiese Assesseringverslag, wat beskikbaar gestel sal word vir die publiek vir kommentaar by die volgende fasiliteite:

* Springbok Publieke Biblioteek, Namakwa Straat, Springbok. Tel 027 718 8180
* Digitaal ook beskikbaar op versoek van die EAP.

Die advertensie dien ook as kennisgewing van die Publieke Opedag wat gehou sal word op Donderdag 04 April 2013 by die Springbok Skousaal vanaf 15:00 tot 19:00

The Basic Assessment Report will be available for public viewing from Thursday 04 April, to the Monday 20 May 2013.

Under the National Environmental Management Act, 1998(Act No.107 of 1998), as amended and the Environmental Impact Assessment Regulations,2010.
Activities were triggered under:

* Listing Notice 1 Activity 23
* Listing Notice 3, Activity 12 and 13

Details of EAP/OBP

Elaine Kühn
Pieter Badenhorst Professional Services
P O Box 1058, Wellington 7654
Tel: 076 584 0822; Fax: 0866721916; E-mail:elaniem@iafrica.com
Date of Advertisement: 28 March 2013
In order to ensure that you are identified as an interested and/or affected party please submit your name, contact information and interest in the matter to the EAP before 17:00 on 20 May 2013. Om te verseker dat jy geidentifiseer is as 'n belanghebbende en geaffekteerde party, stuur asseblief u naam, kontak besonderhede, gekose metode van korrespondensie en belangstelling in die saak aan die OBP voor 17:00 op 20 Mei 2013.

CHOICE CLOTHING

Retail- Store Manager

Choice Clothing is seeking a Store Manager to manage their Springbok branch. The successful candidates will need to have a proven track record of at least at least 3 years retail management experience, as well as the following competencies;

Manage the store and staff compliment
Ensure that turnover figures are met as well as managing stock losses
Planning and organizing of store and stock requirements
Minimum of a Grade 12 qualification

All interested candidates must submit a brief CV for the attention of Cathy Manual as follows: By e-mail to cathym@goodhopesales.com or by fax to 086 774 0841. Please be advised that applications for the above position will close on 12 April 2013 at close of business. Please consider your application as unsuccessful should you not hear from us within two weeks after the closing date.

HERSTEL VAN GEDEREGISTREERDE BK'S/ PRIVAAT MAATSKAPPY

ARIEP BOERDERY 1992/011701/23

"Be please to take notice that WJHA Goosen and EJ Goosen intends making application to the Commissioner of CIPC, for the re-instatement of Ariereop Boerdery BK 1992/011701/23.

Be please to take notice further that any objection to the application must be lodge with the Commissioner of the CIPC within twenty one (21) days of the date of publication hereof."

NOUANSIES PLASE BK 1997/046488/23

"Be please to take notice that JC Goosen, JP Goosen an PS Goosen intends making application to the Commissioner of CIPC, for the re-instatement of Nouansies Plase Bk 1997/046488/23.

Be please to take notice further that any objection to the application must be lodge with the Commissioner of the CIPC within twenty one (21) days of the date of publication hereof."

GEMSBOKVLEI STOETERY(EDMS) BPK 1971/005042/07

"Be please to take notice that ES Kotze en NP Kotze intends making application to the comissioner of CIPC, for the re-instatement of Gemsbokvlei Stoetery (Edms)Bpk 1971/005042/07.

Be please to take notice further that any objection to the application must be lodge with the Commissioner of the CIPC within twenty one (21) days of the date of publication hereof."

Appendix E3: Site Notice and locality

Appendix E3.1: Site notice locality and proof.

Positions of the site notices

Appendix E3.2: Text and proof of site notice

Text as same as advertisement

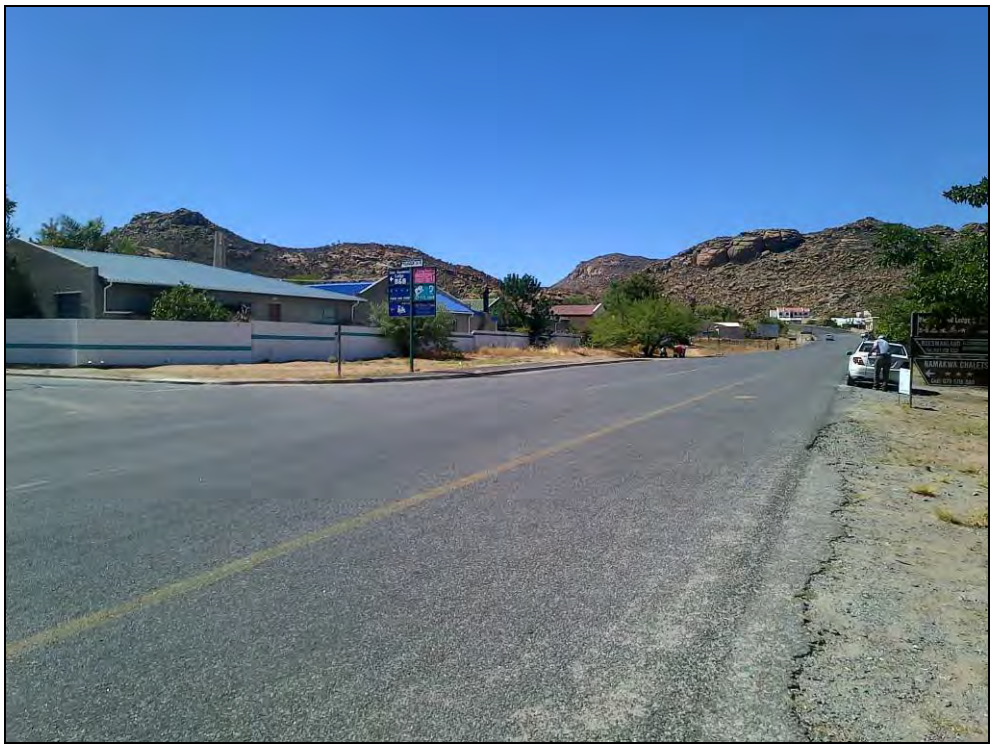
Proof

Site Notice 1

Site notice 1 – view towards N7

Site Notice 1 on corner of R355 and Voortreker street

Site Notice 2



Site notice 2 – on Voortrekker street at the entrance of President street.

Appendix E4: Proof of letters sent

Appendix E4.1 Letter to Property owners

DBAR

PIETER BADENHORST PROFESSIONAL SERVICES CC

PO Box 1058
Wellington, 7654

DATE: 22-03-2013

REF: NC/BA/05/NAM/NAM/SPR1/2013
(NCP/EIA/0000205/2013)

Department of Public Works and Education
And Arts and Culture
P. O. Box 3132
Kimberley
8300
Owner of Erf 931, Springbok

Proposed development of a business premises/Namakwa Mall on Erf 2883, Springbok

This letter serves as notification that Henry Viljoen Properties would like to construct the proposed Namakwa Mall on Erf 2883, with an access over Erf 931, Springbok.

This letter serves as notification that the Basic Assessment Report is available for comment. The Basic Assessment Report will be made available at the following facilities:

- Springbok Public Library, Namakwa Street, Springbok. Tel 027 718 8180
- Also available digitally on request from the EAP.

This letter also serves as notification that a Public Open Day will be held. Details of the Open Day are as follows:

- Date: Thursday, 04 April 2013
- Where: Springbok Skousaal, off Kokerboom Road.
- Time: From 15:00 until 19:00.

Yours sincerely

Elanie Kühn
Pieter Badenhorst Professional Services
Environmental Consultant
P. O. Box 1058
Wellington
7654
Tel: 076 584 0822
Email: elaniem@iafrica.com

Tel: 021 8737228 Fax: 0866721916 Cell: 0827763422 email: pbps@iafrica.com CC Owner: P Badenhorst CC Nr: 97/33840/23

PIETER BADENHORST PROFESSIONAL SERVICES CC

PO Box 1058
Wellington, 7654

DATE: 22-03-2013

REF: NC/BA/05/NAM/NAM/SPR1/2013
(NCP/EIA/0000205/2013)

Nama Khoi Municipality
P. O. Box 17
Springbok
8240
Owner of Erf 2883, Springbok

Proposed development of a business premises/Namakwa Mall on Erf 2883, Springbok

This letter serves as notification that Henry Viljoen Properties would like to construct the proposed Namakwa Mall on Erf 2883, with an access over Erf 931, Springbok.

This letter serves as notification that the Basic Assessment Report is available for comment. The Basic Assessment Report will be made available at the following facilities:

- Springbok Public Library, Namakwa Street, Springbok. Tel 027 718 8180
- Also available digitally on request from the EAP.

This letter also serves as notification that a Public Open Day will be held. Details of the Open Day are as follows:

- Date: Thursday, 04 April 2013
- Where: Springbok Skousaal, off Kokerboom Road.
- Time: From 15:00 until 19:00.

Yours sincerely

Elanie Kühn

Pieter Badenhorst Professional Services

Environmental Consultant

P. O. Box 1058

Wellington

7654

Tel: 076 584 0822

Email: elaniem@iafrica.com

Will be included in the Final Report.

Appendix E4.2: Letters to I&APs & Authorities

DBAR

PIETER BADENHORST PROFESSIONAL SERVICES CC

PO Box 1058
Wellington, 7654

DATE: 22-03-2013

REF: NC/BA/05/NAM/NAM/SPR1/2013 (NCP/EIA/0000205/2013)

Dear Interested and Affected Party

Proposed development of a business premises/Namakwa Mall on Erf 2883, Springbok

English:

This letter serves as notification that the Basic Assessment Report is available for comment. The Basic Assessment Report will be made available at the following facilities:

- Springbok Public Library, Namakwa Street, Springbok. Tel 027 718 8180
- Also available digitally on request from the EAP.

This letter also serves as notification that a Public Open Day will be held. Details of the Open Day are as follows:

- Date: Thursday, 04 April 2013
- Where: Springbok Skousaal, off Kokerboom Road.
- Time: From 15:00 until 19:00.

The public commenting period will be from Thursday 04 April 2013, to the Monday 20 May 2013. Comments may be submitted to the EAP before 17:00 on Monday 20 May 2013. Should you have any queries please do not hesitate to contact me.

Afrikaans:

Hierdie brief dien as kennisgewing dat die Basiese Assesserings verslag beskikbaar gestel word vir kommentaar. Die Basiese Assesserings verslag sal beskikbaar gestel word by die volgende fasiliteite:

- Springbok Publieke Biblioteek, Namakwa straat, Springbok. Tel 027 718 8180
- Digitaal ook beskikbaar op versoek van die EAP.

Die brief dien as kennisgewing dat 'n Publieke Ope Dag gehou sal word. Meer inligting oor die Ope Dag is as volg:

- Datum: Donderdag, 04 April 2013.
- Waar: Springbok Skousaal, uit Kokerboom straat.
- Tyd: Vanaf 15:00 tot 19:00.

Die publieke kommentaar periode sal loop vanaf Donderdag 04 April 2013 tot Maandag 20 Mei 2013. Kommentaar kan gestuur word aan die OBP voor 14:00 op Maandag 20 Mei 2013. Vir enige verder vrae, voel vry om my te kontak.

Tel: 021 8737228 Fax: 0866721916 Cell: 0827763422 email: pbps@iafrica.com CC Owner: P Badenhorst CC Nr: 97/33840/23

Vriendelike groete/Yours sincerely

Elanie Kühn
Pieter Badenhorst Professional Services
Environmental Consultant
P. O. Box 1058
Wellington
7654
Tel: 076 584 0822
Email: elaniem@iafrica.com

Authorities

PIETER BADENHORST PROFESSIONAL SERVICES CC

PO Box 1058
Wellington, 7654

DATE: 20-03-2014

REF: NC/BA/05/NAM/NAM/SPR1/2013
(NCP/EIA/0000205/2013)

Dear Interested and Affected Party

Proposed development of a business premises/Namakwa Mall on Erf 2883, Springbok

This letter serves as notification that the Final Basic Assessment Report is available for comment.

Herewith, please find a copy of the Final Basic Assessment Reports for your consideration and comment. The commenting period is from Thursday 20 March 2014, to the Friday 11 April 2014.

Should you have any queries please do not hesitate to contact me.

Yours sincerely

Elanie Kühn
Pieter Badenhorst Professional Services
Environmental Consultant
P. O. Box 1058
Wellington
7654
Tel: 076 584 0822
Email: elaniem@iafrica.com

Tel: 021 8737228 Fax: 0866721916 Cell: 0827763422 email: pbps@iafrica.com CC Owner: P Badenhorst CC Nr: 97/33840/23

PIETER BADENHORST PROFESSIONAL SERVICES CC

PO Box 1058
Wellington, 7654

DATE: 20-03-2014

REF: NC/BA/05/NAM/NAM/SPR1/2013
(NCP/EIA/0000205/2013)

Dear Interested and Affected Party

Proposed development of a business premises/Namakwa Mall on Erf 2883, Springbok

English:

This letter serves as notification that the Final Basic Assessment Report is available for comment. The Final Basic Assessment Report will be available digitally on request from the EAP. Find attached the Comments and Response sheet.

The public commenting period will be from Thursday 20 March 2014, to the Friday 11 April 2014. Comments may be submitted to the Environmental Consultant before 17:00 on Friday 11 April 2014. Should you have any queries please do not hesitate to contact me.

Afrikaans:

Hierdie brief dien as kennisgewing dat die Finale Basiese Assesserings verslag beskikbaar gestel word vir kommentaar. Die Finale Basiese Assesserings verslag sal digitaal beskikbaar wees, vanaf die Omgewings Konsultant. Vind aangeheg die Kommentaar en Reaksie document.

Die publieke kommentaar periode sal loop vanaf Donderdag 20 Maart 2014 tot Vrydag 11 April 2014. Kommentaar kan gestuur word aan die OBP voor 14:00 op Vrydag 11 April 2014. Vir enige verder vrae, voel vry om my te kontak.

Vriendelike groete/Yours sincerely

Elanie Kühn

Pieter Badenhorst Professional Services

Environmental Consultant

P. O. Box 1058

Wellington

7654

Tel: 076 584 0822

Email: elaniem@iafrica.com

PROJECT: PROPOSED NAMAQUA MALL ON ERF 2883, SPRINGBOK

SUMMARY OF ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

*Prepared in terms of regulation 28(1)(h)(iv) of the Environmental Impact Assessment Regulations, 2010 (G.N. 543 of 18 June 2010) by Pieter Badenhorst Professional Services (the "**EAP**")*

IMPORTANT NOTES:

1. It is noteworthy that at the Open Day held as part of the public participation process, commentators generally expressed support for the proposed Mall on erf 2883 Springbok. They identified a number of positive aspects of the proposed development (e.g. community upliftment in the form of job creation, the promotion of tourism, an improved convenience network, enhancement of the local economy, etc.). Copies of letters received in this regard have been included in the BAR.

2. Although the advantages of a proposal is a relevant consideration, the focus in this summary is on the issues identified by interested and affected parties ("**I&APs**") that should be investigated, evaluated or assessed. Those issues will be summarised below.

3. The following entities/ individuals raised concerns:
   - 3.1. The Department of Water Affairs: Lower Orange Water Management Area (**The Department**)
   - 3.2. SterCorp Properties (Pty) Ltd per Mr J Loubser of (**SterCorp**)
   - 3.3. The South African National Roads Agency Ltd (**SANRAL**)
   - 3.4. J Hendriks (**Hendriks**)
   - 3.5. P D Cilliers (**Cilliers**)
   - 3.6. F E Van Den Heever (**Van Den Heever**)
   - 3.7. Schreuders Attorneys (**Shreuders**)

4. Copies of all letters received from interested and affected parties are included in the BAR. The decision-makers are required to read those letters. The EAP therefore does not find it necessary to quote the comments of the commentators *verbatim* in the summary below. The summary of comments is merely an honest attempt to correctly capture the essence of the concerns raised by interested and affected parties.

5. Public participation plays a particularly important role in the environmental process. It serves as a "safety-net" to identify and highlight matters that the EAP potentially may have overlooked during the investigation and assessment of the likely environmental impact of

proposed listed activities. We therefore welcome comments from the public. Mr J Loubser commented on behalf of SterCorp Properties (Pty) Ltd (the holder of environmental authorisation in respect of an approved Mall on erf 4711 Springbok). He has gone out of his way to launch a very serious challenge to the current process. His comments were particularly helpful to us in our review of our own approach.

6. The main focus of the commentators that identified issues were environmental concerns (e.g. alleged lack of critical information regarding specialist studies to adequately allow for public comment, the visual impact, adequacy of bulk municipal services, solid waste removal and road infrastructure), planning issues (e.g. the validity of the zoning certificate and municipal planning for the area), viability concerns (e.g. need and desirability of two malls), and procedural concerns regarding the sale of erf 2883 (e.g. the municipal tender process followed).

7. The economic and social fields of interest mostly did not feature in the comments received from those who oppose the proposed development. Our National Constitution recognises the need for the protection of the environment and the need for social and economic development. It does not confine itself to the protection against conduct harmful to health or well-being, but explicitly recognises the obligation to promote justifiable economic and social development. The Constitution envisages that environmental considerations will be balanced with socio-economic considerations through the ideal of sustainable development.

8. Economic development, social development and the protection of the environment (the so-called *triple bottom line*) are considered the pillars of sustainable development. The idea that environmental and developmental protection must be reconciled is central to the concept of sustainable development. It implies the need to reconcile and accommodate the three pillars of sustainable development. It is regarded as a "conceptual bridge" between the right to social and economic development and the need to protect the environment. It is against this background that we have prepared our response, as the decision-maker is required to strike a balance between the many competing interests in the ecological, economical and social fields.

9. The following **abbreviations** are used in this summary:
   - 9.1. BAR – the Basic Assessment report
   - 9.2. NEMA – the National Environmental Management Act
   - 9.3. VIA – Visual Impact Assessment

10. **Grouping of comments**
    For discussion purposes the comments have been grouped under following headings, namely A. Procedural concerns; B. Environmental concerns; C. Municipal Planning issues; D. Viability concerns; and E. Other Concerns.

11. **Appendices attached**
    - 11.1. Visual statement by Megan Anderson Landscape Architect dated July 2013 – Appendix D5 of the FBAR.
    - 11.2. Letter from NamaKhoi Municipal Manager dated 26 March 2013 – Appendix G1.1 of the FBAR.
    - 11.3. Letter from NamaKhoi Municipal Manager dated 21 May 2013 – Appendix G1.1 of the FBAR.

11.4. Letter from Dr Helga van der Merwe dated 5 September 2013 – Appendix – Appendix E5.2 of the FBAR.
11.5. Final Report (Botanical Input) by Dr Van Der Merwe dated 29 August 2013 – Appendix D1 of the FBAR.
11.6. Notification of Intention to Develop dated 25 February 2013 – Appendix D6 of the FBAR.

ISSUES RAISED	RESPONSE OF THE EAP
A. PROCEDURAL CONCERNS	
<u>The sale of erf 2883 (e.g. the municipal tender process followed).</u> **Van Den Heever**– questions the procedures and processes followed for disposal of land **Schreuders**– objects to the tender process which was followed by the local municipality	The purpose of the BAR is to investigate and assess the likely environmental impact of proposed listed activities. Whether or not the land was lawfully alienated is a question that falls to be answered by our Courts. It falls outside the scope of the environmental process.
<u>The environmental process</u> SterCorp as registered I&AP only received notification of the application late, received an apology and was afforded additional time to lodge its objections.	We regret that SterCorp only received late notification, tendered our apology and afforded additional time to it to lodge objections. In the circumstances SterCorp suffered no prejudice.
B. ENVIRONMENTAL CONCERNS	
The Department - the Department rates all rivers (including dry river beds), natural drainage and associated riparian areas extremely sensitive to development and prefers development furthest away from all water courses. It requires that storm water must be adequately managed (e.g. to ensure that increased runoff does not lead to bank instability and excessive levels of silt entering the watercourse); that invasive alien vegetation must be eradicated or adequately controlled, using approved methods; that a detailed layout plan showing all the proposed facilities and required particulars must be submitted to the Department; that details of the actual construction method must be submitted to the Department; that the use of material with pollution generating potential must be limited and spillage of any hazardous materials must immediately be reported to the Department; that the collection, containment and disposal of waste generated during the construction phase must meet with the Department's requirements; and that the necessary erosion prevention mechanisms must be employed to prevent in-stream sedimentation and sustainability of structures.	The Department's requirements have been noted. Suffice it to say that the ERF 2883 is approximately 90 km away from the Orange River. It is located a considerable distance away from any other known river (perennial or non-perennial), there is no wetland or dry river beds on the property and it does not form part of a natural drainage area. The storm water runoff from the N14 is an unnatural situation.
A water use licence needs to be obtained for the use and storage of potable water. Construction water may not be obtained from any water course without the necessary authorisation.	All necessary licences, permits and approvals will have to be obtained from the competent authorities in order to undertake the proposed development in a lawful manner.
<u>Specialist studies - alleged lack of critical information regarding specialist studies to adequately allow for meaningful public comment, with the result that it is fatally flawed and should be rejected</u> **<u>SterCorp</u>** – A Heritage NID, Botanical Assessment, visual assessment and development perspective as seen from the N7 should have been supplied in the Draft BAR to allow for adequate public assessment of the specialist information and informed comment. It is far too late to supply same in the final BAR stage to allow for	It must be borne in mind that a full environmental impact assessment is not required. Only a basic impact assessment has been undertaken and only the inputs and recommendations made by specialists to the extent considered necessary were included in the draft BAR. The draft BAR complies with the applicable legislation, policies, guidelines and planning instruments. The findings of the heritage specialist as recorded in her notification to the competent heritage authority (Appendix 11.6) are recorded further below. The findings of Dr Van Der Merwe (Final Report - Botanical Input – Appendix 11.5) are recorded below. Also see the findings of Megan Anderson in respect of the potential visual impact

public comment. **SterCorp** – The botanical statement included in the draft BAR was clearly a desk top study undertaken without any site visit, fails to identify the area as a botanical diversity hotspot, is totally inadequate to allow meaningful public comment or any form of assessment by the **EAP**. Based on the precautionary principle the assumed botanical impact of the proposed development should be significantly negative. **SterCorp** – Information on cultural and historical aspects have not been included in the draft BAR. The available information is totally inadequate to allow meaningful public comment or any form of assessment by the EAP. The failure to mention potential heritage impacts in the draft BAR is a fatal flaw.	of the proposed development below. The final BAR will be made available to interested and affected parties for public comment. Appendix 11.4 refers. Dr Van Der Merwe has confirmed that the original input into the draft BAR was solely based on desktop information (i.e. the site is situated in the succulent Karoo Biome which is a hotspot). A species list was included and a statement that the list was for the entire grid and species actually occurring on site would be habitat dependent. Dr Van Der Merwe conducted two site visits, at times of the year when most of the species (especially geophytes) should be visible and compiled a comprehensive species list for the site. She rated the impact of the proposed development as medium negative and pointed out that, with mitigation (the planned search and rescue efforts) the impact could be rated as low negative. See the final report by Dr Van Der Merwe (Appendix 11.5) Cindy Postlethwayt was appointed to assess the potential impact of the proposed development on cultural heritage values. In her section 38 notification of intent to develop to the competent heritage authority, she confirmed that the property could not be deemed to be a heritage resource and should not be graded. In terms of her heritage assessment she found that it is highly likely that nothing of intrinsic heritage significance exists. The affected portion of the site contains no structures older than 60 years, no structures of heritage significance, and the immediate landscape does not illustrate links to historic landscape patterns of significance. Furthermore that there is no direct significant association with an historic person, group or event. Given the history of the area, the disturbed nature of the site, and the lack of 'triggers' to suggest the possible presence of archaeological material of significance, she suggested that an Archaeological Scoping report is not necessary. Whilst the development will transform a vacant site, she found that it will have no impact upon heritage values as the context is not considered to

5

	be heritage sensitive. This was submitted to SAHRA and the response pending and will be included in the FBAR submitted. The final BAR will be made available to interested and affected parties for public comment.
the visual impact **SterCorp** – No perspectives of the mall from the N7 are supplied; if the Mall turns its back on the N7 it will be an ugly view; it will be significantly exposed to the N7 and is likely to have a negative impact on this important route; For the draft BAR to state that no mitigation is necessary cannot be correct and has clearly not been assessed correctly. **Schreuders**: the visual impact of s single storey building with a maximum height of 21m shall be catastrophic and should not be allowed.	Appendix 11.1 refers. Megan Anderson is of the opinion that the proposed development will not visually impact the overall scenic resources of the town of Springbok as it will be developed on the lower lying area, in keeping with the existing development, with the surrounding Koperberg Mountains maintaining their integrity. However, she regards the significance of the anticipated visual impacts of the proposed structure on the character of the area as "medium" which will only have an influence on the decision-making if not mitigated. In her considered opinion there will be a moderate alteration of the environment which can be reduced by implementing appropriate mitigation measures. Specific measures have been proposed to mitigate any potential negative visual impact of the development to acceptable levels. The final BAR will be made available to interested and affected parties for public comment.
Service issues (adequacy of bulk municipal services) **SterCorp** states thatonly extremely limited services information is provided in the DBAR, that no electrical information is supplied and that the DBAR does not provide information on the electricity requirements of the mall and the availability of the required electricity.	Appendix D2 (Services Report) in the draft BAR refers. Also see Appendix 11.2. It confirms that more than 2 MVA electric power is available on the property.

