

OUTENIQUA GAME FARM

RISK ASSESSMENT & GUIDELINES FOR WILDLIFE INTRODUCTION AND MANAGEMENT

PREPARED FOR Mr CLINT SMITH

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1. INTRODUCTION AND OBJECTIVES

1.1 INTRODUCTION

Mr Clint Smith, the owner of the Oureniqua Game Farm Reserve near Brandwag in the Southern Cape, contracted Ken Coetzee of *Conservation Management Services* (CMS) to prepare a risk assessment for the introduction and management of indigenous and extralimital wildlife and an evaluation of the reserve in terms of the Game Translocation Policy (2014) of Cape Nature.

This risk assessment will include both indigenous and extralimital wildlife, species that are already on the farm, as well as the species that are additionally required for introduction.

1.2 OBJECTIVES FOR MANAGEMENT

PRIMARY OBJECTIVE: The primary objective of this wildlife management plan is to address the objectives of the Game Translocation and Utilization Policy (GTUP) (2014) with respect to the introduction and management of game species extralimital to the Western Cape.

These objectives are as follows:

- To ensure that risks posed to biodiversity by the introduction of extralimital game species are effectively mitigated;
- to ensure the sustainable utilization of natural resources;
- to ensure the ecological integrity of wildlife species; and
- to ensure effective protection, security and compliance.

SECONDARY OBJECTIVES: The secondary objectives are those set by the landowner for the establishment and management of the property. In the case of the Outeniqua Game Farm (OGF) the objectives are as follows:

A. GAME VIEWING AND UTILIZATION OBJECTIVE: The primary objective is the introduction of a diversity of historically occurring and extralimital game species, according to the sustainable capacity of the natural habitat to support them. Wildlife for viewing enjoyment and hunting will thus be the reason for introducing game onto the property.

B. LAND USE OBJECTIVE: The secondary objective is to make good use of land that is too marginal for other economically viable activities, to rehabilitate the areas that have become severely invaded by alien plants and to return the property to its former natural state where possible.

The OGF is part of the Gouritz Cluster Biosphere Reserve and as such, subscribes to the protection and maintenance of the natural fauna and flora and landscape of the area for the enjoyment of the landowner, visitors to the reserve and also for future generations.

A part of the original management objective was to “restore” the historical wildlife of the area, provided that introductions were not in any way detrimental to the natural environment of the OGF. The main objective was thus to develop the property as a wildlife reserve for sustainable utilization, and also to ensure that the envisaged wildlife introductions would not compromise the best interests of the natural environment.

This report thus serves to identify the possible risks involved with the objectives, to determine mitigations for those risks and to provide guidelines for ecologically balanced wildlife and habitat management.

1.3 LOCALITY AND LAYOUT OF THE PROPERTY

The Property lies Northwest of Hartenbos and South of the Robinson Pass in the South Cape coastal plain area. (See Figure 1 for locality detail). The OGF lies about 15km Northwest of Hartenbos and 35km East of Herbertsdale on the South Cape coast.

The layout of the property is shown in Figure 2. Figure 2 illustrates the general topography of the OGF and indicates the position of the boundaries and other important landscape features.

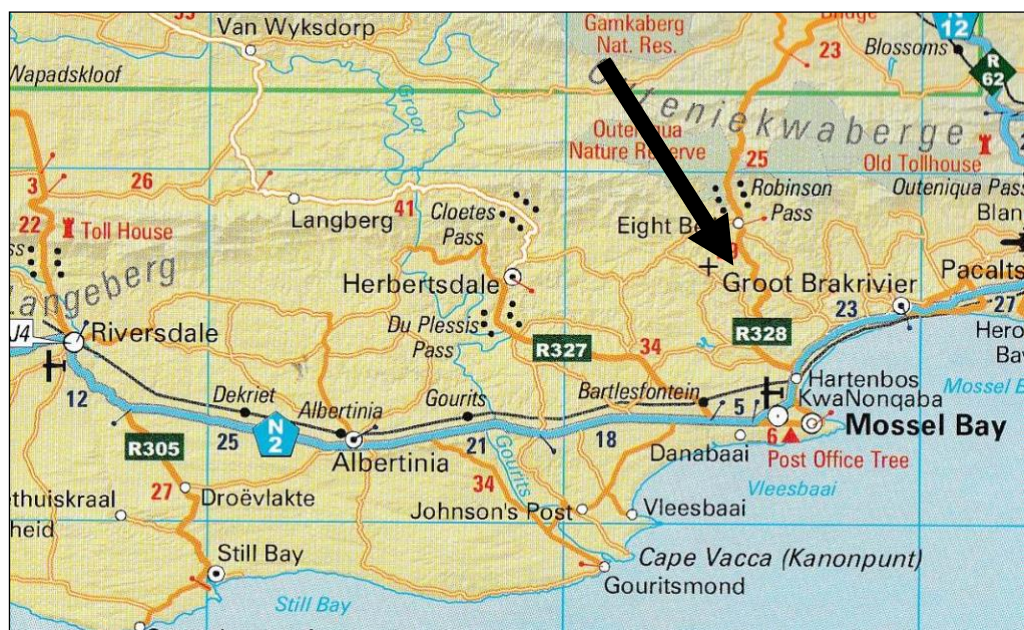


FIGURE 1: Approximate locality of the Outeniqua Game Farm Northwest of Mossel Bay.



FIGURE 2A: The layout of the OGF boundary fence-line and showing the valleys and cultivated hilltops.

1.4 DETAILS OF THE LANDOWNER AND PROPERTY

- a) Full name : Mr. Clint Smith
- b) Identity no : 7409025117082
- c) Farm name : Outeniqua Game Farm
- d) District : Mossel Bay
- e) Address :
- f) Tel / Mobile : 0825646443
- g) e-mail : ogfcc2@gmail.com
- h) Title Deed Numbers: T000000072/2015 & T6687/05

2. HABITAT DESCRIPTION

It is necessary to evaluate the various habitats of the OGF and then to broadly comment on the viability of each wildlife species to be introduced in terms of the available habitat, and in terms of the objectives of the land-owner and the GTUP (2014).

2.1 CLIMATE AND GEOLOGY

The mean annual precipitation is 520mm with no clear peak rainfall period although less rain falls during the November to January summer period. The mean maximum temperature during January is 28°C and the mean minimum for July is 5,5°C with very few days of frost except in the low-lying valleys. Fairly high temperatures and little rain in summer result in a period of drought for which Fynbos and Renosterveld plants are suitably adapted by means of fine or leathery leaves and flowering and fruiting in the wet season.

The rocks of the area are the silcretes and conglomerates which have their origins in the ancient movements of river gravels when the Old African surface was eroding as well as the shales of the Bokkeveld group of rocks. The