6

Cilliers states that an electricity study/ impact has not been presented. **Van Den Heever** questions whether, given the problems with bulk services, supply is guaranteed? **Schreuders** claim that vacant residential plots cannot be developed due the municipality's inability to supply electricity. **SterCorp** raisesthe question whether there is sufficient water to supply the development (even if a new reservoir is built) and whether the sewerage treatment works has capacity to accommodate the sewerage from the proposed Mall? **Schreuders** state that the existing infrastructure is unable to supply the current water needs for Springbok and the surrounding towns and will not be able to supply water at all to the proposed development. **SterCorp**states that no volumes of stormwater that will be generated on site are supplied and no comment is made as to whether the culvert under the N7 and stormwater structures further downstream have sufficient capacity to accommodate the stormwater that will be generated on site. (**SANRAL** requires that the culvert through the N7 be checked to determine whether it will be adequate to drain the increased run-off from the fully developed erf 2883 Springbok) **SterCorp**asks where the spoil material from the significant bulk earthworks that will be required, will be disposed of?	Appendix 11.3 confirms that the property will have adequate access to water, electricity and sanitation services. Shopping malls generate a very limited volume of sewerage. The sewerage pump station will be increased in terms of additional storage capacity (less than 30 cubic metres). The local municipality is satisfied that the sewerage works have adequate capacity to cater for the additional sewerage expected to be generated by the proposed development. The Municipality is also satisfied that the water supply is adequate to cater for the needs of the Mall. The only work which the municipality requires to be undertaken relating to the water distribution network is the upgrading of the water pumps, which must be done before or during the construction of the Mall. Confirmation was obtained from UDS Africa that the culvert under the N7 has adequate capacity to deal with the expected additional stormwater flow from the property once fully developed. UDS Africa furthermore confirmed that, when the final design work is undertaken provision will be made for facilities to attenuate and detain stormwater on-site(e.g. using permeable paving) to ensure that pre- and post-development flows remains the same. During the detailed bulk earthworks design the optimum platform height will be used and excavated material will be employed to create the platforms required.
<u>solid waste removal</u> **Schreuders**state that the municipality is unable to remove the existing solid waste of Springbok and will not be able to remove the	We suggest that the municipality is best placed to say whether or not is able to remove the additional solid waste expected to be

additional 2.5 cubic metres per day from the shopping mall.	generated by the proposed Mall. The volume of solid waste which the proposed Mall is expected to generate is insignificant to the daily volume of solid waste which the municipality is required to remove. It is noteworthy that if the municipality should be unable to remove the existing solid waste it would likewise be unable to remove the additional waste to be generated by the Mall approved for erf 4711 Springbok. Suffice it to say that the municipality is satisfied that it has the capacity to undertake the removal of solid waste to be generated by the proposed development.
C. MUNICIPAL PLANNING ISSUES	In terms of our understanding municipal planning is a local government matter and the local municipality has the executive authority in respect thereof.
<u>the validity of the zoning certificate</u> **Schreuders** – the municipality's zoning certificate is incorrect – the property was never rezoned to Business Zone I. **Schreuders** – there is a critical shortage of residential erven in Springbok and this land was supposed to fulfil this demand.	The purpose of the BAR is to investigate and assess the likely environmental impact of proposed listed activities. The comments made by Schreuders concern municipal planning matters as opposed to environmental concerns. Be that as it may, we have established that the rezoning of Erf 2883 to Business Zone 1 for use as a business complex appeared in "ThePlattelander" on 7 February 2006. The local municipality has also confirmed that the property is indeed zoned Business Zone 1. We have no reason to question this, coming from the competent authority for municipal planning matters.

municipal planning for the area **Schreuders** – the property was always earmarked for residential development in terms of the municipal spatial development framework. The **SDF**makes no provision for a shopping mall on the property. **Van Den Heever** – the proposal conflicts with another Mall planned for Bergsig.	We have also established that the SDF shows Erf 2883 for "Business and/ or Residential" use. In terms of our understanding the SDF is in any event by definition a "broad brush" policy plan providing guidelines to promote the orderly development of the area. In other words, it is not cast in stone. In terms of our understanding "need" is not a valid criterion when deciding land use applications in terms of the Land Use Planning Ordinance. For purposes of the Bar we will restrict our further comment relating to need below to what we have to say on "need and desirability" as environmental considerations.
Access **SterCorp** – access to the Mall is proposed over a portion of land not owned by the applicant. Has the landowner given permission for this access point? **Schreuders**: the main access road to the development from Voortrekker Street over Erf 931 (government property) is not viable – there is no proof that the government has consented to a servitude AND the access road over Erf 931 does not link up with the President street intersection as referred to in the DBAR. **Cilliers** – Kokerboom Street is non existing.	Discussions between the Mnr Pieter Arangie and the Department of Public works took place. We are currently awaiting the written confirmation from the Department of Public Works. This will be included in the FBAR submitted. As above. Kokerboom is not a non-existing road. It was however outlined in the layouts that it is adjacent to the site. This was incorrect as there is an open piece of land in between Kokerboom Road and the proposed development. This was corrected.
Parking **Hendriks** – sufficient parking should be provided	Public parking will have to be provided in accordance with the requirements of the competent authority that apply to developments

9

	of this nature. The SDP for the proposed development shows that parking will be provided on a basis of 5 parking bays per 100 m² GLA, which is regarded as more than adequate.
Traffic **Hendriks** – The problems with the existing traffic in Springbok is of major concern.	According to ITS traffic engineers the road network in the vicinity of the property has sufficient spare capacity to accommodate the additional traffic that the proposed development is expected to generate. Based on our experience it is to be expected that traffic that ordinarily would have been in town would divert to the Mall, which would ease traffic congestion in town during peak periods.
D. VIABILITY CONCERNS	
need and desirability of two malls **SterCorp**: It is common cause in the community that there is no room for two shopping malls and the development of two will in fact cause both to become economically unviable. **SterCorp**: The draft BAR fails to mention that there is already an approval for another mall in Springbok, that the small town is unlikely to accommodate two malls of the scale proposed and that an additional mall may have significant negative impacts on the town if it is unable to support both. **SterCorp**:Is there a need to build a 2nd mall in Springbok that will use a significant amount of water, sewer capacity and scarce electricity when the town can only support the one approved mall?	The Constitution, ECA and NEMA do not protect the existing developments at the expense of future developments (Constitutional Court judgment in Fuel Retailers matter at par 79). Need and desirability can be equated to wise use of land – i.e. the question of what is the most sustainable use of land. The concept of need and desirability relates to *the type* of development being proposed. The emphasis in the concerns raised by SterCorp is on "need", something which is perhaps best left to the free market mechanism to determine. Need refers to "time" and desirability to "place". The questions therefore are whether it is the right time and whether it is the right place for locating the type of land-use/ activity proposed? These questions must be answered from an environmental perspective. We believe that these questions are of great relevance if for example a development proposal implies that one will have to sacrifice valuable agricultural land and/or allow a certain measure of ecological degradation as part of the promotion of justifiable

10

	economic and social development as contemplated in the Constitution. On the facts there is nothing to suggest that anything of this sort will be required. The fact that approval has already been granted for a Mall to be established does not mean that it will indeed be established or that economic realities will not persuade the developer concerned to scale down the development proposal. Approval of one Mall also does not serve as a bar to the approval of another Mall. By way of example we refer to the approval within a short space of time of two Malls in Swellendam during 2010 by the competent provincial authority. One Mall has been constructed to date and the other seems to have fallen by the wayside. Attention is invited to paragraph 9(b) of the draft Bar that deals with need and desirability of the proposed activity.
E. OTHER CONCERNS	
SterCorp: The Applicant is using the exact same name that SterCorp is using for its shopping mall. The name was deliberately used to sow confusion and in the process to reduce possible objection to the application. **Van Den Heever**– raises the question "Why the confusion with the name?"	There is no evidence, above the level of speculation, that the use of the name was a deliberate attempt to sow confusion. During the entire public participation process we have not come across one person being confused as to the whereabouts of the proposed development.
Cilliers: Latest issued drawing does not include proposed swimming pool as Rev 2.	This will be addressed in the final BAR. We thank Mr Cilliers for pointing this out.
Van Den Heever: do contracts exist for the retailers listed on the plan?	This is not an environmental concern and does not warrant further comment from the EAP.
Schreuders: The Deed of Sale was not attached to the DBAR and therefore it is not possible to ascertain whether the land was sold below market value.	It would be inappropriate to speculate about the market value of the land. Suffice it to say that whether or not the land was sold below market value is not an environmental concern, but a legal question. This is not the appropriate forum within which to deal with this aspect. It is best left to the courts to decide, should Schreuders wish to pursue the matter further.

We have throughout the environmental assessment process attempted to objectively balance environmental considerations with socio-economic considerations, as we believe we are required to do.

CONCLUSION:

1. All applicable NEMA listed activities triggered by the proposed development and associated infrastructure were adequately assessed as part of the Basic Assessment Process.

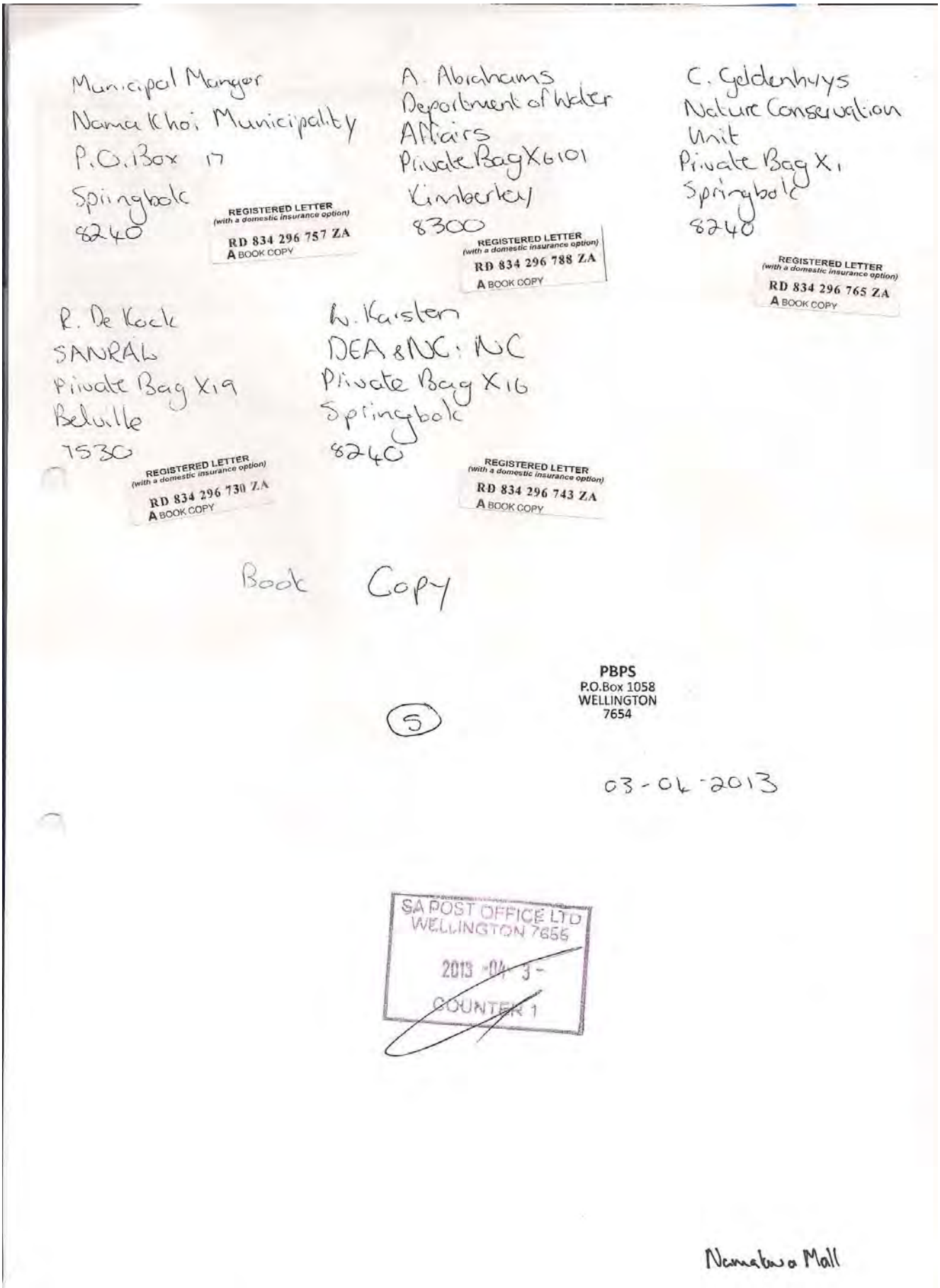
2. All relevant specialist studies were conducted and in our considered opinion adequately identify possible impacts and mitigations for the listed activities that will be triggered by the proposed development.

3. The proposed development will not detrimentally affect the natural environment. It would appear to us that biodiversity conservation and protection of agricultural resources are in any event not the prime motivators for the comments received.

4. The proposed development has the potential to create a significant number of much needed employment opportunities and give community members the opportunity to be gainfully employed, both during construction and operation of the Mall. As such it may make a significant contribution to the promotion of justifiable economic and social development.

5. Based on the triple bottom line considerations (i.e. Environmental, Social and Economic attributes) we believe that the proposed land use is the correct environmental option.

Appendix E4.3: Proof of notices to Authorities for DBAR.



Municipal Manager
Namakhoi Municipality
P.O.Box 17
Springbok
8240

REGISTERED LETTER
(with a domestic insurance option)
RD 834 296 757 ZA
A BOOK COPY

A. Abrahams
Department of Water Affairs
Private Bag X6101
Kimberley
8300

REGISTERED LETTER
(with a domestic insurance option)
RD 834 296 788 ZA
A BOOK COPY

C. Geldenhuys
Nature Conservation Unit
Private Bag X1
Springbok
8240

REGISTERED LETTER
(with a domestic insurance option)
RD 834 296 765 ZA
A BOOK COPY

R. De Kock
SANRAL
Private Bag X19
Bellville
7530

REGISTERED LETTER
(with a domestic insurance option)
RD 834 296 730 ZA
A BOOK COPY

N. Karsten
DEA & NC: NC
Private Bag X16
Springbok
8240

REGISTERED LETTER
(with a domestic insurance option)
RD 834 296 743 ZA
A BOOK COPY

Book Copy

PBPS
P.O.Box 1058
WELLINGTON
7654

(5)

03-04-2013

SA POST OFFICE LTD
WELLINGTON 7655
2013 -04- 3 -
COUNTER 1

Namakwa Mall

Appendix E4.4: Proof of Notices to I&AP's for DBAR.

Die Harm Burger Trust
P. O. Box 513
Springbok
8240
REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za
RD 834 297 678 ZA
CUSTOMER COPY 301028R

Department of Public Works and Education
and Arts and Culture
P. O. Box 3132
Kimberley
8300
REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za
RD 834 297 704 ZA
CUSTOMER COPY 301028R

Nama Khoi Municipality
P. O. Box 17
Springbok
8240
REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za
RD 834 297 695 ZA
CUSTOMER COPY 301028R

Springbok Congregation Jehovas Witness
P. O. Box 952
Springbok
8240
REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za
RD 834 297 681 ZA
CUSTOMER COPY 301028R

A Abrahams
Department of Water Affairs
Private Bag X6101
Kimberley
8300
REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za
RD 834 297 514 ZA
CUSTOMER COPY 301028R

J.A Coetzee
P. O. Box 171
Springbok
8240
REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za
RD 834 297 664 ZA
CUSTOMER COPY 301028R

R De Kock
SANRAL
Private Bag X19, Belville
Cape Town
7530
REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za
RD 834 297 545 ZA
CUSTOMER COPY 301028R

J.M. Engelbrecht
P. O. Box 780
Springbok
8240
REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za
RD 834 297 655 ZA
CUSTOMER COPY 301028R

C Geldenhuys
Nature Conservation Unit
Private Bag X1
Springbok
8240
REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za
RD 834 297 531 ZA
CUSTOMER COPY 301028R

J.R. Holtshausen
P. O. Box 1031
Springbok
8240
REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za
RD 834 297 633 ZA
CUSTOMER COPY 301028R

M. Jacobson
P. O. Box 755
Springbok
8240
REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za
RD 834 297 647 ZA
CUSTOMER COPY 301028R

E.M Jansen
P. O. Box 114
Springbok
8240
REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za
RD 834 297 620 ZA
CUSTOMER COPY 301028R

M.E. Luttig
P. O. Box 35
Springbok
8240
REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za
RD 834 297 616 ZA
CUSTOMER COPY 301028R

Municipal Manager
Nama Khoi Municipality
P. O. Box 17
Springbok
8240
REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za
RD 834 297 528 ZA
CUSTOMER COPY 301028R

B.J. Rich
P. O. Box 352
Springbok
8240
REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za
RD 834 297 602 ZA
CUSTOMER COPY 301028R

S.G. Ruiters
P. O. Box 123
Springbok
8240
REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za
RD 834 297 593 ZA
CUSTOMER COPY 301028R

J.H. Schmidt
P. O. Box 966
Okiep
REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za
RD 834 297 580 ZA
CUSTOMER COPY 301028R

P.P. Van den Heever
P. O. Box 168
Springbok
8240
REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za
RD 834 297 576 ZA
CUSTOMER COPY 301028R

V Van Dyk
Ward Councilor
P. O. Box 17
Springbok
8240
REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za
RD 834 297 559 ZA
CUSTOMER COPY 301028R

K Williams
14 Harfield Court, Claremont
Kennilworth
7700
REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za
RD 834 297 562 ZA
CUSTOMER COPY 301028R

Att: L. Karsten
Private Bag X16
Springbok
8240
REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za
RD 834 297 505 ZA
CUSTOMER COPY 301028R

Customer Copy

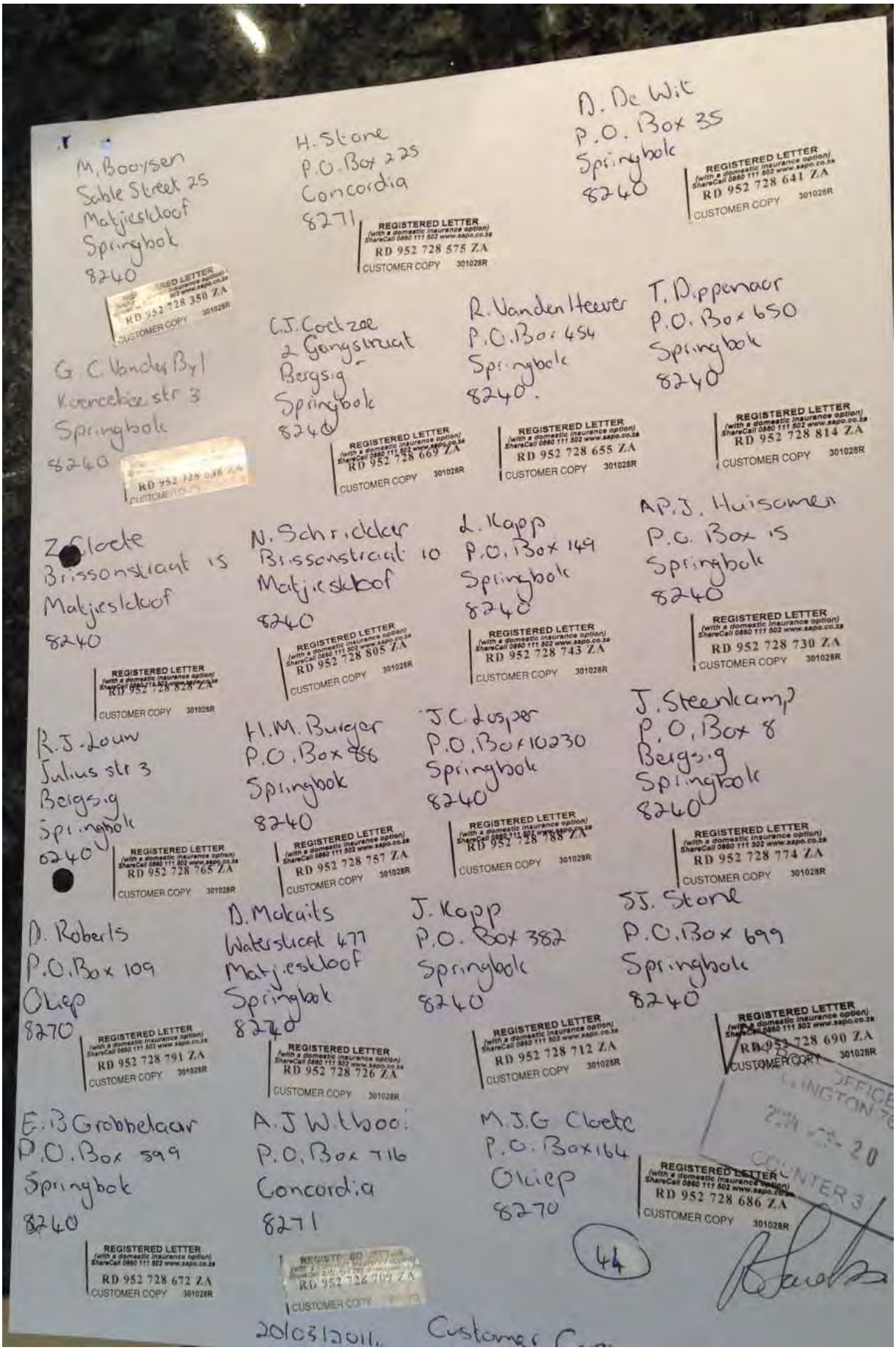
POST OFFICE WELLINGTON 2013 -03- 22 COUNTER 4

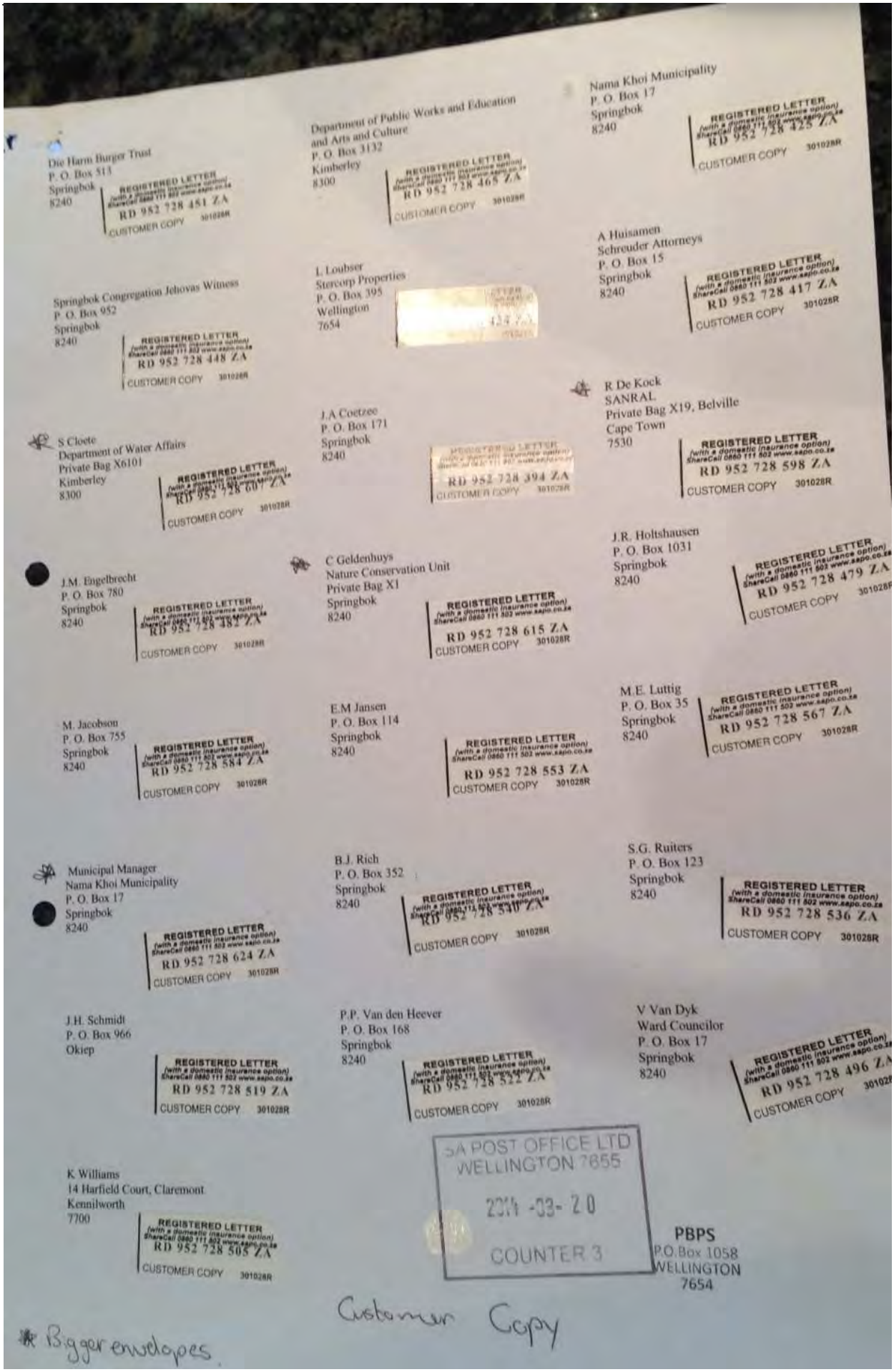
Bigger Envelope

PBPS
P.O.Box 1058
WELLINGTON
7654

22-03-2013

Appendix E4.5: Proof of notices to Authorities & I&AP's for FBAR via registered mail.





Die Harm Burger Trust
P. O. Box 513
Springbok
8240
REGISTERED LETTER
RD 952 728 451 ZA
CUSTOMER COPY 301028R

Department of Public Works and Education
and Arts and Culture
P. O. Box 3132
Kimberley
8300
REGISTERED LETTER
RD 952 728 465 ZA
CUSTOMER COPY 301028R

Nama Khoi Municipality
P. O. Box 17
Springbok
8240
REGISTERED LETTER
RD 952 728 425 ZA
CUSTOMER COPY 301028R

Springbok Congregation Jehovas Witness
P. O. Box 952
Springbok
8240
REGISTERED LETTER
RD 952 728 448 ZA
CUSTOMER COPY 301028R

L Loubser
Stercorp Properties
P. O. Box 395
Wellington
7654

A Huisamen
Schreuder Attorneys
P. O. Box 15
Springbok
8240
REGISTERED LETTER
RD 952 728 417 ZA
CUSTOMER COPY 301028R

R De Kock
SANRAL
Private Bag X19, Belville
Cape Town
7530
REGISTERED LETTER
RD 952 728 598 ZA
CUSTOMER COPY 301028R

J.A Coetzee
P. O. Box 171
Springbok
8240
REGISTERED LETTER
RD 952 728 394 ZA
CUSTOMER COPY 301028R

S Cloete
Department of Water Affairs
Private Bag X6101
Kimberley
8300
REGISTERED LETTER
RD 952 728 601 ZA
CUSTOMER COPY 301028R

J.M. Engelbrecht
P. O. Box 780
Springbok
8240
REGISTERED LETTER
RD 952 728 482 ZA
CUSTOMER COPY 301028R

C Geldenhuys
Nature Conservation Unit
Private Bag X1
Springbok
8240
REGISTERED LETTER
RD 952 728 615 ZA
CUSTOMER COPY 301028R

J.R. Holtshausen
P. O. Box 1031
Springbok
8240
REGISTERED LETTER
RD 952 728 479 ZA
CUSTOMER COPY 301028R

M. Jacobson
P. O. Box 755
Springbok
8240
REGISTERED LETTER
RD 952 728 584 ZA
CUSTOMER COPY 301028R

E.M Jansen
P. O. Box 114
Springbok
8240
REGISTERED LETTER
RD 952 728 553 ZA
CUSTOMER COPY 301028R

M.E. Luttig
P. O. Box 35
Springbok
8240
REGISTERED LETTER
RD 952 728 567 ZA
CUSTOMER COPY 301028R

Municipal Manager
Nama Khoi Municipality
P. O. Box 17
Springbok
8240
REGISTERED LETTER
RD 952 728 624 ZA
CUSTOMER COPY 301028R

B.J. Rich
P. O. Box 352
Springbok
8240
REGISTERED LETTER
RD 952 728 540 ZA
CUSTOMER COPY 301028R

S.G. Ruiters
P. O. Box 123
Springbok
8240
REGISTERED LETTER
RD 952 728 536 ZA
CUSTOMER COPY 301028R

J.H. Schmidt
P. O. Box 966
Okiep
REGISTERED LETTER
RD 952 728 519 ZA
CUSTOMER COPY 301028R

P.P. Van den Heever
P. O. Box 168
Springbok
8240
REGISTERED LETTER
RD 952 728 522 ZA
CUSTOMER COPY 301028R

V Van Dyk
Ward Councilor
P. O. Box 17
Springbok
8240
REGISTERED LETTER
RD 952 728 496 ZA
CUSTOMER COPY 301028R

K Williams
14 Harfield Court, Claremont
Kennilworth
7700
REGISTERED LETTER
RD 952 728 505 ZA
CUSTOMER COPY 301028R

SA POST OFFICE LTD
WELLINGTON 7655
2014 -03- 20
COUNTER 3

PBPS
P.O.Box 1058
WELLINGTON
7654

Customer Copy

* Bigger envelopes

Appendix E4.6: Proof of notices to I&AP's via emails.

Elanie Kuhn (office)

From:	Elanie Kuhn (office) [elaniem@iafrica.com]
Sent:	20 March 2014 02:36 PM
To:	'paulnewmannfm@gmail.com'; 'rfv143@gmail.com'; 'Lezel.losper@namakhoi.gov.za'; 'rudy.cloete@gmail.com'; 'petro.alley@gmail.com'; 'jacoetzee@kingsley.co.za'; 'plaasslaghuis@kingsley.co.za'; 'marius.cloete@namakhoi.gov.za'; 'bowerslusinda2 @gmail.com'
Subject:	FW: Proposed Namaqua mall - Erf 2883, Springbok - Ref: NC/BA/05/NAM/NAM/SPR1/2013 (NCP/EIA/0000205/2013)
Attachments:	Comments and Response March 2014.pdf; Letter to I&AP's DBAR 20-03-2014.pdf

Good day

Find the notification letter attached.

Vriendelike groete/Kind Regards
Elanie Kühn
Environmental Consultant
Pieter Badenhorst Professional Services
PO Box 1058
Wellington
7654
Cell: 0765840822
Fax: 0866721916

Elanie Kuhn (office)

From: Elanie Kuhn (office) [elaniem@iafrica.com]
Sent: 20 March 2014 12:58 PM
To: 'paulnewmanfm@gmail.com'; 'Garth.vanderbyl@namakhoi.gov.za'; 'Madmax2131 @gmail.com'; 'pieterdaan@hotmail.com'; 'frankvdh@namakwa-dm.gov.za'; 'annagraij@gmail.com'; 'ddo@cgrath.co.za'; 'dianne@weskusfilters.co.za'; 'jannie@rekenaardienste.co.za'; 'carel@cdvl.co.za'; 'cdventer1@gmail.com'; 'saaccloete@gmail.com'; 'margaretvisserw@yahoo.com'; 'Claudia.cloete@namakhoi.gov.za'; 'pmeissenheimer@gmail.com'; 'Bowerlusinda2 @gmail.com'
Subject: Proposed Namaqua mall - Erf 2883, Springbok - Ref: NC/BA/05/NAM/NAM/SPR1/2013 (NCP/EIA/0000205/2013)
Attachments: Comments and Response March 2014.pdf; Letter to I&AP's DBAR 20-03-2014.pdf

Good day

Find the notification letter attached.

Vriendelike groete/Kind Regards
Elanie Kühn
Environmental Consultant
Pieter Badenhorst Professional Services
PO Box 1058
Wellington
7654
Cell: 0765840822
Fax: 0866721916

Tracking:

Appendix E5.1: Actual comments received

Appendix E5.1.1: DBAR

Department of Water Affairs

water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

PRIVATE BAG X5912, UPINGTON, 8800
LOUISVALE ROAD, UPINGTON, 8800
TEL: 054 338 5800, FAX: 054 334 0205

F (054) 334 0205
E cloetes@dwa.gov.za

KK Sekwaila
(054) 338 5800

Date: 30 May 2013

PIETER BADENHORST PROFFESSIONAL SERVICES CC
P O Box 1058
Wellington
7654

DEPARTEMENT VAN WATERWESE
BENEDE-ORANJE WATERBESTUURSAREA
2013 -06- 26
LOWER ORANGE WATER MANAGEMENT AREA

Attention Elanie Kuhn

RE- BASIC ASSESSMENT REPORT FOR THE PROPOSED DEVELOPMENT OF BUSINESS PREMISES/NAMAKWA MALL ON FARM ERF 2883 IN SPRINGBOK, NORTHERN CAPE PROVINCE.

1. Introduction

The Department of Water affairs received a draft basic assessment report for the proposed development of business premises/ Namakwa Mall on Erf 2883, from Pieter Badenhorst Professional Services, requiring comment. The document was then reviewed with reference to the National Water Act (Act 36 of 1998) and the following are the comments;

As mentioned in the draft basic assessment, the Department takes note that the proposed activity on the above mentioned location is only the development at Springbok: development of business premises/ Namakwa Mall.

2. Distance from the water course

Please note that our Department rates all perennial and non perennial rivers together with all dry river beds and natural drainage and associated riparian areas extremely sensitive to development. An option of developing furthest away from the all water course would be the preferred option.

Page 1 of 4

Please note that no development should be done within 100 m or 1:100 year flood line of the Orange River/or any water course and 32m of their drainage line without authorization from our Department. The water course should be delineated in order to provide appropriate buffer to maintain such water course. The delineation should be done according to the appropriate Department of water affairs delineation document.

The construction camp shall not be located within the 1:100 year flood line or within 100 meters whatever is the greatest from any watercourse. Operation and storage of equipment within the riparian zone must be limited as far as possible.

Vehicles and other machinery must be serviced well above the 1:100 year flood line or within a horizontal distance of 100 meters from any watercourse or estuary. Oils and other potential pollutants must be disposed off at an appropriate licensed site, with the necessary agreement from the owner of such a site.

3. Storm Water management

Storm water must be diverted from the construction works and roads and must be managed in such a manner as to disperse runoff and to prevent the concentration of storm water flow. Where necessary, works must be constructed to attenuate the velocity of the storm water discharge and to protect the banks of the watercourse. Storm water control works must be constructed, operated and maintained in a sustainable manner throughout the project.

Increased runoff due to vegetation clearance and/or soil compaction must be managed, and steps must be taken to ensure that storm water does not lead to bank instability and excessive levels of silt entering the watercourse. Storm water leaving the applicant's premises must in no way be contaminated by any substance, whether such substance is a solid, liquid, vapour or gas or a combination thereof which is produced, used, stored, dumped or spilled on the premises.

4. Invasive alien vegetation

Alien vegetation must not be allowed to further colonise the area, and all new alien vegetation recruitment must be eradicated or controlled, using standard methods approved by the Department.

5. Design and layout alternatives:

A detailed layout plan need to be submitted to our Department showing all the facilities in the proposed development, distance from the Orange river and any dry river and bathroom facility.

Details of the final design must also be supplied as soon as a decision has been made, as the details of this factor may influence the environmental impact both during the construction and operational phases of the project

6. Construction

Details of the actual construction method must be stated as soon as possible, as it may significantly impact on the type and quantity of the construction waste and impact on the water resources.

Material with pollution generating potential must be limited in any construction activities. Any hazardous substances must be handled according to the relevant legislation relating to transport, storage and use of the substance.

Any spillage of any hazardous materials including diesel that may occur during construction and operation must be reported immediately to our Department.

7. Waste Management

Rubbish bins and Enviro loose/mobile toilets must be there and enough for the people on site during construction. The letter of consent from the municipality to allow contractor to empty the toilet facility at their sewer system should be submitted to our department.

All sewage, grey and wash water, as well as any waste generated during the construction phase of the facilities will be collected, contained and disposed of at the permitted and / or licensed facilities of the Local Authority and this must please be confirmed in writing by the local authority.

8. Rehabilitation

Soils that have become compacted through the activities of the development must be loosened to an appropriate depth to allow seed germination. The necessary erosion prevention mechanisms must be employed to ensure the sustainability of all structures and activities and to prevent in-stream sedimentation.

9. Water use entitlement

The Department notes that you have indicated that portable water will be used and stored during the activity; please take note that, in this instance, a water use license application needs to be submitted to our Department. However, if you have any water entitlement in the proposed property that you will want to use for this development, please inform our Department in writing as it will need to be converted.

Please be informed that Construction water may nct be obtained from any water course without necessary authorization

Should the above issues be considered and all the requested documents be submitted, the Department of Water Affairs has no objection to the proposed development.

Do not hesitate to contact any official should you need any further information

Yours faithfully

ACTING-DEPUTY DIRECTOR: LOWER ORANGE WMA
DATE: 26/06/2013

SterCorp Properties

PROPOSED DEVELOPMENT OF A BUSINESS PREMISES/NAMAKWA MALL ON ERF 2883, SPRINGBOK

NOTICE OF OBJECTION

TO: The Director Environmental Management,
Department of Environment and Nature Conservation
Northern Cape provincial Administration
Private Bag X6102
KIMBERLEY, 8300
Per Fax: 053 8313530

TO: Pieter Badenhorst Professional Services
PO Box 1058
WELLINGTON, 7654
Per Fax: 086 6721916
Per e-mail: elaniem@iafrica.com

Registration as an I&AP:

Stercorp Properties and the owners of Erf 4711 have registered with the Applicants representatives as Interested and Affected Parties and have as such been relying on receiving notice of the proposed Application when the same was launched. The Applicant however did not as such notified the Objectors in time and have subsequently addressed a letter to the Objector's attorneys, De Klerk & Van Gend, apologising for the fact and gave the Objector time until 27 May 2013 to lodge its objections. Acopy of the Letter is attached.

6A Waverley Business Park, Kotzee Road, Mowbray, 7700 - P O Box 395, Wellington, 7654
Tel: + 27 (021) 447 4601 - Fax: +27 (021) 447 4603 - e-mail: finance@stercorp.co.za

DIRECTORS: J.J. LOUBSER, B. MCLAGAN
SterCorp Properties (Pty) Ltd Reg. No. 1998/025522/07

The Objector:

Stercorp Properties(Pty) Ltd herein represented by Johann Loubser and Bruce MacLagan as a Directors do hereby submit our objection to the above application.

Johann Loubser, as duly authorized representative of Stercorp Properties (Pty) Ltd is the holder of Environmental Authority GNR 386 dated 23 October 2009 in respect of Erf 4711, Springbok for the construction of a shopping centre, Namakwa Mall and other activities on Erf 4711, Springbok. Earth work activities have already started on the said Erf and the construction of the first phase is about to start.

Stercorp has been appointed as developer of the property by the owners of Erf 4711, Springbok, i.e. Namakwa Winkelsentrum (Pty) Ltd and Campwell Hardware Vasco (Pty) Ltd (name changed to Springbok Shopping Centre (Pty) Ltd).

The owners of Erf 4711 have already entered into a Services Agreement with the Nama Khoi Municipality as the local authority in whose jurisdiction the Erf 4711 resorts on 11 April 2011. A copy of the Service Agreement is available. The Services Agreement deal with all the relevant aspects relating to the development which have been properly addressed and resolved.

Objection 1: Our first objection relates to the fact that the Applicant have used the exact same name that Stercorp is using for its shopping mall, i.e. Namakwa Mall (although the applicant sometimes spells it as Namaqua and in other instances Namakwa). In any event the pronounciation of the two names are exactly the same.

The use of this name by the Applicant has already caused confusion in the market. We have been contacted by a number of persons from the community wanting to know why we are again applying as we have already commenced. We maintain the name was deliberatey used to sow confusion and in the process to reduce possible objection to the Application.

Objection 2: It is common knowledge in Springbok that there is a lot of support for the development of the Namakwa Mall on Erf 4711, Springbok. The development of Erf 4711 will greatly enhance the economy of the Bergsig

Community and the Springbok Community as a whole. In fact it will greatly contibute to the economy of the Namakwa District. The Namakwa Mall will be a Regional Shopping Centre of about 20,000 square meters which will bring enormous economic activity to the area. The planned shopping centre on erf 2883 will not have the mass to become a Regional Shpping Centre but will remain locally focused. It is however common cause in the community that tere is no room for two shopping developments and the development of two will in fact cause both t become economically unviable.

Our specific comments on the Draft Basic Assessment Report (DBAR) for incorporation into your objection are set out below:

1. **Specialist Studies**

   The specialist studies provided, or not provided, in the DBAR are totally inadequate. Reference is made to a Heritage NID as well as the need for a botanical assessment, neither of which are supplied in the Draft BAR. There is no visual assessment nor is there any development perspective as seen from the N7 (a major route to Namibia). It cannot be expected of interested and affected parties to comment in any meaningful way at DBAR stage without all the information available. It is stated in the DBAR that heritage and botanical information will be supplied in the Final BAR stage, this is far too late in the process to adequately allow for public comment on the information. It is at the DBAR stage that all specialist information should be supplied to allow for adequate public assessment of the specialist information. It is then during the Final BAR stage where the responses to public comments/questions of clarity etc are supplied and on which the I&APs are again allowed to provide comment. By providing little or no specialist information in the DBAR stage the opportunities for informed comment by I&APs are curtailed and even prevented. The DBAR therefore quite clearly does not comply with the NEMA regulations and should be rejected by the Department of Environment & Nature

Conservation. More detail with repect to specialist studies is provided below:

a. **Botany:**

There is a botanical statement included in the Draft BAR which states that there may be any one of a 25 page list of plant species (over 1000 plant species) on the site and that a botanical survey is needed of the site to determine the botanical status of the site. **This was clearly a desk top study undertaken without any site visit**. The study does however identify the area as **a botanical diversity hotspot**. What has been provided at the Draft Basic Assessment Stage therefore is totally inadequate to allow meaningful public comment or any form of assessment by the Environmental Assessment Practitioner conducting the assessment (EAP). Based on the fact that the site is identified as a biodiversity hot spot as identified in the desk top botanical assessment and without any further botanical input provided the **precautionary principle** should be applied and the assumed botanical impact off the proposed Namaqwua Mall should be **SIGNIFICANTLY NEGATIVE**! It is noted that the assessment section of the DBAR (Section D, 2) states clearly that the impacts of the proposed mall on the botany of the site is unknown and details will be provided in the final BAR – this is not best practice and the information should clearly have been supplied at the DBAR stage! A bigger concern is that even although section D, 2 states that information is awaited to determine the botanical impacts (and bearing in mind the site is identified as potentially being a biodiversity hotspot in the desktop study), the DBAR in section D,3 states that the impact on the botany of the site is Medium to Low Negative but Low Negative after mitigation! This is clearly a contradiction, does not take the precautionary principle into account and is misleading to I&APs. **This is a fatal flaw in the DBAR and assessment process**.

b. Socio-Economic:

The socio-economic assessment provided is that the proposed Mall will provide jobs and uplift the community. The issue here is, however, that no mention is made anywhere in the DBAR of the fact that there is already an approval for another mall in Springbok. The EAP is aware of the approved mall but has not mentioned this in the DBAR. Springbok is a small town that is unlikely to be able to accommodate two malls of the scale proposed. In fact an additional Mall to the one already approved may have significant negative impacts on the town if the town cannot support both malls. It is a requirement of the process that Need and Desirability of the proposed project is assessed. It is clear that the need and desirability of a second mall in springbok is an issues that should be dealt with in depth in this DBAR but instead the approved mall is simply ignored and not even mentioned. **This is a fatal flaw in the DBAR and assessment process**.

c. Cultural and Historic Aspects

The DBAR once again states that information on the cultural and historic aspects of the proposal will be provided in the Final BAR stage. It cannot be expected of interested and affected parties to comment in any meaningful way at DBAR stage without all the information available. What has been provided at the Draft Basic Assessment Stage therefore is totally inadequate to allow meaningful public comment or any form of assessment by the Environmental Assessment Practitioner conducting the assessment (EAP). In section D,3 of the DBAR no reference is made in the environmental impact statement to the potential heritage impacts.. **This is a fatal flaw in the DBAR and assessment process**.

d. **Visual Impact**

The DBAR states that Visual impact is not seen as a significant impact, however no perspectives of the Mall from the N7 are supplied or if they are they are not clearly shown. From the figures provided is seems that the Mall in fact turns its back on the N7 and the views of the Mall from the N7 will be of the deliveries perspective of the mall. Not only is this likely to be an ugly view the site has a significant slope to it and is situated above the N7. This will mean that the site is significantly exposed to the N7. With the N7 being the major route to Namibia and used by commercial vehicles as well as a significant number of tourists there is definitely likely to be a negative impact on this important route. For the DBAR to state that no mitigation is necessary cannot be correct and has clearly not been assessed correctly. **A detailed visual impact assessment should be undertaken and supplied in the revised DBAR.**

2. **Access**

Access to the mall is proposed over a portion of land not owned by the applicant. Has the landowner of this portion of land given permission for this access point and has the landowner even been informed of the proposed crossing of the land. **Surely if clarity is not provided with respect to access to the site then this is a potential fatal flaw in the project?**

3. **Services**

Only extremely limited services information is provided in the DBAR and no electrical information is supplied.

a. **Water:**

Statements are made as to the fact that a new reservoir if required to supply the proposed Mall. The question that is not

answered, however, is whether there is sufficient water to supply the development at all, even if a new reservoir is built. In terms of need and desirability, is there a need to build a second mall in springbok that will use a significant amount of water when the town can only support the one approved mall?

b. **Sewer**

Reference is made to the sewer pipelines and their capacity. No clarity is provided on whether the sewerage treatment works has capacity to accommodate the sewerage from the proposed Mall. In terms of need and desirability, is there a need to build a second mall in springbok that will use a significant amount of sewer capacity when the town can only support the one approved mall?

c. **Stormwater**

Broad statements are provided with respect to stormwater but no details are provided. A mall of this size and expected hard surface area will generate a significant amount of stormwater during rain events and this stormwater needs to be dealt with. Broad statements such as the fact that the stormwater will be diverted along the northern boundary of the site into an existing culvert underneath the N7 does not allay fears. No volumes of stormwater that will be generated on site are supplied and no comment is made as to whether the culvert under the N7 and stormwater structures further downstream have sufficient capacity to accommodate the stormwater that will be generated on site.

d. **Bulk Earthworks**

The site is on a significant slope and significant earthworks may be required. If significant cut is required, where will the spoil material be disposed of.

e. **Electricity**

No information is provided in the DBAR as to the electricity requirements of the mall and the availability of the required electricity. Will a new power line be required? In terms of need

and desirability, is there a need to build a second mall in springbok that will use a significant amount of scarce electricity when the town can only support the one approved mall?

The comments raised above indicate that the **DBAR lacks critical information on which I&APs can base any meaningful comment**. It is clear that the EAP is in a hurry and rather than wait to provide I&APs with adequate information has provided an incomplete report for public review. **The report is therefore fatally flawed and should be rejected. It should be resubmitted as a revised Draft BAR when further information is included.** A Final BAR should not be submitted for public comment until such time as the I&APs have had an opportunity to comment on a comprehensively revised DBAR.

SIGNED AT CAPE TOWN ON THIS 24TH DAY OF MAY 2013

JOHANN LOUBSER

SCHREUDERS

André Petrus Jansen Huisamen B. Comm L.L.B Elretha Huisamen B.A. L.L.B.
Janice Zullerine Osborne B. Comm L.L.B

Prokureurs, Notarisse & Transportbesorgers – Attorneys, Notaries & Conveyancers

Anico-gebou, Voortrekkerstraat
Posbus 15
Telefoon (027) 712 2051
Telefax Nr. (027) 712 3759
Direkte Faks Nr. 0865286061

SPRINGBOK 8240

E-pos: kas@schreuders.co.za

BTW Nr. / VAT No. 4040109144

Anico Building, Voortrekker Street
P O Box 15
Telephone (027) 712 2 051
Telefax No. (027) 712 3759
Direct Fax No. 0865286061

U Verw./Your Ref.: **MR PIETER BADENHORST**

Ons Verw./Our Ref.: A HUISAMEN/Juanita

Datum/Date: 20 May 2013

Fax: 086 6721 916
E-mail: elaniem@iafrica.com

Messrs Pieter Badenhorst Professional Services CC
P O Box 1058
WELLINGTON
7654

Dear Sir

BASIC ASSESSMENT RESPONSE FORM
PROPOSED NAMAQUA MALL ON ERF 2883 SPRINGBOK

We address you at the instance of various clients of our firm, being registered owners of various properties in Springbok.

1. ZONING:

   The Zoning Certificate of Nama Khoi Municipality is incorrect. The land was always earmarked for residential development in accordance with the Spatial Development Plan of the Municipality. It was never rezoned To Business Zone I and it was never on tender for sale for business purposes. We therefor deny the legality of the zoning certificate as Business Zone I.

2. TENDERS:

   We object to the Tender Process which was followed by the local Municipality. The First Tender Process during June, July 2012 was blatantly fraudulent which led to a Second Tender Process which was advertised by the Municipality during the Moratorium Period of November; December 2011 and January 2012. We believe that again only one tender emerged as the tender was explicitly for a Namaqua Shopping Mall, which in itself is a fraudulent advertisement and tender.

2/...

3. DEED OF SALE:

The Basic Assessment Report on Page 157 refers to a Deed of Sale as Annexure "B". However, the Deed of Sale is not annexed to the report and consequently it is not possible to ascertain whether this land was sold by the Municipality at a market related price or below a market related price. A rumour has it that this land was sold below market related price and consequently it is necessary to make the Deed of Sale public for comment by all interested parties.

4. MAIN ACCESS ROAD:

The Main Access Road to the development from Voortrekker Street over Erf 931 Springbok is not viable at all. Erf 931 Springbok is the property of the Government of the Republic of South Africa who will not consent to a servitude being registered over its own property as this will be to its own detriment. There is no proof by the developer that the Government consented to this servitude. The access road over Erf 931 Springbok does not link up with the President Street Intersection as referred to in the report. This would then result in two (2) different intersections i.e. the President Street Intersection and the Namaqua Mall Intersection very near to its other. This is not a viable option at all with specific reference to the traffic chaos that will entail.

5. SERVICES:

Springbok has a serious water problem and shortage due to a failing infra-structure that cannot supply and fulfil the water needs for Springbok. Springbok has been in the news for the past two (2) years on a regular basis due to water crisises. During December 2012 / January 2013 Springbok and surrounding towns were without water for approximately three (3) weeks as was the position in January and February of previous years. The existing infra-structure is unable to supply the current water needs for Springbok and surrounding towns. It therefor speaks for itself that the existing infra-structure will not be able to supply water at all to the proposed development.

6. SOLID WASTE:

The local Municipality is unable to remove the existing solid waste of Springbok and it therefor speaks for itself that the Municipality will not be able to remove the 2.5m³ of solid waste per day from the shopping mall.

7. ELECTRICITY:

The supply of electricity by the Municipality is also a big problem to the extent that the Municipality acknowledge in its Draft IDP 2013/2014 that the Namaqua Mall has not been constructed because there is not electricity available to power the mall. Owners of properties in Springbok are unable to build houses on vacant land because of the inability by the Municipality to supply electricity. Building plans are approved subject to the endorsement by the Municipality that it is unable to supply electricity. The Municipality further fails to make due payments to Eskom which resulted in Eskom threatening to cut the power to the local Municipality.

3/...

8. RESIDENTIAL DEVELOPMENT:

This property was all along earmarked for residential development and the previous Council held a public meeting for the development of middle-cost and rental housing on this property. The statement that a residential development on this property is not a viable option financially is without any substance and not true. There is a critical shortage of residential erven in Springbok and this land was supposed to fulfil this demand.

9. SPATIAL DEVELOPMENT PLAN:

The Spacial Development Plan by the local Municipality makes no provision for the proposed shopping mall on Erf 2883 Springbok and as such this development should not be continued with.

10. VISUAL IMPACT:

The visual impact of a single storey building with a maximum height of 21m shall be catastrophic. The incline from Voortrekker Street to Kokerboom Street is about 15m and if a shopping mall is erected on the koppie adding another 21m, the visual impact of ±35m- 40m will be catastrophic and should not be allowed.

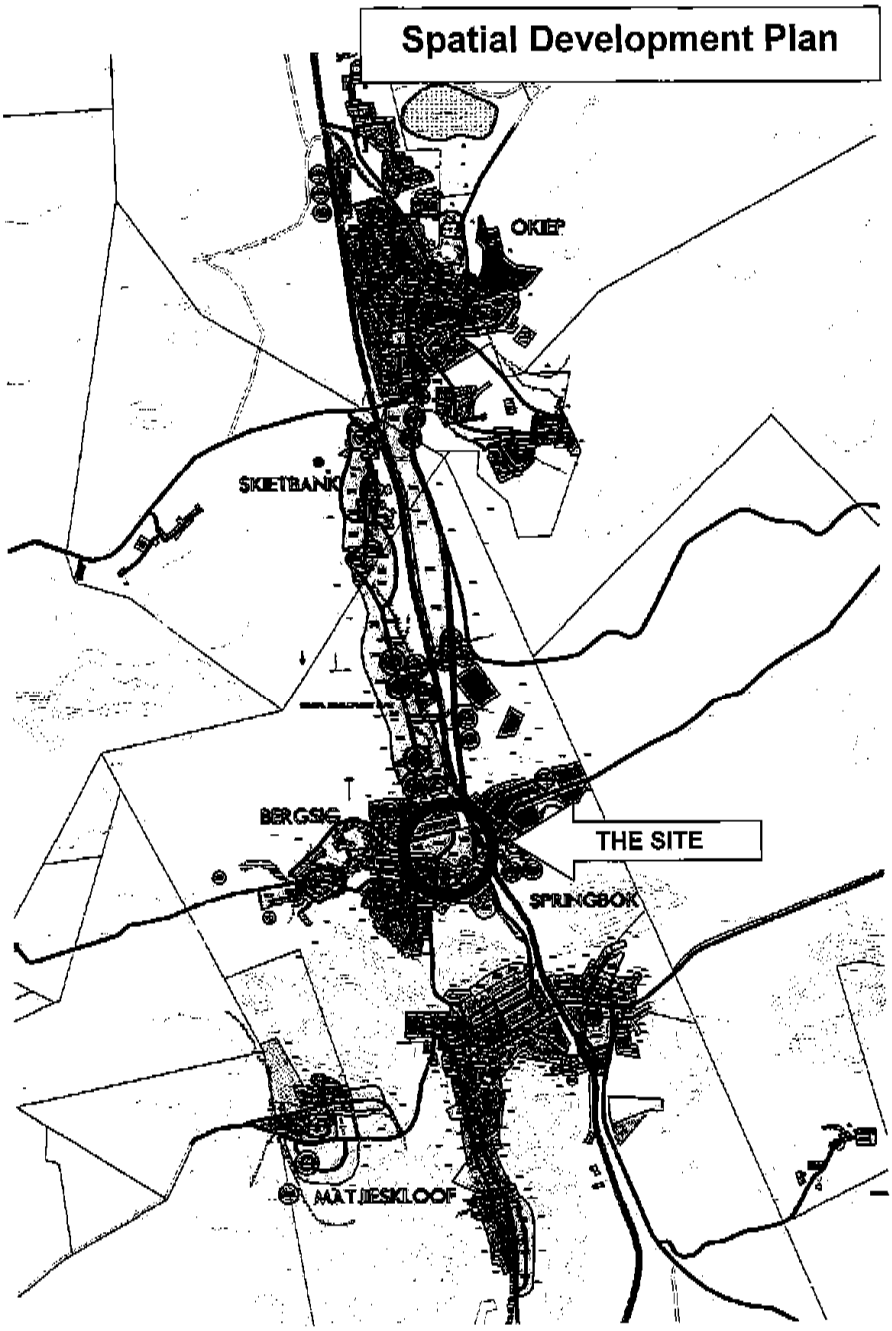
Yours faithfully
SCHREUDERS

Per:
A HUISAMEN

▪ Brain-drain as individuals from the Northern Cape migrate from scarcity of business, finance, technical skills, and so forth	drought resistant crops) ▪ Eco-tourism ▪ Expand on and coordinate SMME support services

Opportunity Potential Analysis

	OPPORTUNITIES
Mining & Quarrying	▪ Mining is a declining sector with major mining companies pulling out of the area. There are some minerals in the Nama Khoi LM that have never been exploited but feasibility studies would need to be conducted if these opportunities were to be taken forward ▪ There are also limited skilled people in the Nama Khoi LM and this may pose a threat to the sustainability of small-scale mining projects ▪ There is a possibility to negotiate with large mines to improve small miners access to claims but the lack of skills will need to be resolved ▪ Working granite dumps ▪ Recycle copper and granite dumps ▪ Local contracting rehabilitation of mining sites ▪ Building factories to mill minerals ▪ Milling minerals local adds more value ▪ Institutional arrangements to stimulate economic development ▪ Employing local unemployed in projects
Wholesale & Retail Trade, Catering & Accommodation	▪ Community shopping centres ▪ The trade of small scale agricultural produce ▪ Arts and crafts for the tourism market ▪ The Namakwa Mall has not been constructed yet because there is not enough electricity available to power the Mall. Renewable energy plants will not be implemented soon so there is the option of looking at a solar roof for the Mall. ▪ There is also the need for better support of SMMEs to start their own businesses and continual support to ensure the sustainability of these ventures. This will have to be linked to the availability of basic infrastructure (Development of an SMME strategy) ▪ Small-scale industrial opportunities for local business in Springbok
Community, Social & Personal Services; & General Government	▪ There is a shortage of qualified medical staff / personnel and the ambulance services are very poor. ▪ Education, public transport, water and communication services are also poor, especially in the more remote settlements ▪ There are opportunities then to focus on water saving technologies, renewable energy, better educational opportunities, better health services, upgrading roads and communication infrastructure, and increasing job opportunities to improve the tax base of the municipality ▪ Skills Centre with a database of local labour & skills that can be used by outside contractors or local businesses
Finance, Insurance, Real Estate & Business Services	▪ Opportunities exist to expand business services within Springbok, Bergsig and Matjieskloof so as to lessen the dependence of having to travel to Upington; and then to improve public transport so that remote communities can have access to these services


Spatial Development Plan
OKIEP
SKIETBANK
BERGSIG
THE SITE
SPRINGBOK
MATJIESKLOOF

THE SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LTD
Reg. No.1998/009584/06

Western Region
Parc du Cap, Building 5, cor. Mispel Str & Willie van Schoor Avenue, Bellville, 7530
Private Bag X19, Bellville, South Africa, 7530
Tel +27 (0) 21 957 4600 Fax +27 (0) 21 946 1630
Head Office Tel +27 (0) 12 844 8000 Fax +27 (0) 12 844 8200
Offices in Menlyn - Pretoria, Pietermaritzburg, Port Elizabeth

Reference:	W11/4/3-14/1-2	**Fax Number:**	+27 (0) 21 946 1630
Date:	15 April 2013	**Direct Line:**	+27 (0) 21 957 4600
Email:	dekockr@nra.co.za	**Website:**	www.sanral.co.za

Me E Kühn
Pieter Bardenhorst Professional Services CC
Environmental Consultant
PO Box 1058
WELLINGTON
7654

Dear Me Kühn

PROPOSED DEVELOPMENT OF A BUSINESS PREMISES/NAMAKWA MALLON ERF 2883, SPRINGBOK

Thank you for your letter dated 22 March 2013.

The South African National Roads Agency SOC Limited (SANRAL) has the following comments:

SANRAL requires that the culvert through the N7 be checked to determine whether it will be adequate to drain the increased run-off from the fully developed Erf 2883, Springbok.

The Traffic Impact Assessment (TIA) recommendations must be implemented. Any cost associated with the above will be for the applicant's account.

Yours faithfully

René de Kock
STATUTORY CONTROL
Docs 473081

Appendix E5.1.2: FBAR

No additional comments received.

Appendix E5.2: Responses to comments received

Appendix E5.2.1: DBAR

Dr Helga van der Merwe

Elanie Kuhn (office)

From: Jac & Helga van der Merwe [soekop@hantam.co.za]
Sent: 05 September 2013 07:04 PM
To: 'Elanie Kuhn (office)'; 'Cobus Louw Louw'; pietera@itse.co.za; danie@hvprop.co.za; derek@ingplan.co.za; 'Leon Smith'
Cc: 'Pieter Badenhorst'
Subject: RE: Namakwa Mall

Follow Up Flag: Follow up
Flag Status: Completed

Dear Elanie,

My comments are as follows:

- The original input into the Draft BAR was made solely based on desktop information i.e. the site is situated in the Succulent Karoo Biome which is a hotspot. A species list for the entire grid was included and a statement that the list was for the entire grid and species actually occurring on site would be habitat dependent.
- Following two sites visits, at times of the year when most of the species (especially geophytes) should be visible, a comprehensive species list was compiled for the site.
- Thus the impact of the proposed development could be rated as medium negative, however, with mitigation (the planned search and rescue efforts) the impact could be rated as low negative.

Please feel free to contact me should you require additional information.

Kind regards,
Helga

Dr Helga van der Merwe (Pr.Sci.Nat.)
P.O. Box 1
Calvinia
8190
Tel/Fax: 027 3412578
Email: soekop@hantam.co.za

From: Elanie Kuhn (office) [mailto:elaniem@iafrica.com]
Sent: 04 September 2013 10:08 AM
To: 'Cobus Louw Louw'; pietera@itse.co.za; danie@hvprop.co.za; 'Jac & Helga van der Merwe'; derek@ingplan.co.za; 'Leon Smith'
Cc: 'Pieter Badenhorst'
Subject: RE: Namakwa Mall

Apologies. Please submit responses by end of work day Thursday 05 September 2013.

From: Elanie Kuhn (office) [mailto:elaniem@iafrica.com]
Sent: 03 September 2013 04:39 PM
To: 'Cobus Louw Louw'; Pieter Arangie(pietera@itse.co.za); 'danie@hvprop.co.za'; 'Jac & Helga van der Merwe'; 'derek@ingplan.co.za'; 'Leon Smith'
Cc: 'Pieter Badenhorst'
Subject: FW: Namakwa Mall

Hi all

Can everyone please address the comments outlined for your area of expertise as outlined below:

Pieter Arangie -Traffic – Blue
Danie – Red and yellow

1

Appendix E6: Comments and Responses table

PROJECT: PROPOSED NAMAQUA MALL ON ERF 2883, SPRINGBOK

SUMMARY OF ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

*Prepared in terms of regulation 28(1)(h)(iv) of the Environmental Impact Assessment Regulations, 2010 (G.N. 543 of 18 June 2010) by Pieter Badenhorst Professional Services (the "**EAP**")*

IMPORTANT NOTES:

1. It is noteworthy that at the Open Day held as part of the public participation process, commentators generally expressed support for the proposed Mall on erf 2883 Springbok. They identified a number of positive aspects of the proposed development (e.g. community upliftment in the form of job creation, the promotion of tourism, an improved convenience network, enhancement of the local economy, etc.). Copies of letters received in this regard have been included in the BAR.

2. Although the advantages of a proposal is a relevant consideration, the focus in this summary is on the issues identified by interested and affected parties ("**I&APs**") that should be investigated, evaluated or assessed. Those issues will be summarised below.

3. The following entities/ individuals raised concerns:
   - 3.1. The Department of Water Affairs: Lower Orange Water Management Area (**The Department**)
   - 3.2. SterCorp Properties (Pty) Ltd per Mr J Loubser of (**SterCorp**)
   - 3.3. The South African National Roads Agency Ltd (**SANRAL**)
   - 3.4. J Hendriks (**Hendriks**)
   - 3.5. P D Cilliers (**Cilliers**)
   - 3.6. F E Van Den Heever (**Van Den Heever**)
   - 3.7. Schreuders Attorneys (**Shreuders**)

4. Copies of all letters received from interested and affected parties are included in the BAR. The decision-makers are required to read those letters. The EAP therefore does not find it necessary to quote the comments of the commentators *verbatim* in the summary below. The summary of comments is merely an honest attempt to correctly capture the essence of the concerns raised by interested and affected parties.

5. Public participation plays a particularly important role in the environmental process. It serves as a "safety-net" to identify and highlight matters that the EAP potentially may have overlooked during the investigation and assessment of the likely environmental impact of

proposed listed activities. We therefore welcome comments from the public. Mr J Loubser commented on behalf of SterCorp Properties (Pty) Ltd (the holder of environmental authorisation in respect of an approved Mall on erf 4711 Springbok). He has gone out of his way to launch a very serious challenge to the current process. His comments were particularly helpful to us in our review of our own approach.

6. The main focus of the commentators that identified issues were environmental concerns (e.g. alleged lack of critical information regarding specialist studies to adequately allow for public comment, the visual impact, adequacy of bulk municipal services, solid waste removal and road infrastructure), planning issues (e.g. the validity of the zoning certificate and municipal planning for the area), viability concerns (e.g. need and desirability of two malls), and procedural concerns regarding the sale of erf 2883 (e.g. the municipal tender process followed).

7. The economic and social fields of interest mostly did not feature in the comments received from those who oppose the proposed development. Our National Constitution recognises the need for the protection of the environment and the need for social and economic development. It does not confine itself to the protection against conduct harmful to health or well-being, but explicitly recognises the obligation to promote justifiable economic and social development. The Constitution envisages that environmental considerations will be balanced with socio-economic considerations through the ideal of sustainable development.

8. Economic development, social development and the protection of the environment (the so-called *triple bottom line*) are considered the pillars of sustainable development. The idea that environmental and developmental protection must be reconciled is central to the concept of sustainable development. It implies the need to reconcile and accommodate the three pillars of sustainable development. It is regarded as a "conceptual bridge" between the right to social and economic development and the need to protect the environment. It is against this background that we have prepared our response, as the decision-maker is required to strike a balance between the many competing interests in the ecological, economical and social fields.

9. The following **abbreviations** are used in this summary:
   - 9.1. BAR – the Basic Assessment report
   - 9.2. NEMA – the National Environmental Management Act
   - 9.3. VIA – Visual Impact Assessment

10. **Grouping of comments**
For discussion purposes the comments have been grouped under following headings, namely A. Procedural concerns; B. Environmental concerns; C. Municipal Planning issues; D. Viability concerns; and E. Other Concerns.

11. **Appendices attached**
   - 11.1. Visual statement by Megan Anderson Landscape Architect dated July 2013 – Appendix D5 of the FBAR.
   - 11.2. Letter from NamaKhoi Municipal Manager dated 26 March 2013 – Appendix G1.1 of the FBAR.
   - 11.3. Letter from NamaKhoi Municipal Manager dated 21 May 2013 – Appendix G1.1 of the FBAR.

11.4. Letter from Dr Helga van der Merwe dated 5 September 2013 – Appendix – Appendix E5.2 of the FBAR.
11.5. Final Report (Botanical Input) by Dr Van Der Merwe dated 29 August 2013 – Appendix D1 of the FBAR.
11.6. Notification of Intention to Develop dated 25 February 2013 – Appendix D6 of the FBAR.

ISSUES RAISED	**RESPONSE OF THE EAP**
A. PROCEDURAL CONCERNS	
<u>The sale of erf 2883 (e.g. the municipal tender process followed).</u> **Van Den Heever**– questions the procedures and processes followed for disposal of land **Schreuders**– objects to the tender process which was followed by the local municipality	The purpose of the BAR is to investigate and assess the likely environmental impact of proposed listed activities. Whether or not the land was lawfully alienated is a question that falls to be answered by our Courts. It falls outside the scope of the environmental process.
<u>The environmental process</u> SterCorp as registered I&AP only received notification of the application late, received an apology and was afforded additional time to lodge its objections.	We regret that SterCorp only received late notification, tendered our apology and afforded additional time to it to lodge objections. In the circumstances SterCorp suffered no prejudice.
B. ENVIRONMENTAL CONCERNS	
The Department - the Department rates all rivers (including dry river	The Department's requirements have been noted. Suffice it to say

beds), natural drainage and associated riparian areas extremely sensitive to development and prefers development furthest away from all water courses. It requires that storm water must be adequately managed (e.g. to ensure that increased runoff does not lead to bank instability and excessive levels of silt entering the watercourse); that invasive alien vegetation must be eradicated or adequately controlled, using approved methods; that a detailed layout plan showing all the proposed facilities and required particulars must be submitted to the Department; that details of the actual construction method must be submitted to the Department; that the use of material with pollution generating potential must be limited and spillage of any hazardous materials must immediately be reported to the Department; that the collection, containment and disposal of waste generated during the construction phase must meet with the Department's requirements; and that the necessary erosion prevention mechanisms must be employed to prevent in-stream sedimentation and sustainability of structures. A water use licence needs to be obtained for the use and storage of potable water. Construction water may not be obtained from any water course without the necessary authorisation.	that the ERF 2883 is approximately 90 km away from the Orange River. It is located a considerable distance away from any other known river (perennial or non-perennial), there is no wetland or dry river beds on the property and it does not form part of a natural drainage area. The storm water runoff from the N14 is an unnatural situation. All necessary licences, permits and approvals will have to be obtained from the competent authorities in order to undertake the proposed development in a lawful manner.
<u>Specialist studies - alleged lack of critical information regarding specialist studies to adequately allow for meaningful public comment, with the result that it is fatally flawed and should be rejected</u> **<u>SterCorp</u>** – A Heritage NID, Botanical Assessment, visual assessment and development perspective as seen from the N7 should have been supplied in the Draft BAR to allow for adequate public assessment of the specialist information and informed comment. It is far too late to supply same in the final BAR stage to allow for	It must be borne in mind that a full environmental impact assessment is not required. Only a basic impact assessment has been undertaken and only the inputs and recommendations made by specialists to the extent considered necessary were included in the draft BAR. The draft BAR complies with the applicable legislation, policies, guidelines and planning instruments. The findings of the heritage specialist as recorded in her notification to the competent heritage authority (Appendix 11.6) are recorded further below. The findings of Dr Van Der Merwe (Final Report - Botanical Input – Appendix 11.5) are recorded below. Also see the findings of Megan Anderson in respect of the potential visual impact

public comment.	of the proposed development below. The final BAR will be made available to interested and affected parties for public comment.
SterCorp – The botanical statement included in the draft BAR was clearly a desk top study undertaken without any site visit, fails to identify the area as a botanical diversity hotspot, is totally inadequate to allow meaningful public comment or any form of assessment by the **EAP**. Based on the precautionary principle the assumed botanical impact of the proposed development should be significantly negative.	Appendix 11.4 refers. Dr Van Der Merwe has confirmed that the original input into the draft BAR was solely based on desktop information (i.e. the site is situated in the succulent Karoo Biome which is a hotspot). A species list was included and a statement that the list was for the entire grid and species actually occurring on site would be habitat dependent. Dr Van Der Merwe conducted two site visits, at times of the year when most of the species (especially geophytes) should be visible and compiled a comprehensive species list for the site. She rated the impact of the proposed development as medium negative and pointed out that, with mitigation (the planned search and rescue efforts) the impact could be rated as low negative. See the final report by Dr Van Der Merwe (Appendix 11.5)
SterCorp – Information on cultural and historical aspects have not been included in the draft BAR. The available information is totally inadequate to allow meaningful public comment or any form of assessment by the EAP. The failure to mention potential heritage impacts in the draft BAR is a fatal flaw.	Cindy Postlethwayt was appointed to assess the potential impact of the proposed development on cultural heritage values. In her section 38 notification of intent to develop to the competent heritage authority, she confirmed that the property could not be deemed to be a heritage resource and should not be graded. In terms of her heritage assessment she found that it is highly likely that nothing of intrinsic heritage significance exists. The affected portion of the site contains no structures older than 60 years, no structures of heritage significance, and the immediate landscape does not illustrate links to historic landscape patterns of significance. Furthermore that there is no direct significant association with an historic person, group or event. Given the history of the area, the disturbed nature of the site, and the lack of 'triggers' to suggest the possible presence of archaeological material of significance, she suggested that an Archaeological Scoping report is not necessary. Whilst the development will transform a vacant site, she found that it will have no impact upon heritage values as the context is not considered to

	be heritage sensitive. This was submitted to SAHRA and the response pending and will be included in the FBAR submitted. The final BAR will be made available to interested and affected parties for public comment.
the visual impact **SterCorp** – No perspectives of the mall from the N7 are supplied; if the Mall turns its back on the N7 it will be an ugly view; it will be significantly exposed to the N7 and is likely to have a negative impact on this important route; For the draft BAR to state that no mitigation is necessary cannot be correct and has clearly not been assessed correctly. **Schreuders**: the visual impact of s single storey building with a maximum height of 21m shall be catastrophic and should not be allowed.	Appendix 11.1 refers. Megan Anderson is of the opinion that the proposed development will not visually impact the overall scenic resources of the town of Springbok as it will be developed on the lower lying area, in keeping with the existing development, with the surrounding Koperberg Mountains maintaining their integrity. However, she regards the significance of the anticipated visual impacts of the proposed structure on the character of the area as "medium" which will only have an influence on the decision-making if not mitigated. In her considered opinion there will be a moderate alteration of the environment which can be reduced by implementing appropriate mitigation measures. Specific measures have been proposed to mitigate any potential negative visual impact of the development to acceptable levels. The final BAR will be made available to interested and affected parties for public comment.
Service issues (adequacy of bulk municipal services) **SterCorp** states thatonly extremely limited services information is provided in the DBAR, that no electrical information is supplied and that the DBAR does not provide information on the electricity requirements of the mall and the availability of the required electricity.	Appendix D2 (Services Report) in the draft BAR refers. Also see Appendix 11.2. It confirms that more than 2 MVA electric power is available on the property.

Cilliers states that an electricity study/ impact has not been presented. **Van Den Heever** questions whether, given the problems with bulk services, supply is guaranteed? **Schreuders** claim that vacant residential plots cannot be developed due the municipality's inability to supply electricity. **SterCorp** raisesthe question whether there is sufficient water to supply the development (even if a new reservoir is built) and whether the sewerage treatment works has capacity to accommodate the sewerage from the proposed Mall? **Schreuders** state that the existing infrastructure is unable to supply the current water needs for Springbok and the surrounding towns and will not be able to supply water at all to the proposed development. **SterCorp**states that no volumes of stormwater that will be generated on site are supplied and no comment is made as to whether the culvert under the N7 and stormwater structures further downstream have sufficient capacity to accommodate the stormwater that will be generated on site. (**SANRAL** requires that the culvert through the N7 be checked to determine whether it will be adequate to drain the increased run-off from the fully developed erf 2883 Springbok) **SterCorp**asks where the spoil material from the significant bulk earthworks that will be required, will be disposed of?	Appendix 11.3 confirms that the property will have adequate access to water, electricity and sanitation services. Shopping malls generate a very limited volume of sewerage. The sewerage pump station will be increased in terms of additional storage capacity (less than 30 cubic metres). The local municipality is satisfied that the sewerage works have adequate capacity to cater for the additional sewerage expected to be generated by the proposed development. The Municipality is also satisfied that the water supply is adequate to cater for the needs of the Mall. The only work which the municipality requires to be undertaken relating to the water distribution network is the upgrading of the water pumps, which must be done before or during the construction of the Mall. Confirmation was obtained from UDS Africa that the culvert under the N7 has adequate capacity to deal with the expected additional stormwater flow from the property once fully developed. UDS Africa furthermore confirmed that, when the final design work is undertaken provision will be made for facilities to attenuate and detain stormwater on-site(e.g. using permeable paving) to ensure that pre- and post-development flows remains the same. During the detailed bulk earthworks design the optimum platform height will be used and excavated material will be employed to create the platforms required.
<u>solid waste removal</u> **Schreuders**state that the municipality is unable to remove the existing solid waste of Springbok and will not be able to remove the	We suggest that the municipality is best placed to say whether or not is able to remove the additional solid waste expected to be

additional 2.5 cubic metres per day from the shopping mall.	generated by the proposed Mall. The volume of solid waste which the proposed Mall is expected to generate is insignificant to the daily volume of solid waste which the municipality is required to remove. It is noteworthy that if the municipality should be unable to remove the existing solid waste it would likewise be unable to remove the additional waste to be generated by the Mall approved for erf 4711 Springbok. Suffice it to say that the municipality is satisfied that it has the capacity to undertake the removal of solid waste to be generated by the proposed development.
C. MUNICIPAL PLANNING ISSUES	In terms of our understanding municipal planning is a local government matter and the local municipality has the executive authority in respect thereof.
<u>the validity of the zoning certificate</u> **Schreuders** – the municipality's zoning certificate is incorrect – the property was never rezoned to Business Zone I. **Schreuders** – there is a critical shortage of residential erven in Springbok and this land was supposed to fulfil this demand.	The purpose of the BAR is to investigate and assess the likely environmental impact of proposed listed activities. The comments made by Schreuders concern municipal planning matters as opposed to environmental concerns. Be that as it may, we have established that the rezoning of Erf 2883 to Business Zone 1 for use as a business complex appeared in "ThePlattelander" on 7 February 2006. The local municipality has also confirmed that the property is indeed zoned Business Zone 1. We have no reason to question this, coming from the competent authority for municipal planning matters.

municipal planning for the area **Schreuders** – the property was always earmarked for residential development in terms of the municipal spatial development framework. The **SDF**makes no provision for a shopping mall on the property. **Van Den Heever** – the proposal conflicts with another Mall planned for Bergsig.	We have also established that the SDF shows Erf 2883 for "Business and/ or Residential" use. In terms of our understanding the SDF is in any event by definition a "broad brush" policy plan providing guidelines to promote the orderly development of the area. In other words, it is not cast in stone. In terms of our understanding "need" is not a valid criterion when deciding land use applications in terms of the Land Use Planning Ordinance. For purposes of the Bar we will restrict our further comment relating to need below to what we have to say on "need and desirability" as environmental considerations.
Access **SterCorp** – access to the Mall is proposed over a portion of land not owned by the applicant. Has the landowner given permission for this access point? **Schreuders**: the main access road to the development from Voortrekker Street over Erf 931 (government property) is not viable – there is no proof that the government has consented to a servitude AND the access road over Erf 931 does not link up with the President street intersection as referred to in the DBAR. **Cilliers** – Kokerboom Street is non existing.	Discussions between the Mnr Pieter Arangie and the Department of Public works took place. We are currently awaiting the written confirmation from the Department of Public Works. This will be included in the FBAR submitted. As above. Kokerboom is not a non-existing road. It was however outlined in the layouts that it is adjacent to the site. This was incorrect as there is an open piece of land in between Kokerboom Road and the proposed development. This was corrected.
Parking **Hendriks** – sufficient parking should be provided	Public parking will have to be provided in accordance with the requirements of the competent authority that apply to developments

Traffic **Hendriks** – The problems with the existing traffic in Springbok is of major concern.	of this nature. The SDP for the proposed development shows that parking will be provided on a basis of 5 parking bays per 100 m² GLA, which is regarded as more than adequate. According to ITS traffic engineers the road network in the vicinity of the property has sufficient spare capacity to accommodate the additional traffic that the proposed development is expected to generate. Based on our experience it is to be expected that traffic that ordinarily would have been in town would divert to the Mall, which would ease traffic congestion in town during peak periods.
D. VIABILITY CONCERNS	
need and desirability of two malls **SterCorp**: It is common cause in the community that there is no room for two shopping malls and the development of two will in fact cause both to become economically unviable. **SterCorp**: The draft BAR fails to mention that there is already an approval for another mall in Springbok, that the small town is unlikely to accommodate two malls of the scale proposed and that an additional mall may have significant negative impacts on the town if it is unable to support both. **SterCorp**:Is there a need to build a 2nd mall in Springbok that will use a significant amount of water, sewer capacity and scarce electricity when the town can only support the one approved mall?	The Constitution, ECA and NEMA do not protect the existing developments at the expense of future developments (Constitutional Court judgment in Fuel Retailers matter at par 79). Need and desirability can be equated to wise use of land – i.e. the question of what is the most sustainable use of land. The concept of need and desirability relates to *the type* of development being proposed. The emphasis in the concerns raised by SterCorp is on "need", something which is perhaps best left to the free market mechanism to determine. Need refers to "time" and desirability to "place". The questions therefore are whether it is the right time and whether it is the right place for locating the type of land-use/ activity proposed? These questions must be answered from an environmental perspective. We believe that these questions are of great relevance if for example a development proposal implies that one will have to sacrifice valuable agricultural land and/or allow a certain measure of ecological degradation as part of the promotion of justifiable

	economic and social development as contemplated in the Constitution. On the facts there is nothing to suggest that anything of this sort will be required. The fact that approval has already been granted for a Mall to be established does not mean that it will indeed be established or that economic realities will not persuade the developer concerned to scale down the development proposal. Approval of one Mall also does not serve as a bar to the approval of another Mall. By way of example we refer to the approval within a short space of time of two Malls in Swellendam during 2010 by the competent provincial authority. One Mall has been constructed to date and the other seems to have fallen by the wayside. Attention is invited to paragraph 9(b) of the draft Bar that deals with need and desirability of the proposed activity.
E. OTHER CONCERNS	
SterCorp: The Applicant is using the exact same name that SterCorp is using for its shopping mall. The name was deliberately used to sow confusion and in the process to reduce possible objection to the application. **Van Den Heever**– raises the question "Why the confusion with the name?"	There is no evidence, above the level of speculation, that the use of the name was a deliberate attempt to sow confusion. During the entire public participation process we have not come across one person being confused as to the whereabouts of the proposed development.
Cilliers: Latest issued drawing does not include proposed swimming pool as Rev 2.	This will be addressed in the final BAR. We thank Mr Cilliers for pointing this out.
Van Den Heever: do contracts exist for the retailers listed on the	This is not an environmental concern and does not warrant further

plan? **Schreuders**: The Deed of Sale was not attached to the DBAR and therefore it is not possible to ascertain whether the land was sold below market value.	comment from the EAP. It would be inappropriate to speculate about the market value of the land. Suffice it to say that whether or not the land was sold below market value is not an environmental concern, but a legal question. This is not the appropriate forum within which to deal with this aspect. It is best left to the courts to decide, should Schreuders wish to pursue the matter further.

We have throughout the environmental assessment process attempted to objectively balance environmental considerations with socio-economic considerations, as we believe we are required to do.

CONCLUSION:

1. All applicable NEMA listed activities triggered by the proposed development and associated infrastructure were adequately assessed as part of the Basic Assessment Process.

2. All relevant specialist studies were conducted and in our considered opinion adequately identify possible impacts and mitigations for the listed activities that will be triggered by the proposed development.

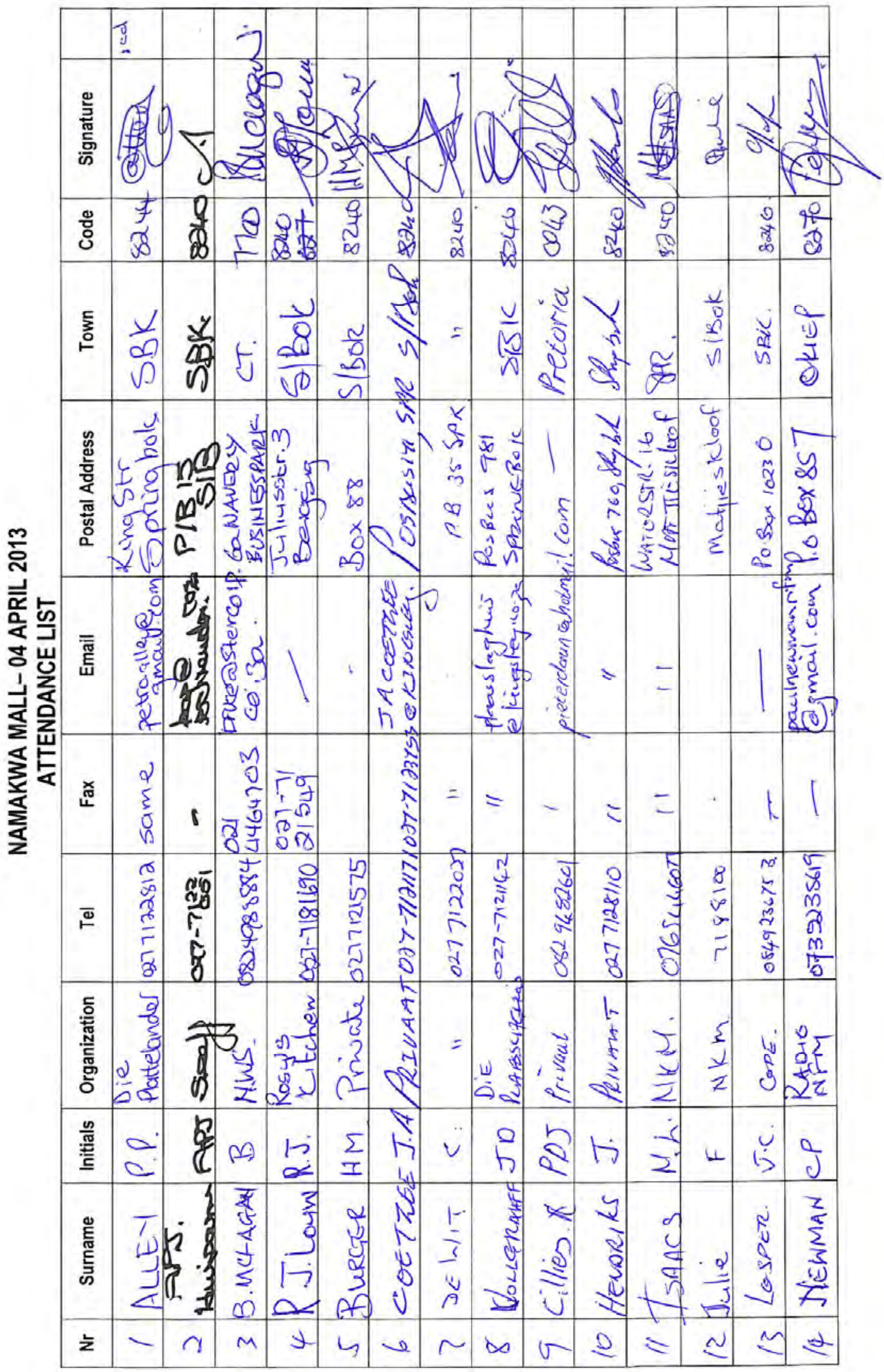
3. The proposed development will not detrimentally affect the natural environment. It would appear to us that biodiversity conservation and protection of agricultural resources are in any event not the prime motivators for the comments received.

4. The proposed development has the potential to create a significant number of much needed employment opportunities and give community members the opportunity to be gainfully employed, both during construction and operation of the Mall. As such it may make a significant contribution to the promotion of justifiable economic and social development.

5. Based on the triple bottom line considerations (i.e. Environmental, Social and Economic attributes) we believe that the proposed land use is the correct environmental option.

Appendix E7: OPEN DAY

Appendix E7.1: Attendance register.



NAMAKWA MALL– 04 APRIL 2013
ATTENDANCE LIST

Nr	Surname	Initials	Organization	Tel	Fax	Email	Postal Address	Town	Code	Signature	
1	ALLEY	P.P.	Die Plattelander	0277132812	same	petraalley@gmail.com	King Str Springbok	SBK	8244	[illegible]	,ed
2	APJ. Huisamen	APJ	Self	027-7122 / 051	–	[illegible]	P/B 15 S/B	SBK	8240	[illegible]	
3	B.MCLAGAN	B	NWS	0824988884	021 4464703	[illegible]@sterco.co.za	6a NAVEDY BUSINESSPARK	CT.	7440	[illegible]	
4	R J.Louw	R.J.	Rosy's Kitchen	027-7181690	027-71 21549	—	Juliusstr. 3 Bergsig	S/Bok	8240 / 027	[illegible]	
5	BURGER	HM	Private	0277121575		-	Box 88	S/Bok	8240	[illegible]	
6	COETZEE	J.A	PRIVAAT	027-7121171	027-7123753	JACOETZEE@KINGSLEY.	POSBUS 171, SPK	S/Bok	8240	[illegible]	
7	DE WIT	C.	"	0277122037	"		PB 35 SPK	"	8240	[illegible]	
8	VOLLGRAAFF	JD	DIE PLATTELANDER	027-7121162	"	plaaslaghuis@kingsley.co.za	Posbus 981 SPRINGBOK	SBK	8240	[illegible]	
9	Cilliers	PDJ	Privaat	082 9682661	/	pieterdaan@hotmail.com	—	Pretoria	0043	[illegible]	
10	HENDRIKS	J.	PRIVAAT	0277128110	"	"	Posbus 760, Springbok	Springbok	8240	[illegible]	
11	ISAACS	M.L.	NKM.	0765446071	"	"	WATERSTR. 16 MATJIESKLOOF	SPR.	8240	[illegible]	
12	Julie	F	NKM	7188100	.		Matjieskloof	S/Bok		[illegible]	
13	LOSPER	J.C.	COPE.	0849236753	—	——	Po Box 1023	SBK.	8240	[illegible]	
14	NEWMAN	CP	RADIO NFM	0739233619	—	paulnewman.nfm@gmail.com	P.O Box 857	OKIEP	8270	[illegible]	

Nr	Surname	Initials	Organization	Tel	Fax	Email	Postal Address	Town	Code	Signature	
15	STEENKAMP	J		0277188140			Posbus 8	Bergsig	8240		
16	VD MERWE	K		0277188101				Springbok	8240		
17	CLOETE	M.J.G		0277188134	0277121635	Marius.Cloete@namakwa-ge…	Posbus 164 O'KIEP 8270	O'KIEP	8270		
18	D. Roberts			0731121270			Posbus 104	O'KIEP	8270		
19	M. Coetzee	M.L.C		0782959848			Gangstr. 2. Bergsig	Bergsig	8240	m.Coetzee	
20	D. Mulkerin	D.		0766712313			WATERSTRAAT MATJIESKLOOF	Matjieskloof	8240		
21	Victor		Coetzee	0276442362			[illegible]	"			
22	Kapp	J.		0277121410	"		Posbus 382	Springbok	8240		
23	ENGELBRECHT	J.H		0825735255			Posbus 780	"	"		
24	STONE	S.J.		0828950842			Posbus 699	Springbok	8240		

NAMAKWA MALL– 04 APRIL 2013
ATTENDANCE LIST

Nr	Surname	Initials	Organization	Tel	Fax	Email	Postal Address	Town	Code	Signature
1	Van der Heever	FE	NDM	0277128049	0277128040	[illegible]@namakwa-dm.gov.za	PO Box 564	Concordia	871	[signature]
2	Witbooi	A.J.	Private	078 768 8367		[illegible]@gmail.com	P.O. Box 716	Concordia	716	[signature]
3	H. Stone			082 961 9021	02771 22386		Posbus 255			[signature]
4	D. de Wit	D	Private	082 8975826		ddo@cgrowth.c.z.	Bus 55	Springbok	8240	[signature]
5	Ellis	J.	Private	0832473365		dianne@westausfilters.co.za		Sbk		[signature]
6	J de Kock	J	"	0828715779		JANNIE@REKENAARDIENSTE.CO.ZA		SBK		[signature]
7	Grobbelaar	EB	PVT	072 7673230			Posbus 599	Springbok	8240	[signature]
8	VENTER	CD	Landmeters	082 772384		carel@cdul.co.za	Bus 62	Springbok	8240	[signature]
9	Venter	CD	Landmeters	0829046101		cd.venter1@gmail.com		Springbok	8240	[signature]
10	CLOETE	IJJ	NDM	0835578206		isaaccloete@gmail.com		SPRINGBOK	824	[signature]
11	WILLIAMS	M	NKM	0828524875		margaretvisserw@yahoo.com		S/BOK	8240	[signature]
12	CLOETE	CA	NKM	0796393009				S/BOK	8240	[signature]
13	Meissenheimer	PM	NKM	0843920998		pmeissenheimer@gmail.com		S/bok	8240	[signature]
14	BOWERS	LE	NKM	0732409366		bowerslusinda20@gmail.com		S/bok	8240	[signature]

Nr	Surname	Initials	Organization	Tel	Fax	Email	Postal Address	Town	Code	Signature
15	FIELDING	H		0829026257			Koenopee Str.	Springbok	8240	
16	VAN DER BYL	G.C.		083 8855335			Koenoebee Str 3	SPRINGBOK	8240	
17	VISSER	R.F.		0728862780		rfvil38@gmail.com	1 PREMIER STR	SPRINGBOK	8240	
18	LOOPER	L.E.		0731151183		leeel.looper@gmail.com	P.O. Box 162,	Okiep	8270	
19	BOOYSEN	M.		0721741985		mattbooysen@gmail.com	SALISSTRAAT 25 MATJIESKLOOF	MATJIESKLOOF	8240	
20	BASSON	JC		0711266766		madimax2131@gmail.com	6 KINGSTR. SPRINGBOK	SPRINGBOK	8240	
21	COETZEE	G.J.		0782957848			GANGSTR 2 BERGSIG	SPRINGBOK	8240	
22	CLAASEN	R.		0726917935	—	—	MATJIESKLOOF	" "	8240	
23	V.D. HEEVER	C		0719218804	—	—	POSBUS 454 NABABEEP	" "	8240	
24	Dippenaar	T		0836488864	0277121770	tdippenaar@yahoo	Postnus 650 Springbok	S'bok	8240	
25	CLOETE	Z		0828875282		zihandloet@gmail.com	BRISSON STRAAT 15	MATJIESKLOOF	8240	
26	SCHRICKKER	N.A.		0711068599			BRISSON Straat 10 MATJIESKLOOF	MATJIESKLOOF	8240	
27	J CLOETE						MATJIESKLOOF	" "	8240	
28	COETZE	RI		0836401246	0865897	rudy.cloete@gmail.com	40 Jewells St, Spr	Springbok	8240	
29	Kapp	L		0729361868			Posbus 149	Springbok	8240	

Appendix E7.2: Comments received during the Open Day

ENVIRONMENTAL CONSULTANT
Pieter Badenhorst Professional Services cc; PO Box 1058, Wellington, 7654
Cell: 0765840822; Fax: 0866721916; email: elaniem@iafrica.com

BASIC ASSESSMENT RESPONSE FORM

Deadline for returns: 20 May 2013

PROJECT
PROPOSED NAMAKWA MALL ON ERF 2883, SPRINGBOK

Date:

RESPONDENT

Name: J. Hendriks
Organisation: Privaat
Tel: (027) 7128110
Fax:
Email:
Address:

Please list any issues and comments that should be included in the Basic Assessment Report:

Daar moet net voldoende Parkering wees.
Dit het hoog tyd geword,
dat ons 'n mall kry, die
dorp is baie bekrimp en ons
moet ver afstande ry om
by plekke te kom met
verskeidenheid winkels.
Hoop die voorstelling sal die
realiteit wees. ✓

Please list any alternatives that you think could be viable:

Geen

ENVIRONMENTAL CONSULTANT
Pieter Badenhorst Professional Services cc; PO Box 1058, Wellington, 7654
Cell: 0765840822; Fax: 0866721916; email: elaniem@iafrica.com

BASIC ASSESSMENT RESPONSE FORM

Deadline for returns: 20 May 2013

PROJECT
PROPOSED NAMAKWA MALL ON ERF 2883, SPRINGBOK

Date: 04 · 04 · 2013

RESPONDENT
Name: PAUL NEWMAN Organisation: RADIO NFM
Tel: 073 923 5013 Fax:
Email: paulnewmannfm@gmail.com
Address: MAIN Rd OKIEP

Please list any issues and comments that should be included in the Basic Assessment Report:

Community Upliftment in the form of Job Creation in our area where the current unemployment rate is very high - This initiative is highly appreciated

Please list any alternatives that you think could be viable:

ENVIRONMENTAL CONSULTANT
Pieter Badenhorst Professional Services cc; PO Box 1058, Wellington, 7654
Cell: 0765840822; Fax: 0866721916; email: elaniem@iafrica.com

BASIC ASSESSMENT RESPONSE FORM

Deadline for returns: 20 May 2013

PROJECT
PROPOSED NAMAKWA MALL ON ERF 2883, SPRINGBOK

Date:

RESPONDENT

Name: G.C VANDER Byl
Organisation: Nama Khoi Municipality
Tel: 082 8555 335
Fax: 027-7181442
Email: gouth.vandelbyl@namakhoi.gov.za,
Address: Koenoebee Str 3
Simonsig - Suid
Springbok

Please list any issues and comments that should be included in the Basic Assessment Report:

- I like the idea.
- Big economic input for the community, municipal area and Namaqualand as a whole
- Value increasing of property.
- Availability of big store which was normally in big town's like Clanwilliam, Vredendal, West Coast (Vredenburg), Cape Town
- 110 % support to the project.
- Boost for Tourism.

Please list any alternatives that you think could be viable:

ENVIRONMENTAL CONSULTANT
Pieter Badenhorst Professional Services cc; PO Box 1058, Wellington, 7654
Cell: 0765840822; Fax: 0866721916; email: elaniem@iafrica.com

BASIC ASSESSMENT RESPONSE FORM

Deadline for returns: 20 May 2013

PROJECT
PROPOSED NAMAKWA MALL ON ERF 2883, SPRINGBOK

Date:

RESPONDENT
Name: J.C. [redacted] Organisation: Nama Khoi Municipality
Tel: 071 126 6766 Fax: 027 - 7181442
Email: madmax2131@gmail.com
Address: 6 Kingstraat
Springbok
8240

Please list any issues and comments that should be included in the Basic Assessment Report:

Ekonomiese inspuiting vir gebied
Werkskepping
Toerisme inspuiting en toename
Meer beskikbare grand wees wat nie in groter sentras gevind word.

Please list any alternatives that you think could be viable:

ENVIRONMENTAL CONSULTANT
Pieter Badenhorst Professional Services cc; PO Box 1058, Wellington, 7654
Cell: 0765840822; Fax: 0866721916; email: elaniem@iafrica.com

BASIC ASSESSMENT RESPONSE FORM

Deadline for returns: 20 May 2013

PROJECT
PROPOSED NAMAKWA MALL ON ERF 2883, SPRINGBOK

Date:

RESPONDENT

Name: M BOOYSEN. Organisation: INWONERS
Tel: 0721744985. Fax:
Email:
Address: SAKKIESTRAAT 25
MATJIESKLOOF
8240

Please list any issues and comments that should be included in the Basic Assessment Report:

DIT SAL BYDRA TOT BEPONTWIKKELING
WERKGELEENTHEDE GEBIED ONSTAAN.
VERSKEIDENHEID PRODUKTE SAL BYDRA TOT LAER
PRYSE.
DIT SAL TOERISME BEVORDER

Please list any alternatives that you think could be viable:

DIT SAL BORD BEHALK EN MEER BELEGGERS
LOK

ENVIRONMENTAL CONSULTANT
Pieter Badenhorst Professional Services cc; PO Box 1058, Wellington, 7654
Cell: 0765840822; Fax: 0866721916; email: elaniem@iafrica.com

BASIC ASSESSMENT RESPONSE FORM

Deadline for returns: 20 May 2013

PROJECT
PROPOSED NAMAKWA MALL ON ERF 2883, SPRINGBOK

Date:

RESPONDENT
Name: Pieter-Daan Cillies
Organisation: CD Venter Landmeters
Tel: 062 948 2601
Fax:
Email: pieterdaancilliers@hotmail.com
Address: 22, Uniet straat, Springbok

Please list any issues and comments that should be included in the Basic Assessment Report:

- Latest issued drawing does not include proposed swimming pool as Rev 2
- Electricity study / impact not presented
- Kokerboom street non existing

Please list any alternatives that you think could be viable:

- A petrol garage would be a great aces for N7 travelers with a proposed Wimpy, Spur steers at the garage side and not as shown in the designed lay out
- Great community asset if it develops
- Great job opportunities
- Great Stop bye before entering Namibia

ENVIRONMENTAL CONSULTANT
Pieter Badenhorst Professional Services cc; PO Box 1058, Wellington, 7654
Cell: 0765840822; Fax: 0866721916; email: elaniem@iafrica.com

BASIC ASSESSMENT RESPONSE FORM

Deadline for returns: 20 May 2013

PROJECT
PROPOSED NAMAKWA MALL ON ERF 2883, SPRINGBOK

Date:

RESPONDENT
Name: FE van der Heever Organisation: Namakwa District Municipality
Tel: 027 712 8049 Fax: 027 712 8040
Email: fransvdh@namakwa-dm.gov.za
Address: PO Box 564, Concordia, 8801

Please list any issues and comments that should be included in the Basic Assessment Report:

1. Why the confusion with the name of the development that is also planned.
2. Does contracts exist for the retailers listed on the plan
3. Given the problems with bulk services (water & electricity) how is supply guaranteed.
4. Problems with existing traffic in Springbok is of major concern.
5. Procedures & Processes for disposal of land is being questioned
   - Previous council earmarked the land for housing development to address the legacy of apartheid. Even that people was forcibly removed
6. Conflict with another mall planned for Bergsig

Please list any alternatives that you think could be viable:

- By Election in municipality might change power base which will cause instability on development

Appendix E7.3: Open Day Information

OPEN DAY FOR THE PROPOSED NAMAKWA MALL DEVELOPMENT

Reference: NC/BA/05/NAM/NAM/SPR1/2013 (NCP/EIA/0000205/2013)

Proposed development of a business premises on Erf 2883, Springbok

1. LOCALITY:

The proposed site is located within the town of Springbok in the Northern Cape. The site is located along the N7 from Cape Town towards Namibia on the right hand side. This site is bordered by the N14 and R355.

Namaqua Mall – Springbok, Northern Cape

2. ACTIVITIES APPLIED FOR:

Listing Notice 1
Activity 23 –
The transformation of undeveloped, vacant or derelict land to –

(i)residential, retail, commercial, recreational, industrial or institutional use, inside an urban area, and where the total area to be transformed is 5 hectares or more, but less than 20 hectares, or
(ii)residential, retail, commercial, recreational, industrial or institutional use, outside an urban area and where the total area to be transformed is bigger than 1 hectare but less than 20 hectares; -
except where such transformation takes place for linear activities–

(i) for linear activities; or
(ii) for purposes of agriculture or afforestation, in which case Activity 16 of Notice No. R. 545 applies.

Relevance: As per 1 proposed construction of the Namakwa Mall (business/retail shops).

Listing Notice 3
Activity 12 –
(a)The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation.
(b)Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; Within critical biodiversity areas identified in bioregional plans;
(c)Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuary, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas.

Activity 13 –
The clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, except where such removal of vegetation is required for:
1)the undertaking of a process or activity included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), in which case the activity is regarded to be excluded from this list.
2)the undertaking of a linear activity falling below the thresholds mentioned in Listing Notice 1 in terms of GN No. 544 of 2010.
(a) Northern Cape and Western Cape:

(i) In an estuary;
(ii) Outside urban areas, the following:

(aa) A protected area identified in terms of NEMPAA, excluding conservancies;
(bb) National Protected Area Expansion Strategy Focus areas;
(cc)Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;
(dd)Sites or areas identified in terms of an International Convention;

(ee)Core areas in biosphere reserves;
(ff)Areas within10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve;
(gg)Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined.

(iii) In urban areas, the following:
(aa) Areas zoned for use as public open space;
(bb)Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose;
(cc) Areas seawards of the development setback line;
(dd) Areas on the watercourse side of the development setback line or within 100 metres from the edge of a watercourse where no such setback line has been determined.

Relevance: As per the Baseline Botanical report in 4 it is at this stage still unknown if these activities are triggered. This will be determined in the Final Basic Assessment Report.

3. DEVELOPMENT PROPOSAL

Erf 2883, Springbok is 76 722m² in extent and the proposed development footprint is 65 002m² in size.

A small access will be constructed over Erf 931, Springbok. Erf 931 is approximately 42 000m² in extent.

The proposed site a business premises with retail related development proposed on site consisting of:

- **41 shops, ranging in sizes between 36m² - 4014m², single storey building with a maximum height of 21m, Building area will be 27730m² in extent.**
- **1185 parking bays, covering an area of 37272m²,**
- **With roads infrastructure and accesses.**

Refer to next page for the proposed layout plan.

Appendix 1 – Proposed layout

4. ARCHITECTURAL PERSPECTIVES

- **The landscape calls for a building that relates to it, as well as the vernacular architecture. Analyzing the local area it was learned that a farm style architecture relates both to the landscape and surrounding buildings.**
- **The concept of the development started off by converting the local natural material relating directly to the landscape, into a building form that can accommodate a retail programme.**
- **The look, feel and form giving of the building developed and took on the characteristics of old style farm architecture.**
- **The sun in Springbok ensures for the true reflection of the landscape and all its colours. It follows the contours of rock hills, reflecting light while producing strong shadows.**
- **The strong contrast between light and shadows are not only represented in the building, but also in the rich texture of natural stone finish.**
- **Timber will form an integral part of the building. Exposing the timber structure adds to the detail of the building.**
- **The roof structures will appear lighter and almost floating on the heavier rock walls.**
- **Louvers made of timber will ensure for shadows on the walkways and interior of the building.**
- **The timber adds to the nature of the landscape not only in colour but in the contrast between light and shadow.**

Refer to next page for the perspectives.


KALAHARI
SHOPPING centre
1928
HEINEMANNS
HAUS
SPRINGBOK

natural stone





The sun in Springbok ensures for the true reflection of the landscape and all its colours.

It follows the contours of rock hills, reflecting light while producing strong shadows.

The strong contrast between light and shadows are not only represented in the building, but also in the rich texture of natural stone finish.

natural timber





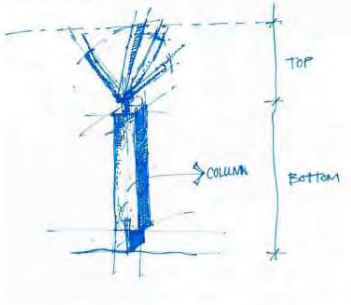
Timber will form an integral part of the building.

Exposing the timber structure adds to the detail of the building.

The roof structures will appear lighter and almost floating on the heavier rock walls.

Louvers made of timber will ensure for shadows on the walkways and interior of the building.

The timber adds to the nature of the landscape not only in colour but in the contrast between light and shadow.




SMITH ARCHITECTS INTERNATIONAL
.08 landscaping
PROPERTIES


SMITH ARCHITECTS INTERNATIONAL
.09 aerial render
PROPERTIES

Appendix 2, 3, 4, 5 and 6 – Architectural perspectives

5. SERVICES

Water
The demand for portable water for the proposed development is estimated at 93.5 kl/day with a peak demand of 4.37 l/s. Water to the development can be supplied from the existing 160mm dia. water mains in Voortrekker Street. A 110mm dia. connection will be adequate to provide for the domestic needs. The existing reservoir storage capacity is inadequate to accommodate the new shopping centre development and a 187kl on-site storage facility will have to be provided by the developer to provide 48 hour storage capacity.

Sewer
The average daily sewer run-off from the proposed development is estimated at 74.8 kl/day, with a peak flow of 3.5 l/s. The internal sewer network will connect to the existing sewer running along Voortrekker Street to the north of the site.

Storm water:
The site drains towards the existing culverts underneath the N7 National Road in the north-western corner of the Erf. Due to the topography of the terrain, the site is receiving storm water from higher laying properties adjacent to the eastern boundary of the site. This storm water running through the northern part of the site will be formalized and diverted along the northern boundary of the site into the existing culvert underneath the N7 National Road.

Solid waste:
Approximately 2.5m³ of solid waste per day will be collected by the Nama-Khoi Municipality on a weekly basis and taken to the Bergsig Waste disposal site.

Refer to next page for the proposed layout plan.

Appendix 7 – Services layout plan

6. TRAFFIC

The following conclusion and recommendation as made by the Traffic Impact Assessment:

- ***Access is proposed via two accesses, i.e. main access off Voortrekker Street at the President Street intersection with a secondary access off the link road (R355) between Voortrekker Street and Kokerboom Road spaced approximately 120 metres to the north of the Kokerboom Road intersection. Dedicated eastbound and westbound right-turn lanes are recommended along Voortrekker Street at the main access intersection.***

- ***The Namakwa Mall development is expected to generate approximately 1 030 vehicular trips (515 in/ 515 out) during the typical Friday p.m. peak hour and approximately 1 183 vehicular trips (556 in/ 627 out) during the typical Saturday peak hour.***

- ***All the study intersections will operate at acceptable levels-of-service during both the Friday p.m. and Saturday peak hours and the surrounding road network has sufficient spare capacity to accommodate the additional trips associated with the proposed Namakwa Mall.***

- ***Sidewalks should be provided along the site frontages with Voortrekker Street and the link road (R355) between Voortrekker Street and the Kokerboom Road intersection. Well-defined walkways should also be provided on site.***

- ***Minibus taxi lay-bys should be provided along both sides of Voortrekker Street downstream of the main access intersection."***

7. BOTANICAL

The following is a summary according to the Baseline Assessment conducted:

"In conclusion, the site is situated in the Succulent Karoo, a hotspot of diversity. This highlights the importance of establishing the presence of species of conservation significance on site before construction commences. Site investigations in autumn and in spring should provide a good indication of the species present on site. Recommendations with respect to specific species of conservation significance will be made once these species have been identified. These conservation significant species are expected to fall mainly within two groups, namely the geophytes and succulents. The option of using species found on site for the landscaping of the development will also be considered. The fact that the site is situated within the town of Springbok and has been subjected to decades of disturbance, increases the likelihood that more weedy and invasive species will be present on site and also increases the probability that fewer species of conservation significance will be found on site."

Hereby concluding that further assessment is necessary, with possible mitigation measures, this will then be included in the Final Basic Assessment report.

8. ALTERNATIVES

Four alternatives were considered for the proposed development. Two of the alternatives are property alternatives, the third alternative is a design/layout alternatives and the fourth is the No-Go Alternative.

Alternative 1:

Design/Layout Alternative

This alternative will consist of the proposed development of high density residential units.

This alternative is not deemed preferred for the following reasons:

- **It would result in a rezoning application, when clearly this site was already appointed the status for a business/retail premises.**
- **The Municipality owns this site. Tenders were requested for the development of this site for business and retail purposes.**
- **The site's location in relation to the town lends for the development of a mall.**
- **From a Socio-Economic perspective this site will be profitable as a mall, and a residential development in this area is not a viable option financially.**

Therefore, this alternative was not considered further as it was not a reasonable or feasible option.

Alternative 2:

Design/Layout alternative and Property alternative

This alternative is for construction of the following:

Erf 2883, Springbok is 76 722m² in extent and the proposed development footprint is 65 002m² in size.

The proposed site is a business premises with retail related development proposed on site consisting of:

- **41 shops, ranging in sizes between 36m² - 4014m², single storey building with a maximum height of 21m, Building area will be 27730m² in extent.**
- **1185 parking bays, covering an area of 37272m²,**
- **With roads infrastructure and accesses.**

This alternative is in essence the same as that of Alternative 3, except for the positioning of the accesses.

Refer to next page for the proposed layout plan.

Appendix 8 – Alternative 2

This alternative is deemed:

- **Preferred from a Socio-Economic perspective, as it will result in the most profitable option for the local economy and the developer.**
- **Also from a Socio-Economic perspective it would result in a considerable amount of new job opportunities, with the opportunity for new skills development for the local community.**
- **This type of development is preferred from the Municipality's perspective.**
- **No new planning approvals are necessary as the site will be used for it's current zoning scheme, which is business/retail related.**
- **This alternative is, however, in total not preferred from Traffic and Transport perspective, as the positioning of the access is too close to the existing access from the N14 into R355.**

It is therefore clear that this alternative is not deemed preferred.

Alternative 3 (Appendix A2.3 – Preferred alternative):
Design/Layout alternative and Property alternative

This alternative is for construction of the following:
Erf 2883, Springbok is 76 722m² in extent and the proposed development footprint is 65 002m² in size. A small access will be constructed over Erf 931, Springbok. Erf 931 is approximately 42 000m² in extent.
The proposed site a business premises with retail related development proposed on site consisting of:

- **41 shops, ranging in sizes between 36m² - 4014m², single storey building with a maximum height of 21m, Building area will be 27730m² in extent.**
- **1185 parking bays, covering an area of 37272m²,**
- **With roads infrastructure and accesses.**

This alternative is in essence the same as that of Alternative 2, except for the positioning of the accesses, see Figure 3 below.

Refer to next page for the proposed layout plan.

Appendix 9 – Alternative 3

This alternative is deemed:

- **Preferred from a Socio-Economic perspective, as it will result in the most profitable option for the local economy and the developer.**
- **Also from a Socio-Economic perspective would result in a considerable amount of new job opportunities, with the opportunity for new skills development for the local community.**
- **This type of development is preferred from the Municipality's perspective.**
- **No new planning approvals necessary as the site will be used for its current zoning scheme, which is business/retail related.**
- **This alternative is, however, preferred from Traffic and Transport perspective, as the positioning of the access is moved further from the existing access off the N14 into the R355.**

<u>Alternative 4: No-Go Option:</u>

The No-Go option for the site is to remain in its current undeveloped state. This is not considered preferred for the following reasons:

- **From a Socio-Economic perspective it will not provide new job opportunities and the possibility to procure new skills.**
- **Also the proposed development will not profit from the great financial boost this development would have on the community.**

9. CONCLUSION

The proposed development will contribute and impact as follows:

Will provide job opportunities for local workers.

Provide the local community with the opportunity to procure new skill sets.

Will contribute to the influx of retail spenders to the area and thereby contributing to the financial gain of the local economy.

From a Botanical perspective it is predicted that the proposed development alternative will have a low to neutral impact on the natural vegetation if all mitigation measures are implemented. Still to be finalized in the Final Botanical Assessment Report.

From Traffic and roads infrastructure perspective the proposed development can be accommodated.

From a Heritage perspective, still to be determined.

From a services infrastructure perspective the proposed development will have a minimal impact on the environment.

APPENDIX F: Environmental Management Plan

CONSTRUCTION & OPERATIONAL MANAGEMENT PLAN
FOR
PROPOSED NAMAKWA MALL DEVELOPMENT

[Reference: NC/BA/05/NAM/NAM/SPR1/2013 (NCP/EIA/0000205/2013)]

on

Proposed development of a business premises on Erf 2883, Springbok

Prepared by:

Elanie Kühn

Pieter Badenhorst Professional Services

Date: March 2013

CONTENTS

List of Figures

List of abbreviations

DEA&DP	Department of Environmental Affairs and Development Planning
EA	Environmental authorisation
ECO	Environmental Control Officer as per the environmental authorisation

EMP	Environmental Management Programme
EO	Environmental officer as appointed by the client or contractor
RE/Engineer	Resident Engineer overseeing the construction activity

Definitions

For the purposes of this Specification the following definitions shall apply:

Construction site, working area or Site - means any area within the boundaries of the property(ies) where construction is taking place.

No-Go area - means any area where no access is allowed.

Refuse - refers to all solid waste, including construction debris (cement bags, wrapping materials), waste and surplus food, food packaging, organic waste etc.

---

1 Introduction

The proposed site is located within the town Springbok in the Northern Cape. The site is located along the N7 from Cape Town towards Namibia on the right hand side. This site is bordered by the N14 and R355. See Locality in Figure 1 below.

Figure 1: Locality

Proposed development proposal (Figure 2):

Erf 2883, Springbok is 76 722m² in extent and the proposed development footprint is 65 002m² in size. A small access will be constructed over Erf 931, Springbok. Erf 931 is approximately 42 000m² in extent.

The proposed site a business premises with retail related development proposed on site consisting of:

- 41 shops, ranging in sizes between 36m² - 4014m², single storey building with a maximum height of 21m, Building area will be 27730m² in extent.
- 1185 parking bays, covering an area of 37272m²,
- With roads infrastructure and accesses.

Figure 2: Proposed development layout

The proposed development with potential development area was identified in the Basic Assessment Report through a constraint and opportunity analysis and includes *inter alia* vegetation sensitivity, freshwater ecology and visual views. Following acceptance of the Application form which identified the alternative options to be investigated in the Basic Assessment Report further refining of the preferred option was required to develop the proposed development as described above. The main reason for this was to reduce visual and vegetation impacts and to still achieve a viable development option.

This document is a requirement for environmental authorization (EA) which is shown in Appendix A. All mitigation measures included in the EA will be inserted into Appendix C. On approval by DEA&DP the developer must ensure that its conditions are implemented by making the document available to the contractor and also ensure that an ECO or the Resident Engineer are appointed and systems are in place to evaluate compliance. The contractor(s) is expected to familiarise himself with the contents of this document and to implement its conditions.

Overall the EMP will aim to:

- Control the construction activities in such a way that negative impacts on the physical environment, sensitive areas and surrounding residential areas are prevented or minimised.
- Ensure that mitigation and rehabilitation measures are implemented where required.

Please note that this document does not replace any other regulations, laws and bylaws that the contractor must adhere to. It specifically does not replace the regulations of the Occupational Health and Safety act of 1993 (Act No. 85 of 1993).

Funding for the implementation of the Construction EMP is the financial responsibility of the developer.

The project environmental issues are shown in section 2 with the construction EMP in section 3 and the operational EMP in section 4.

2 Environmental issues

2.1 Vegetation

The following is a summary according to the Baseline Assessment conducted:

"In conclusion, the site is situated in the Succulent Karoo, a hotspot of diversity. This highlights the importance of establishing the presence of species of conservation significance on site before construction commences. Site investigations in autumn and in spring should provide a good indication of the species present on site. Recommendations with respect to specific species of conservation significance will be made once these species have been identified. These conservation significant species are expected to fall mainly within two groups, namely the geophytes and succulents. The option of using species found on site for the landscaping of the development will also be considered. The fact that the site is situated within the town of Springbok and has been subjected to decades of disturbance, increases the likelihood that more weedy and invasive species will be present on site and also increases the probability that fewer species of conservation significance will be found on site."

Hereby concluding that further assessment is necessary, with possible mitigation measures, this will then be included in the Final Basic Assessment report.

The vegetation report summarised its findings on the vegetation of the property as follows:

Will be included in the Final Report

2.2 Storm water features

The site drains towards the existing culverts underneath the N7 National Road in the north-western corner of the erf. Due to the topography of the terrain, the site is receiving storm water from higher laying properties adjacent to the eastern boundary of the site.

This storm water running through the northern part of the site will be formalized and diverted along the northern boundary of the site into the existing culvert underneath the N7 National Road.

2.3 Heritage, Archaeology and Visual

Will be included once received

3 Management Programme – Construction

Please note that the EMP must be included in any tender documentation and all sub-contractors on the site must be made aware of this EMP and they must at all times adhere to the procedures specified.

Only those sections applicable to the specific construction activity are relevant and to be implemented.

3.1 Contractual obligations

1) The Contractor shall acknowledge receipt of copies of the EMP and confirm in writing that he has familiarised himself with the contents thereof;
2) The Contractor shall comply with all environmental obligations imposed by the RE/ECO/EO.
3) The Contractor shall co-operate fully with the RE/ECO/EO and use his best endeavours to ensure that the objectives of the EMP are fulfilled in the course of the Contractor's execution of the works or the relevant part thereof.
4) The Contractor shall erect an information board containing background information for the construction activity and listing the relevant contact details for complaint.
5) The Contractor must ensure that all workers are given environmental awareness training on the requirements of the EMP. This must form part of the Contractor's contract agreement. The RE/ECO/EO must be informed in writing of implementation.
6) Working hours will be from 7:00pm to 18:00pm Monday to Saturday. No work will be allowed on Sundays or public holidays.
7) Deliveries will only be allowed between 8:00am and 5pm.
8) Preference must be given to local labour.
9) Workers (except security guards) may not be housed on site.

3.2 Penalties

Penalties will be instituted for non-compliance. The penalty is over and above the cost of rectifying the problem and/or damage. Penalties will vary on a sliding scale from R 1 000 to R 20 000 for non-serious to serious issues as determined by the RE/ECO/EO/EO.

These penalties must be paid into a separate account to be administered by the developer. The RE/ECO/EO/EO will decide how the penalties, if any, are to be spent.

3.3 Methodology statement

A methodology statement must be compiled by the contractor(s) before any construction or activity may commence. The statement must include a site establishment plan indicating all relevant areas. The RE/ECO/EO must approve the methodology statement.

The activity indicated highlighted in yellow in the following list will as a minimum require a statement. The contractor must identify any other statements that will be required as part of the project implementation.

Access routes

- Upgrading and construction of access routes.
- Rehabilitation of temporary access routes.
- Location of proposed access routes.

Alien plant clearing

- Method of control to be used for the eradication or control of alien vegetation.

Blasting

- Details of all methods and logistics associated with blasting.

Bunding

- Method of bunding for static plant.

Camp establishment

- Layout and preparation of the construction camp.
- Method of installing fences required for "no go" areas, working areas and construction camp areas.
- Preparation of the working area.

Cement /concrete batching

- Location, layout and preparation of cement/ concrete batching facilities including the methods employed for the mixing of concrete including the management of runoff water from such areas.

Contaminated water

- Contaminated water management plan, including the containment of runoff and polluted water.

Demolition

- Proposed method(s) of demolition.

Dredging

- Proposed methods and compounds to treat spills.
- Methods of refuelling dredger.

Drilling and jack hammering

- Method of drill coring with water or coolant lubricants.
- Methods to prevent pollution during drilling operations.

Dust

- Dust control.

Earthworks

- Method for the control of erosion during bulk earthwork operations.
- Method of undertaking earthworks, including hand excavation and spoil management.

Emergency

- Emergency construction method statements.

Environmental awareness course

- Logistics for the environmental awareness course for all the Contractors employees.
- Logistics for the environmental awareness course for the Contractors management staff.

Erosion control

- Method of erosion control, including erosion of spoil material

Exposed aggregate finishes

- The method of control, treatment and disposal with respect to exposed aggregate finishes.

Fire, hazardous and poisonous substances

- Handling and storage of hazardous wastes.
- Emergency spillage procedures and compounds to be used.
- Emergency procedures for fire.
- Use of herbicides, pesticides and other poisonous substances.
- Methods for the disposal of hazardous building materials including asbestos, fibre claddings, refrigerants and coolants.

Fuels and fuel spills

- Methods of refuelling vehicles.
- Details of methods for fuel spills and clean up operations.
- Refuelling of construction vehicles in high flow areas [or in the 1 in 50 year floodplain].
- Method of refuelling dredger during dredging operations.

Piling, jacking and thrust boring

- The method of piling operation (e.g. driven or bored) or in situ casting or pre-cast pile structures.

Rehabilitation

- Rehabilitation of disturbed areas and revegetation after construction is complete.
- Rehabilitation of street or hardened surfaces after construction is complete.
- Retaining walls and gabions.
- Method for construction and installation of retaining walls/ gabion baskets.

Riverine corridors

- Method of diverting the river during construction.
- Details of methods to control downstream sedimentation.

- Details of methods to control instream and floodplain erosion.
- Details of methods to cross rivers or streams during construction activities.
- Details of the release of any construction related effluent water into any natural stream of river.
- Method for all construction activities within the 1 in 50 year floodplain.
- Method of laying the pipeline across the water course or wetland, including details of methods to control sedimentation.
- Method of constructing and maintaining silt screens.

Rock breaking

- Details of chemical applications to be used for rock breaking.

Settlement ponds and sumps

- Layout and preparation of settlement ponds and sumps.

Solid waste management

- Solid waste control and removal of waste from Site.
- Methods for the disposal of vegetation cuttings, tree trunks, building materials or rubble generated by construction.

Sources of materials

- Details of materials imported to the site (where applicable).

Sensitive environments

- Proposed construction methods within any sensitive environments. These can include but are not limited to wetlands, intertidal zones and estuaries.

Traffic

- Traffic safety measure for entry/ exit onto/ off public roads.
- Traffic control when crossing roads or pedestrian routes with construction activities.

Vegetation clearing

- Method of vegetation clearing during site establishment.

Wash areas

- Location, layout, preparation and operation of all wash areas, including vehicle wash, workshop washing and paint washing and clearing.

Wastewater treatment works

- Emergency procedures for accidental leaks, spillage or overflow of raw wastewater, semi treated wastewater, sludge or final effluent. The Method Statement shall include the following:

  a. a comprehensive list of available equipment (*e.g.* pipes and pumps) in the event of a spill

  b. the location of all emergency equipment

c. the individual(s) responsible for the upkeep and maintenance of the emergency equipment

d. an indication of how regularly the emergency equipment will be checked to ensure that it is working properly

e. the location of any and all temporary emergency sumps, including old sludge ponds, clarifiers, low lying areas *etc*.

f. the size of spillage which the emergency procedures could contain

g. where and how any spilled material will be returned to the wastewater works system

h. who shall be notified in the event of an emergency, including contact numbers for the relevant local authority

- Methods to isolate any section of the wastewater infrastructure for construction or maintenance purposes.
- Methods to connect new structures or reconnect old structures to the wastewater treatment infrastructure.

Water abstraction

- Methods of abstraction and utilisation of water from natural water resources.
- Details of any well point provision.

3.4 Environmental awareness training

1) All the Contractors employees and Sub-Contractors employees and any suppliers employees that spend more than 1 day a week or four days in a month on site, must attend an Environmental Awareness Training course presented by the Contractor the first of which shall be held within one week of the Commencement Date. Subsequent courses shall be held as and when required.
2) The Engineer/ECO will provide the Contractor with the course content for the environmental awareness training course, and the Contractor shall communicate this information to his employees on the site, to any new employees coming onto site, to his subcontractors and to his suppliers.
3) The Contractor shall supply the Engineer/ECO with a monthly report indicating the number of employees that will be present on site during the following month and any changes in this number that may occur during the month.
4) The Contractor shall submit a Method Statement detailing the logistics of the environmental awareness training course.

3.5 Demarcation and protection

1) The property must be fenced prior to start of construction to determine the construction/work area. Proper access control must be implemented to ensure that only authorised people obtain access to the site.
2) No-Go which include sensitive areas such as wetlands or any other sensitive areas must be clearly demarcated prior to commencing of demolition and/or earthworks/building operations.

3) The contractor must ensure that fencing and/or demarcations are maintained for the duration of the project.
4) Although not limited to, No-Go areas include the river.
5) No work outside of the property boundary will be allowed.
6) Special features shall be marked on a site layout plan prior to any works commencing on site. These areas may be designated "No go" areas.
7) Outcrops, rock faces, trees and natural vegetation or any other natural or special features inside and outside the Site, shall not be defaced, painted for benchmarks for survey or any other purposes or otherwise damaged in any way without the prior approval of the Engineer/ECO. These features shall be demarcated as "no go" areas and shall be fenced or similarly protected, as determined by the Engineer/ECO.

3.6 Site clearing

1) Prior to earthworks (including site clearance) starting on site, a search and rescue operation for bulbs and other indigenous plants of value, as detailed in the environmental approval shall be undertaken.
2) The stripping and separation of topsoil shall occur as stipulated by the Engineer/ECO/EO. As a guide the upper 250 mm of soil (topsoil, which includes roots and leaf litter) shall be placed separately. This soil shall be used for re-shaping and filling as required.

3.7 Aesthetics

The aesthetics measures indicated below should be implemented as required by the specific site and situated and as agreed with the RE/ECO/EO/EO.

1) The Contractor shall be required to visually screen the site.
2) Visual screening shall be aesthetically pleasing and shall be erected by the Contractor prior to commencing any activities.
3) Visual screening shall be maintained by the Contractor for the duration of the Contract.
4) Visual screening may be of the following types:
    a) Shade cloth
    b) Hessian
    c) Berms

3.8 Contractor's camp

1) The Contractor's camp, offices, and storage facilities shall not be located within an environmentally sensitive area. The camp's position must be approved by RE/ECO/EO.
2) The camp must be fenced as agreed with the RE/ECO/EO.
3) Water from the kitchens, showers, sinks etc., shall be discharged in a manner approved by the RE/ECO/EO.
4) The contractor must ensure that all temporary structures, equipment, materials, and facilities used or created on-site during the construction phase are removed and appropriately disposed of.

3.9 Trenching

1) Trenching for services shall be undertaken in accordance with the engineering specifications (SABS 1200DB) with the following environmental amplifications, where applicable:
   a) Trenching shall be kept to a minimum through the use of single trenches for multiple service provision.
   b) The planning and selection of trench routes shall be undertaken in liaison with the Engineer/ECO/EO and cognisance shall be given to minimising the potential for soil erosion.
   c) Trench routes with permitted working areas shall be clearly defined and marked with painted stakes prior to excavation.
   d) The stripping and separation of topsoil shall occur as stipulated by the Engineer/ECO/EO. Soil shall be excavated and used for re-filling trenches using the rollover method, i.e. soil from the first trench section shall be stockpiled. Thereafter, soil excavated from subsequent trench lengths shall be used to backfill the trench behind it once the services have been laid. The final trench length shall be re-filled using the soil stockpiled from the first length.
   e) Trench lengths shall be kept as short as practically possible before backfilling and compacting.
   f) Trenches shall be re-filled to the same level as (or slightly higher to allow for settlement) the surrounding land surface to minimise erosion. Excess soil shall be stockpiled in an appropriate manner.
   g) Immediately after re-filling, trenches and associated disturbed working areas shall be replanted or resurfaced to obtain the pre-trench conditions unless otherwise specified.
2) For trenching in ecologically sensitive environments on slopes or through wetlands the following should be implemented:
3) The upper 250 mm of soil (topsoil, which includes roots and leaf litter) shall be placed on one side of the trench within the specified working corridor.
4) The remainder of the soil shall be placed on the other side or kept separate as is practical.
5) Topsoil and subsoil may not be mixed at any time, since this impedes the restoration process following closure.
6) Following the cable/ pipe laying operation, soils are to be replaced in the order in which they were excavated, i.e. subsoil must be replaced first and capped with the topsoil; and, Brush-cut plant material is to be replaced (scattered) within the working corridor on either side of the closed trench. This method reduces erosion, protects the vegetation within the working corridor, and conserves the topsoil and seed-banks.

3.10 Demolition

1) Hazardous building materials, including asbestos shall be identified prior to demolition of any buildings and dealt with in accordance with the safety and health legislation. A Method Statement, outlining the proposed approach to the disposal of these materials, must be supplied for approval by the Engineer/ECO/EO.

2) Hazardous and non-hazardous materials shall be separated at site and disposed of in a manner approved by the Engineer/ECO/EO.
3) All buildings older than 60 years require a permit from South African Heritage Resources Agency in terms of the National Heritage Resources Act (no. 25 of 1999).
4) A demolition permit is also required from the local authority in terms of the National Building Regulations.
5) Municipal and other services shall be isolated prior to any demolition occurring.
6) Hazardous building materials (e.g. asbestos, fibre claddings, refrigerants, coolants, substation cooling oils) shall be identified prior to demolition of the building and dealt with in accordance with the safety and health legislation. A Method Statement shall be supplied for approval by the Engineer/ECO/EO.
7) Safety legislation shall be strictly adhered to in demolishing buildings and structures.
8) A Safety officer shall be appointed to oversee the safe demolition of buildings and structures.
9) Demolition sites shall be kept in a neat, tidy and safe condition.
10) Hazardous and non-hazardous materials shall be separated on Site and disposed off at appropriate licensed disposal sites. The Contractor shall supply the Engineer/ECO/EO with a certificate of disposal.
11) Prior to demolition taking place, the Contractor shall ensure that suitable anti-rodent measures are implemented at any building requiring demolition.

3.11 Tree protection

1) All trees, which are to be retained, are to be clearly indicated on a site plan and demarcated.
2) Trees to be demarcated shall be clearly marked under the supervision of the Engineer/ECO. Marking techniques include danger tape, paint (be aware of long term aesthetics), strapping and pegs. Tagging by exclusion shall be considered, i.e. where the number of trees to be cleared is fewer than those to be retained then marked trees for felling and all other trees shall automatically be retained.
3) Demarcation shall remain in place for the duration of works on site. If damaged, demarcation shall be repaired or replaced immediately.

3.12 Sensitive environments

3.12.1 Intertidal zones and estuaries

1) No vehicle shall be permitted onto a beach without a permit having first been obtained from the Relevant Authority concerned.
2) Any works to be carried out near to or below the high water mark of the sea for which a permit has not been obtained from the Relevant Authority in terms of the Marine Living Resources Act (Act No. 18 of 1998) and National Environmental Management Act (No 107 of 1998) and its Regulations is illegal and shall render the offender to a prison sentence of up to two years and a fine.

3) The removal of any material from below the high water mark of the sea without the necessary permit is an offence and attracts a jail term of up to two years and a fine.

4) Additionally, a court may order the removal of any illegal works carried out below the high water mark of the sea at the offender's expense and further order the rehabilitation and repair of any damage to the sea shore caused by the illegal works.

5) Method statements should be requested for all construction activities within these areas.

3.12.2 Rivers and streams

1) The Contractor shall minimise the extent of any damage to the flood plain to that necessary to complete the works, and shall not pollute the river system as a result of construction activities. The Contractor shall not cause any physical damage to any aspects of a watercourse, other than that necessary to complete the works as specified and in accordance with the accepted method statement.

2) Construction activities shall not permanently alter the surface or subsurface flow of water through the flood plain area. No construction materials shall be stockpiled on the flood plain.

3) The Contractor shall submit a method statement for review 14 days prior to commencing construction within the 1 in 50 year floodline. The method statement shall highlight (but not be confined to) the following issues:

    a) detailed plan for any crossings, including pipe protection works;

    b) how water flow will be diverted during construction (if applicable);

    c) containment of contaminated runoff and contaminated water;

    d) width of working servitude (if not already detailed in project specification);

    e) final expected profile of river/ stream banks;

    f) reinstatement and rehabilitation of river/ stream banks.

5) All temporary and permanent fill used adjacent to, or within, the river / streambed shall be of clean sand or larger particles. Silts, clays, granitic sands and boulders shall not be permitted in the fill.

4) Plastic sheeting, sandbags or geofabric approved by the Engineer/ECO/EO shall be used to prevent the migration of fines through the edges of the fill into the river.

5) Banks shall be suitably stabilised incrementally immediately after construction allows. Upkeep of stabilisation facilities shall be continuously maintained.

6) The Contractor shall remove herbaceous riparian vegetation as directed by the Engineer/ECO/EO, with their root ball intact. This vegetation shall be kept moist by means of placing it in the shade, covered with moistened hessian cloth until it is replanted within a specified time period.

7) The Contractor shall not modify the banks or bed of a watercourse other than as indicated by the approved plans and licences.

8) The Contractor shall not cause any physical damage to any aspects of a watercourse, other than that necessary to complete the works as specified and in accordance with the accepted method statement.

9) The introduction of any construction related effluent water into any natural stream or river requires a Method Statement to be approved by the Engineer/ECO/EO.

3.12.3 Wetlands

1) Damage to the wetland areas shall be minimised. The Engineer/ECO/EO shall approve demarcation of work area extent. All potential wetland areas shall be marked clearly on the plan and the Contractor shall submit a Method Statement for review at least 14 days prior to commencing construction in a wetland.
2) Construction may not permanently alter the surface or subsurface flow of water through the wetland.
3) The Contractor shall remove all wetland vegetation, as indicated by the Engineer/ECO/EO, with their root ball intact.
4) No construction materials shall be stockpiled in any wetland areas.
5) The post-construction profile of the wetland shall be returned to one similar to that before construction, with no created "ridge or channel" features present.

3.13 Cement mixing/batching plant

1) The cement mixing or batching plant area(s) must be indicated on the Site Establishment Plan.
2) All wastewater resulting from batching of concrete shall be disposed of via the wastewater management system where available.
3) The cement/ concrete batching works shall be kept neat and clean at all times. No batching activities shall occur on unprotected substratum of any kind.
4) All runoff from batching areas shall be strictly controlled, and cement-contaminated water shall be collected, stored and disposed of at a site approved by the Engineer/ECO/EO. Dagga boards, mixing trays and impermeable sumps shall be used at all mixing and supply points. Contaminated water shall be disposed at a waste disposal site approved by the Engineer/ECO/EO.
5) Contaminated water storage facilities shall not be allowed to overflow and appropriate protection from rain and flooding shall be implemented.
6) Contaminated water treatment on Site shall require a method statement approved by Engineer/ECO/EO.
7) Unused cement bags are to be stored so as not to be effected by rain or runoff events.
8) Used bags shall be stored in weatherproof containers to prevent wind-blown cement dust and water contamination. Used bags shall be disposed of on a regular basis via the solid waste management system, and shall not be used for any other purpose.
9) Concrete transportation shall not result in spillage.
10) Cleaning of equipment and flushing of mixers shall not result in pollution of the surrounding environment: Care shall be taken to collect contaminated wash water from cleaning activities and dispose of it in a manner approved by the Engineer/ECO/EO. To prevent spillage onto roads, ready mix trucks shall rinse off the delivery shoot into a suitable sump prior to leaving Site.
11) Suitable screening and containment shall be in place to prevent wind-blown contamination associated with bulk cement silos, loading and batching.

12) With respect to exposed aggregate finishes, the Contractor shall collect all contaminated water & fines and store it in sumps for disposal at an approved waste site.

13) All visible remains of excess concrete shall be physically removed on completion of the plaster or concrete pour section and disposed off. Washing the remains into the ground is not acceptable. All excess aggregate shall also be removed. Any mixed cement (for building or plastering) at the work area must be placed on boards or container to prevent spillage or contamination of the soil.

14) During cement delivery boards or other protection material must be used to prevent spilling on the ground.

15) No mixed concrete/dagga may be placed or stored on bare surfaces. Dagga boards must be use at all times to prevent contamination of surfaces.

3.14 Surface and groundwater pollution

1) The Contractor shall take all reasonable steps to prevent pollution of surface and groundwater as a result of his activities. Such pollution could result from release (accidental or otherwise) of chemicals, oils, fuels, paint, and sewage, water from excavations, construction water, water carrying soil particles or waste products.

2) Cement or concrete mixing must take place in such a way as to prevent any cement water runoff. All pieces of cement or related material are to be stored and dumped at the approved Municipal site.

3) Bulk cement silos and storage areas must be properly lined/screened/contained to prevent windblown cement dust or pollution of water during rain events.

4) On completion, stormwater catchpits must be closed with geotextile (biddim) or similar material to prevent sand or other contaminants from entering the system.

5) Ready-mix trucks are not permitted to clean chutes at the work site.

6) Adequate plastic or concrete lined cleaning pits are to be installed to facilitate washing of all cement and painting equipment. A functional, non-leaking, water point must be installed at each pit. The top 75% of the water in the pit may be disposed down the sewerage system, with approval from the Engineer. The remaining water and sludge must be disposed of at a Municipal approved site or removed by a chemical contractor.

7) The Contractor shall provide water and/or washing facilities at the construction camp for personnel.

8) In the event of any pollution entering any water body, the Contractor shall inform the RE/ECO/EO immediately.

9) The contractor will be responsible for any cleanup costs involved should pollution, erosion or sedimentation have taken place.

3.15 Pipe testing and cleaning

1) Cleaning/flushing of pipelines shall not impair (down grade) downstream baseline water quality.

2) Materials used in the sterilisation of pipelines, viz. chlorine solutions shall be treated as hazardous substances and disposed of at an approved landfill site.

3) Litter traps shall be installed and maintained at the outflow of all pipelines.

3.16 Noise control

1) Working hours will be restricted to daily normal working hours.
2) All noise and sounds generated by plant or machinery must adhere to SABS 0103 specifications for the maximum permissible noise levels for residential areas.
3) All plant and machinery are to be fitted with adequate silencers.
4) No sound amplification equipment such as sirens, loud hailers or hooters may be used on site, after normal working hours, except in emergencies.
5) If work is to be undertaken outside of normal work hours, permission must be obtained from the Local Authority. Prior to commencing any such activity the Contractor is also to advise the potentially affected neighbouring residents. Dates, times and the nature of the work to be undertaken are to be provided. Notification could include letter-drops.
6) The acceptable noise level according to SABS 10103 Code of Practice is 45dBA in rural district during the day and 35dBA at night. The applicant must comply/adhere to this requirement.

3.17 Erosion control and stormwater management

The Contractor shall take all reasonable precautions to prevent soil erosion resulting from a diversion, restriction or increase in the flow of storm water or water resulting from its operations and activities, to the satisfaction of the RE/ECO/EO. Possible measures that can be considered include the following:

1) Brushcut packing
2) Mulch or chip cover
3) Straw stabilising (at the rate of one bale/m² and rotated into the top 100mm of the
4) completed earthworks)
5) Watering
6) Planting / sodding
7) Hand seeding sowing
8) Hydroseeding
9) Soil binders and anti erosion compounds
10) Mechanical cover or packing structures
    a) Gabions & mattresses
    b) Geofabric
    c) Hessian cover
    d) Armourflex
    e) Log / pole fencing
    f) Retaining walls
11) The Contractor shall take reasonable measures to control the erosive effects of stormwater runoff.

12) The Contractor shall use siltscreens to prevent overland flowing water from causing erosion.

13) The use of straw bales as filters, which are placed across the flow of overland stormwater flows, shall be used as an erosion protection measure.

14) The ploughing-in of straw offers limited protection against stormwater runoffinduced erosion and shall be used as an erosion protection measure.

15) The Contractor shall be liable for any damage to downstream property caused by the diversion of overland stormwater flows.

3.18 Dust control

DUST - generated by works

1) Sand stockpiles are to be covered with hessian, shadecloth or DPC plastic.
2) Stockpiles are to be located in sheltered areas and the usable/cut face orientated away from the direction of the prevailing wind for that season.
3) Excavating, handling or transporting erodable materials in high wind or when dust plumes visible shall be avoided.
4) If high winds prevail the Engineer shall decide whether water dampening measures or cessation of activities is required, and if necessary they shall have the authority to temporarily stop certain of the works until wind conditions become more favourable.

Dust – generated by roads and vehicle movement

1) Vehicle speeds shall not exceed 40km/h along gravel roads or 20km/h on unconsolidated or non-vegetated areas. Dust plumes created by vehicle movement are to be monitored.
2) If access roads are generating dust beyond acceptable levels dust suppression measures must be initiated. These include, but are not limited to the following:
3) Reduction of travelling speeds along the road.
4) Restriction of vehicle or plant usage.
5) Application of chemical soil binders.
6) Application of a suitable sacrificial road surfacing.
7) If water is to be used for dust suppression, then only the critical areas should be watered. The use of water carts or hand watering is preferable. Overhead sprayers shall not be permitted in windy conditions, as the evaporation loss is too high. Watering is to be supervised to prevent unnecessary water wastage, and runoff into potentially sensitive areas. Preferable watering times are early morning and late afternoon/ evening. Water restrictions are to be observed if in place.

3.19 Turbidity control

1) Silt/turbidity must be contained within the construction area using silt screens that are properly fixed to prevent lifting and damage (special care must be taken to ensure stable silt screens at the deeper water levels during high tides). The siting of the screens and their operation must be approved by the RE/ECO/EO.

2) Water generated from well-point dewatering, sumps or dredging must be contained in selected bunded areas within the construction area.
3) The bunded areas must be constructed with plastic liners (or similar) to ensure no leakage.
4) Only clean water may be released into the river/estuary and no erosion will be allowed.

3.20 Fire management

1) No open fires or naked flames for heating or cooking shall be allowed on Site. Stoves and other electrical equipment shall only be permitted in the Contractor's camp and never be left unattended.
2) The Contractor shall take all reasonable and active steps to avoid increasing the risk of fire through their activities on Site. No fires may be lit except at places approved by the Engineer/ECO/EO.
3) The Contractor shall ensure that the basic fire-fighting equipment is to the satisfaction of the Municipal Fire Chief (where applicable).
4) The Contractor shall supply all living quarters, site offices, kitchen areas, workshop areas, materials, stores and any other areas identified by the Engineer/ECO/EO with tested and approved fire fighting equipment.
5) Fire and "hot work" shall be restricted to a site approved by the Engineer/ECO/EO
6) A braai facility may be considered at the discretion of the Engineer/ECO/EO. The area shall be away from flammable stores. All events shall be under management supervision and a fire extinguisher shall be immediately available. "Low smoke" fuels shall be used. Smoke free zoning regulations shall be considered.
7) Fires within National Parks, Nature Reserves and natural areas are prohibited.
8) Cooking shall be restricted to bottled gas facilities under strict control and supervision. The sensitivity of the surrounding land uses and occurrence of natural indigenous vegetation must be considered when assessing the risk of fires.
9) The Contractor shall take precautions when working with welding or grinding equipment near potential sources of combustion. Such precautions include having a suitable, tested and approved fire extinguisher immediately at hand and the use of welding curtains.
10) The Contractor shall identify the authorities responsible for fighting fires in the area and shall liaise with them regarding procedures should a fire start. The Contractor shall ensure that his staff are aware of the fire danger at all times and are aware of the procedure to be followed in the event of a fire. The Contractor shall also ensure that all the necessary telephone numbers etc. are posted at conspicuous and relevant locations in the event of an emergency. The Contractor shall advise the relevant authority of a fire as soon as one starts and shall not wait until he can no longer control it.
11) Should a contractor be found responsible for the outbreak of a fire, he shall be liable for any associated costs.

3.21 Water management

1) The Contractor shall provide water for drinking and construction purposes until such time as it is available from the local system. Water from the local system must be used carefully and sparingly with the view of not wasting water.
2) Taps are to be attached to secure supports and leaking taps and hosepipes are to be repaired immediately.

3) Watering as dust suppression must be undertaken as a last resort. It is preferable that sand stockpiles be covered rather than watered.

4) Any abstraction from natural water sources such as a stream or groundwater will require a Method Statement for approval by the RE/ECO/EO.

3.22 Waste management

1) A waste minimisation approach must be followed. This requires recycling wherever possible. All waste therefore to be suitably contained and removed regularly from site in accordance with the municipal waste management procedures. Other examples could include the use of rubble as fill, minimisation of waste concrete and the use of brush cuttings for mulching on rehabilitated areas.

2) The Contractor shall be responsible for the establishment of a refuse control and removal system that prevents the spread of refuse within and beyond the construction sites.

3) The Contractor shall ensure that all refuse is deposited in refuse bins, which he shall supply and arrange to be emptied on a weekly basis. Refuse bins shall be of such a design that the refuse cannot be blown out and that animals or birds are not attracted to the waste and spread it around. Refuse bins shall be water tight, wind-proof and scavenger-proof and shall be appropriately placed throughout the site. Refuse must also be protected from rain, which may cause pollutants to leach out. Refuse bins shall be appropriately placed throughout the Site and shall be conspicuous (e.g. painted bright yellow).

4) Refuse shall be disposed of at an approved waste site (site and method to be agreed with Local Authority). Refuse shall not be burnt or buried on or near the Site.

5) The Contractor shall provide labourers to clean up the Contractor's camp and Site on a weekly basis.

6) The Contractor shall also clean the Contractor's camp and Site of all structures, equipment, residual litter and building materials at the end of the contract.

3.23 Toilets

1) The Contractor shall be responsible for providing all sanitary arrangements for construction and supervisory staff on the site. A minimum of one chemical toilet shall be provided per 15 persons. Toilets provided by the Contractor must be easily accessible and within a practical distance from the workers. Toilets shall be located within areas of low environmental importance. The toilets shall be of a neat construction and shall be provided with doors and locks and shall be secured to prevent them blowing over. Toilets shall be placed outside areas susceptible to flooding.

2) The Contractor shall keep the toilets in a clean, neat and hygienic condition. The Contractor shall supply toilet paper at all toilets.

3) The Contractor shall be responsible for the cleaning, maintenance, servicing and emptying of the toilets on a regular basis (by chemical contractor). No waste to be dumped in the bush or stream. The Contractor shall ensure that the toilets are emptied before the builders' or other holidays and the waste be stored and disposed of at an appropriate place off site. The Contractor shall ensure that no spillage occurs when chemical toilets are cleaned and emptied. The Contractor shall supply a contingency plan for spills from toilets.

4) Performing ablutions in any other area is strictly prohibited.

5) The location for construction camps and toilets must be approved by the ECO.

3.24 Blasting and drilling

1) A current and valid authorisation shall be obtained from the relevant authorities and copied to the Engineer/ECO/EO prior to any blasting activity.

2) A Method Statement shall be required for any blasting or drilling related activities.

3) All Laws and Regulations applicable to blasting/drilling activities shall be adhered to at all times.

4) A qualified and registered blaster shall supervise all blasting and rock splitting operations at all times.

5) The Contractor shall ensure that appropriate pre blast monitoring records are in place (i.e. photographic and inspection records of structures in close proximity to the blast area).

6) The Contractor shall allow for good quality vibration monitoring equipment and record keeping on Site at all times during blasting operations.

7) The Contractor shall ensure that emergency services are notified, in writing, a minimum of 24 hours prior to any blasting activities commencing on Site.

8) The Contractor shall take necessary precautions to prevent damage to special features and the general environment, which includes the removal of flyrock. Environmental damage caused by blasting / drilling shall be repaired at the Contractors expense to the satisfaction of the Engineer/ECO/EO.

9) The Contractor shall ensure that no pollution results from drilling operations, either as a result of oil and fuel drips, or from drilling fluid.

10) Drill coring with water or coolant lubricants shall require a Method Statement approved by the Engineer/ECO/EO.

11) The Contractor shall ensure that adequate warning is provided immediately prior to all blasting/drilling. All signals shall also be clearly given.

12) The Contractor shall use blast mats for cover material during blasting.

13) During demolition the Contractor shall ensure, where possible, that trees in the area are not damaged.

14) Appropriate blast shaping techniques shall be employed to aid in the landscaping of blast areas, and a Method Statement to be approved by the Engineer/ECO/EO, shall be required in this regard.

15) At least one week prior to blasting or drilling/jackhammering, the relevant occupants/owners of surrounding land shall be notified by the Contractor and any concerns addressed. Buildings within the potential damaging zone of the blast shall be surveyed preferably with the owner present, and any cracks or latent defects pointed out and recorded either using photographs or video. Failing to do so shall render the Contractor fully liable for any claim of whatsoever nature, which may arise. The Contractor shall indemnify the Employer in this regard.

3.25 Borrow pit, quarries and crushers

1) All borrow pit, quarry and crusher sites shall be clearly indicated on plan.

2) Prior to the onset of any quarrying or borrow pit activities the Contractor shall establish from the Engineer/ECO/EO whether authorisation has been obtained, both in terms of the most recent acts of Mineral and Petroleum Resources Development Act, (Act 28 of 2002), National Environmental Management Act (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2010 and Noise and Nuisance Regulations of the Environmental Conservation Act. No excavation or blasting activities shall commence before the necessary authorisations are in place.
3) Only single lane access for construction vehicles shall be provided at borrow pit and quarry sites. New access roads require approval by the Engineer/ECO/EO.
4) The site of the crusher shall be fenced and sign-posted, and access to all unauthorised persons and vehicles shall be strictly prohibited.
5) The positioning of the crusher plant shall take cognisance of noise nuisance.
6) Stormwater and groundwater controls shall be implemented
7) Machinery, fuels and hazardous materials vulnerable to flooding shall be stored out of flood risk areas.
8) Vehicles leaving borrow pits shall not deposit/shed mud, sand and debris onto any public road.
9) All loads shall be covered with a tarpaulin or similar to prevent dangers and nuisance to other road users.
10) Trees and debris shall not be permitted to fall outside of the clearing limits. Trees shall be cleared or felled so as not to damage other trees or vegetation
11) Borrow pits shall be fenced to prevent unauthorised persons and vehicles from entering the area. Fences shall also be stock and game proof.
12) Rehabilitation and revegetation of borrow pits sites shall be as detailed in the relevant approvals.
13) The contractor shall ensure that blasted faces of the pit shall be shape-blasted to the approval of the Engineer/ECO/EO.
14) Where required, dust and fly-rock prevention methods shall be detailed in a Method Statement to be approved by the Engineer/ECO/EO.
15) Main crusher box and conveyor belt heads are to be fitted with fine jet sprinkler heads to minimise dust, and pre- and post- crush stockpiles shall be managed to minimise dust.
16) All crushing plant machinery shall have drip trays and all fuels and oils required for the crusher infrastructure shall be stored in the fuel store, if one is present on Site, or in an appropriately bunded and secured area.
17) Rehabilitation of borrow pits, quarries and crusher areas shall be as determined in the relevant approvals.

3.26 Waste water treatment works

1) A Method Statement shall be drawn up by the Contractor, in consultation with the wastewater plant manager, on the protocols to be followed, and contingencies in place, in the event of an accidental leak, spillage or overflow of raw wastewater, semi-treated wastewater, sludge or final effluent, as a direct or indirect result of construction activities. The Method Statement shall include the following:

a) a comprehensive list of available equipment (*e.g.* pipes and pumps) in the event of a spill

b) the location of all emergency equipment

c) the individual(s) responsible for the upkeep and maintenance of the emergency equipment

d) an indication of how regularly the emergency equipment will be checked to ensure that it is working properly

e) the location of any and all temporary emergency sumps, including old sludge ponds, clarifiers, low lying areas *etc.*

f) the size of spillage which the emergency procedures could contain

g) where and how any spilled material will be returned to the wastewater works system

h) who shall be notified in the event of an emergency, including contact numbers

2) The Contractor shall ensure that his staff and the staff of Subcontractors are aware of the procedure to be followed for dealing with spills and leaks, which shall include notifying the Engineer/ECO/EO and the relevant local authorities. The Contractor shall ensure that the necessary materials and equipment for dealing with spills and leaks are present on Site at all times. The clean-up of spills and any damage caused by the spill or leak shall be for the Contractor's account.

3.27 Fuel and chemical management

1) Fuel may be stored on site providing the following is strictly adhered to:

2) All necessary approvals with respect to fuel storage and dispensing shall be obtained from the appropriate authorities.

3) The Municipal Fire Chief (or as applicable) must be informed and consulted ito Fire Regulations.

4) The Contractor shall ensure that all liquid fuels and oils are stored in tanks with lids, which are kept firmly shut and under lock and key at all times.

5) The Contractor shall stand any equipment that may leak, and does not have to be transported regularly, on watertight drip trays to catch any pollutants. The drip trays shall be of a size that the equipment can be placed inside it. Drip trays shall be cleaned regularly and shall not be allowed to overflow.

6) All hazardous material (e.g., oils. Petrol or diesel) used on site must be disposed of at an approved hazardous waste facility or with the services of a licensed waste transportation company. All certificates of disposal and weigh bridge slips need to be signed by all relevant officials and kept as records on the premises.

7) The contractor will be responsible for the cleaning up of any spill and associated costs.

8) Areas for storage of fuels and other flammable materials shall comply with standard fire safety regulations and may require the approval of the Municipal Fire Chief (in urban areas) or RE/ECO/EO.

9) Temporary above ground storage tanks may be permitted at the discretion of the Municipal Fire Chief based on the merit of the situation, provided that the following requirements are complied with:

   a. Written application together with a plan and authority from the Municipality shall be forwarded to the Municipal Fire Chief (in urban areas) or RE/ECO/EO at least fourteen (14) days prior to the installation being erected on site. Written permission shall be obtained from the chief fire officer for the erection of the installation.

   b. The drawn plan shall be acceptable to the Municipal Fire Chief (in urban areas) or RE/ECO/EO and to contain the following information:

      (i) the scale

      (ii) the name and address of the premises,

      (iii)the number and the quantity of the tanks,

      (iv)the position of the tanks in relation to the boundary, other flammable or combustible materials, etc,

      (v) the size and construction materials used for the bund

      (vi)the product to be kept in the tank, and

      (vii) any other information relevant to the situation.

Location

- The fuel storage area shall be located at one of the following locations: {provide a list of acceptable locations for the fuel storage area}.
- The Engineer/ECO shall be advised of the area that the Contractor intends using for the storage of fuel.
- The location of the fuel storage area will determined by the Municipal Fire Chief (in urban areas) and be approved by the Engineer/ECO/EO.
- The tank shall be erected at least 3,5 meters from buildings, boundaries and any other combustible or flammable materials.

Signs/good practice/safety precautions

- Symbolic safety signs depicting "No Smoking", "No Naked Lights" and "Danger" conforming to the requirement of SABS 1186 are to be prominently displayed in and around the fuel storage area. The volume capacity of the tank shall be displayed.
- No smoking shall be allowed in the vicinity of the stores.
- The capacity of the tank shall be clearly displayed and the product contained within the tank clearly identified using the emergency information system detailed in SABS 0232 part 1.
- There shall be adequate fire-fighting equipment at the fuel storage and dispensing area or areas.
- Fuel shall be kept under lock and key at all times.

Tanks

- The storage tank shall be removed on completion of the works.

- The storage tank shall be on the premises only for as long as the contract last.
- All such tanks to be designed and constructed in accordance with a recognised code.
- The rated capacity of tanks shall provide sufficient capacity to permit expansion of the product contained therein by the rise in temperature during storage.

Bunds/storage areas

- Tanks shall be situated in a bunded area the volume of which shall be at least 150% of the volume of the largest tank. The floor of bund shall be smooth and impermeable constructed of concrete or plastic sheeting with impermeable joints with a layer of sand over to prevent perishing. The bund walls shall be of concrete or formed of well-packed earth with the impermeable lining extending to the crest. The floor of the bund shall be sloped towards an oil trap or sump to enable any spilled fuel and/or fuel-soaked water to be removed.
- A bacterial hydrocarbon digestion agent that is effective in water approved by the Engineer/ECO/EO shall be installed in the sump.
- The tanks and bunded areas shall be covered by a roofed structure to prevent the bunded area from filling with rain water. This structure shall be constructed in such a way, and to the approval of the Engineer/ECO/EO, to ensure that it is wind resistant.
- Any water that collects in the bund shall not be allowed to stand and shall be removed within one day and taken off Site to a disposal site approved by the Engineer/ECO/EO, and the bacterial hydrocarbon digestion agent shall be replenished.

Empty containers

- Only empty and externally clean tanks may be stored on the bare ground. All empty and externally dirty tanks shall be sealed and stored on an area where the ground has been protected.

Filling/dispensing methods

- Any electrical or petrol-driven pump shall be equipped and positioned so as not to cause any danger of ignition of the product.
- If fuel is dispensed from 200 litre drums, the proper dispensing equipment shall be used. The drum shall not be tipped in order to dispense fuel. The dispensing mechanism of the fuel storage tank shall be stored in a waterproof container when not in use.
- Adequate precautions shall be provided to prevent spillage during the filling of any tank and during the dispensing of the contents.

Method statements

- A method statement is required for the filling of and dispensing from storage tanks.

3.28 Litter and oil traps

Refuse screens and oil traps shall be installed at runoff concentration points from large parking facilities, wash bays, stormwater outlets, inlets to detention ponds, workshop forecourt drainage points, ablution and eating areas. These facilities shall be serviced and monitored at the discretion of the Engineer/ECO.

3.29 Contaminated water

General

1. The Engineer/ECO/EO's approval will be required prior to the discharge of contaminated water to the Municipal sewer system.
2. The Contractor shall prevent discharge of any pollutants, such as cements, concrete, lime, chemicals and fuels into any water sources.
3. Water from kitchens, showers, laboratories, sinks etc. shall be discharged into a conservancy tank for removal from the site.
4. Runoff from fuel depots/workshops/truck washing areas and concrete swills shall be directed into a conservancy tank and disposed off at a site approved by the Engineer/ECO and Local Authority.
5. The contaminated water, contaminated run-off, or effluent released into a water body requires analysis in terms of the National Water Act. Contaminated water must not be released into the environment without authorisation from the relevant authority.

Washing areas

1. Wash areas shall be placed and constructed in such a manner so as to ensure that the surrounding areas, which include groundwater, are not polluted.
2. A Method Statement shall be required for all wash areas where hydrocarbon and hazardous materials, and pollutants are expected to be used. This includes, but is not limited to, vehicle washing, workshop wash bays, paint wash and cleaning.
3. Wash areas for domestic use shall ensure that the disposal of contaminated "grey" water is sanctioned by the Engineer/ECO.

3.30 Fixing of surfaces

1) Over spray of bitumen products outside of the road surface and onto roadside vegetation shall be prevented using a method approved by the Engineer/ECO/EO.
2) Bitumen drums / products shall be stored in an area approved by the Engineer/ECO/EO. This area shall be indicated on the construction camp layout plan. The storage area shall have a smooth impermeable (concrete or thick plastic covered in sand) floor. The floor shall be bunded and sloped towards a sump to contain any spillages of substances.
3) When heating of bitumen products, the Contractor shall take cognisance of appropriate fire risk controls.
4) Stone chip / gravel excess shall not be left on road / paved area verges. This shall be swept / raked into piles and removed to an area approved by the Engineer/ECO/EO.
5) Milled or cut out bitumen shall be removed to an area approved by the Engineer/ECO/EO.
6) Water quality from runoff from newly /fresh bitumen surfaces shall be monitored by the Engineer/ECO/EO and remedial actions taken where necessary.
7) Heating of bitumen products shall only be undertaken using LPG or similar zero emission fuels.
8) Appropriate fire fighting equipment shall be readily available.

3.31 Vehicles and access roads

1) The movement of any vehicles and/ or personnel outside of the designated working areas shall not be permitted without the written authorisation of the Engineer/ECO.
2) Should the Contractor not exercise sufficient control to restrict all work to the area within the marker boundaries, then these on instruction of the Engineer/ECO/EO shall be replaced by fencing the additional cost of which shall be borne by the Contractor.
3) Dust control measures such as dampening with water shall be implemented where necessary, as indicated by the Engineer/ECO.
4) Access and haul roads shall be maintained by the Contractor.
5) Maintenance includes adequate drainage and side drains, dust control and restriction of edge use.
6) All temporary access routes shall be rehabilitated at the end of the contract to the satisfaction of the Engineer/ECO.
7) All public roads shall be kept clear of mud and sand. Mud and sand that has been deposited through construction activities shall be cleared regularly.
8) Any materials used for layerworks shall be approved by the Engineer/ECO prior to the activity commencing.
9) Damage to the existing access roads as a result of construction activities shall be repaired to the satisfaction of the Engineer/ECO/EO, using material similar to that originally used. The cost of the repairs shall be borne by the Contractor
10) Traffic safety measures, to the satisfaction of the Engineer/ECO, shall be considered in determining entry / exit onto public roads.
11) All users of haul roads shall not exceed 45 km/h (cars)/ 15 km/h (trucks) {note that the standard spec places a site speed limit of 45 km/h for all vehicles}
12) Appropriate traffic warning signs shall be erected and maintained.
13) Trained and equipped flagmen shall be used where the access road intersects with any public roads.
14) Attention shall be paid to minimising disruption of the flow of traffic and reducing the danger to other road users and pedestrians.
15) Method statements are required for the following:-
    a) Traffic safety measures with regard to entry and exit on public roads and the control of construction traffic.
    b) Proposed route for new access roads, tracks, or haul roads; the proposed construction of new roads, and the method of upgrading existing roads; and the proposed methods of rehabilitation on completion.

3.32 Stockpiling of materials

The Contractor shall temporarily stockpile topsoil materials in such a way that the spread of materials is minimised, and thus the impact on the natural vegetation. The stockpiles must be placed within areas demarcated for this purpose. The RE/ECO/EO shall approve stockpile areas.

3.33 Heritage remains

Should any heritage remains be exposed during excavations, these must immediately be reported to the Provincial Heritage Resources Authority of the Western Cape, Heritage Western Cape. Heritage remains uncovered or disturbed during earthworks must not be disturbed further until the necessary approval has been obtained from Heritage Western Cape.

3.34 Contingency planning

In the event of a spill or leak of product into the ground and/or water courses (e.g. that of hazardous substances used for the construction phase), such incidents must be reported (within 14 days) to all the relevant authorities including the Directorate: Pollution Management in accordance with Section 30(10) of the National Environmental Management Act No. 107 of 1998 (NEMA) and Section 20 (3) of the National Water Act No.36 of 1998 (NWA), that pertains to the control of emergency incidents and the remediation of the affected area. All necessary documentation must be completed and submitted within the prescribed timeframes.

Containment, clean-up, and remediation must commence immediately.

3.35 Energy Efficiency & Waste Minimization Measures

The following design measures will be considered for energy and water saving measures:

- All toilets must have an interruptible flush mechanism that allows for complete control over flushing by the user unless the cistern is supplied with a fitted weight (to interrupt the flow) or a hippo pack or any water replacement pack/device to reduce the amount of water lost in a single flush. All toilets cisterns must have a capacity of less than 9 litres;
- No automatic flush urinals are to be installed in any facilities of any type whatsoever.
- All taps used must include an aerator that reduces the flow of water by at least 30% or to 6liters/minute, unless sued solely to fill receptacles such as basins or water/drinking troughs.
- Shower heads must be adjustable to reduce the water flow or have a built-in water restrictor/aerator that reduces the water flow to at least 10litres/minute.
- Energy saving light bulbs such as CFL's and LED's must be installed instead of incandescent bulbs except where the quality of the light is not sufficient for high precision work and reading.
- Where applicable, all outdoor lighting must be fitted with timers, automatic shut-off devices or photo-sensitive mechanisms to switch off light during daylight hours.
- Household waste to be separated and re-cycled (glass, paper, green/garden waste).
- Retention pond will also be used as a detention facility to detain water for irrigational use within the development.
- Where applicable, rain water harvesting from the roofs must be considered. The installation of solar water heaters and solar photovoltaic panels must be considered for the generation of some of the electricity.
- The use of energy saving bulbs in all structures, alternatively use low voltage or compact fluorescent lights are to be used in this project.
- The use of energy saving geysers;
- The use of solar panels and storage tanks on flat roof areas.

3.36 Outdoor advertising

All outdoor advertising associated with this activity, whether on or off the property concerned, must comply with the applicable Local Authority By-Law for control of Outdoor Advertising or in the absence of local legislative controls, must comply with the South African Manual for Outdoor Advertising Control.

3.37 Environmental Control Officer or Resident Engineer

An Environmental Control Officer (ECO) will implement environmental control of the development. The ECO duties will be as follows:

- Ensure implementation and monitoring of the EMP.
- Make changes to the EMP as required.
- Visit the site regularly on at least a monthly basis after three weekly visit at commencement of project.
- Prepare reports as required by mitigation measures or by the EA.
- Maintain a photographic record of the work and environmental issues.

3.38 Documentation control

The ECO will maintain a file containing the following:

1) Copy of the EMP
2) Methodology statement(s) by the contractor(s)
3) Site establishment plan
4) Letter from contractor(s) indicating that he has familiarised himself with the contents of the EMP.
5) Letter from contractor(s) on environmental awareness training
6) The applicant must ensure that complaints received by the farm are documented.
7) The contractor should maintain a copy of the following documents on-site:
    - All methodology statements;
    - Emergency response and remedial action plan;
    - Environmental Management Plan (EMP) and other documents related to the operation on file.
8) Tracking table (see Appendix B)

4 Management Programme – Operational

Note: All controls and regulations must be adhered to as indicated in the architectural guidelines and energy saving principles.

4.1 Construction

All applicable measures as indicated under the Construction EMP must be implemented.

4.2 Stormwater management

A storm water minimisation policy should be adopted. This will require that rainwater concentration be minimised.

4.3 Water storage

It is strongly recommended that the installation of a rainwater storage reservoir(s) as far as practically possible.

4.4 Vegetation

All measures as indicated in the final BAR must be implemented.

4.5 Contingency Planning

- In the event of a spill or leak of product into the ground and/or stormwater (e.g. that of hazardous substances used for the operational phase), such incidents must be reported (within 14 days) to all the relevant Municipality including the Directorate: Pollution Management in accordance with Section 30(10) of the National Environmental Management Act No. 107 of 1998 (NEMA) and Section 20 (3) of the National Water Act No.36 of 1998 (NWA), that pertains to the control of emergency incidents and the remediation of the affected area. All necessary documentation must be completed and submitted within the prescribed timeframes. Containment, clean-up, and remediation must commence immediately.

Appendix A: Environmental authorisation

Appendix B: Tracking Table

Requirement	Received		Date	Comment
	Yes	No		
Methodology statement				
Site establishment plan				
Letter re contents of EMP				
Letter re awareness training				

Appendix C: Mitigation measures

APPENDIX G: Other

Appendix G1: Permits and Licenses

Appendix G1.1: Municipal confirmation of services.

NAMA KHOI

MUNISIPALITEIT **MUNICIPALITY**

Alle korrespondensie moet gerig word aan die:
MUNISIPALE BESTUURDER

All correspondence to be addressed to:
MUNICIPAL MANAGER

Posbus / P.O. Box 17
Privaatsak / Private Bag X22
SPRINGBOK 8240
☎ 027 718 8100
📠 027 712 1635
E-mail: info@namakhoi.gov.za
Web: www.namakhoi.gov.za

Navrae / Enquiries: NA Baartman
Ons verwysing / Our Reference:

26 March 2013

Dear Mr. Danie Viljoen

I hereby confirm on behalf of the Municipality that more than 2 MVA electrical power is available on Erven 2883.

Hope you find this in order.

Kindest Regards

NA BAARTMAN
MUNICIPAL MANAGER

NAMA KHOI

MUNISIPALITEIT MUNICIPALITY

Alle korrespondensie moet gerig word aan die:
MUNISIPALE BESTUURDER

All correspondence to be addressed to:
MUNICIPAL MANAGER

Posbus / P.O. Box 17
Privaatsak / Private Bag X22
SPRINGBOK 8240
☎ 027 718 8100
🖷 027 712 1635
E-mail: info@namakhoi.gov.za
Web: www.namakhoi.gov.za

Navrae / Enquiries: NA BAARTMAN
Ons verwysing / Our Reference:

21 May 2013

Maretha van den Heever
Conveyancing Secretary
MOSTERT & BOSMAN ATTORNEYS
P O Box 3355
Tygervalley, 7536
3rd Floor
MSP Chambers
Cnr of Carl Cronje & Tygerfalls Boulevard
Tygerfalls
Dx 152, Cape Town

RE: ERF 2883

We hereby wish to confirm that the above mentioned property will have adequate access to the following services:

- Water
- Electricity
- Sanitation

Hope you find this in order.

Regards

NA BAARTMAN
MUNICIPAL MANAGER

Appendix G1.2: Department of Water Affairs Approval

Will be included in the Final Report.

.

Appendix G1.3: Heritage Western Cape

Comments from Heritage Northern Cape

NGWAO-BOSWA
YA KAPA BOKONE

1 Robb Street
Kimberley North
P.O. Box 1930
KIMBERLEY,
8330

Rob Straat 1
Kimberley Noord
P.O. Box 1930
KIMBERLEY,
8330

Moago Robb 1
Kimberley North
P.O. Box 1930
KIMBERLEY,
8330

Isakhiwo I –Robb 1
Kimberley North
P.O. Box 1930
KIMBERLEY,
8330

Telephone:
+27 53 831 2537/ 0790369294

Fax:
+27 53 833 1435

E-mail:
ratha.timothy@gmail.com

Enquiries : Mr. A. Timothy
Dipatlisiso :
Imibuzo :
Navrae :

Date: 29 October 2013
Letlha:
Umhla:
Datum:

Ms Cindy Postlewayt
7 Ritchie Avenue
Kenilworth
Cape Town
7708

Tel: 021 797 1005
Mobile: 084 354 0096
E-mail: csnaude@absamail.co.za

RE: Notification of Intent to Develop- Springbok Mall

Dear Cindy

Thank you for the indication that the above development is to take place in Springbok, Namaqua District of the Northern Cape province.

This letter has come into effect to inform you that the above 'Notification of intent to develop' Erf :2883 in Springbok has been considered at the Built Environment and Landscape Committee meeting held on 23 October 2013 in Kimberley.

Although it is indicated in the NID that no significant heritage structures exist within the affected site, the clearing of the site, even excavation activities may destroy or damage archaeological and/or palaeontological resources.

The Committee has therefore decided that the NID be referred to the South African Heritage Resources Authority (SAHRA).

Hope you will find the above arrangement to be in order.

Yours sincerely

Ratha Timothy
(Office Manager)

NGWAO BOSWA JWA KAPA BOKONE
1 ROBB STREET
KIMBERLEY NORTH
KIMBERLEY 8301
TEL: 053 831 2537 FAX: 053 833 1435

Ngwao Boswa Kapa Bokone is the Provincial Heritage Resources Authority of the Northern Cape Province established in terms of Section 23 of the National Heritage Resources Act, Act no. 25 of 1999

Appendix G1.4: Zoning approval

Aanhangsel A

Nama Khoi Municipality

ZONING CERTIFICATE

Date: 2011/12/14

Fax No: (027)718-8100
Tel No: (027)712-1635
Address: Private bag X22
Springbok
8240

Property description:	2883, SPRINGBOK
Street Address:	VOORTEKKERSTRAAT
Registered area:	7.6722SQM
Municipality:	Nama Khoi Municipality
District:	Namakwa
Zoning:	Business zone I
Primary use:	Business premises;
Consent use:	Animal clinic; Animal hospital; Drive-in restaurant; Funeral parlour; Institution; Place of entertainment; Service industry; Service station; Warehouse;
Consent uses approved:	None recorded (confirm with municipality)
Restrictions:	See annexure
Relaxations of restrictions:	None recorded (confirm with municipality)

This information is in accordance with the Nama Khoi Municipality Town Planning Scheme as on above date, and may be amended from time to time. This information is also given in respect of Land Use Management requirements only and must not be construed as indicating requirements in terms of any By-Laws, the National Building Regulations, Environmental Legislations or any restrictive conditions in Title Deeds.

Divisional Head: Land-Use Planning
Mr Deon Magerman

MUNICIPAL MANAGER

Date Created: 2011/12/14 8:31 AM

Creator: Deon

KOOPKONTRAK – AANHANGSEL 'B'

Location, Size and Zoning Erf 2883

The property identified is 7,6722 m^2 undeveloped land known as stand 2883 and is zoned as Business zone 1 The property is owned by Nama Khoi Municipality and registered in its name at the Registrar of Deeds. (Title deed No. T56048/1990). The property is bounded by the N7 on the west towards the Namibian Border and is located in the CBD of Springbok.

Locality plan indicating the development area

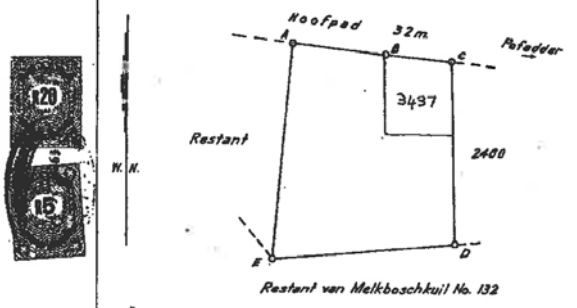
KANTOORAFSKRIF

SYE METER		RIGTINGS-HOEKE		KOORDINATE Stelsel Lo 17° Y	X
		Konstant		- 80 000,00	+3 280 000,00
AB	140,00	276 54 00	A	- 6 812,88	+ 2 651,47
BC	100,01	275 21 10	B	- 6 951,07	+ 2 668,25
CD	276,56	350 22 50	C	- 7 051,44	+ 2 677,62
DE	275,37	85 47 40	D	- 7 059,25	+ 2 954,67
EA	324,03	185 00 10	E	- 6 784,62	+ 2 974,26
		No 103 Monument	Δ	- 5 538,80	+ 2 255,24
		No 81 Springbok X	Δ	- 4 577,43	+ 2 823,46

L.G. No. F 3824-88

Goedgekeur
Adj Landmeter-generaal
1988 · 07 · 12

Bakens.
A, B, C, D, E, 12 mm. ysterpen in sement.



Restant van Melkboschkuil No. 132

Skaal 1:5000

Die figuur A B C D E
stel voor 7,6722 hektaar grond, synde
Erf 2883, gedeelte van Erf 931, Springbok,
gelee in die Munisipaliteit Springbok,
Administratiewe Distrik Namakwaland, Provinsie Kaap die Goeie Hoop.
Opgemeet in Febr. 1967, Julie 1985, Mei 1988,
deur my, Landmeter

Hierdie kaart is gehegg aan T/A 56048/90 No. gedateer t.g.v. Registrateur van Aktes	Die oorspronklike kaart is. No. 1470/87 gehegg aan Transport/Grondbrief No. 1368.21.1008	Lêer No. S. 8976 M.S. Nos 1293/88 Kamp. FB-608/XII (2554) FB-608/YI2 (2996)

2883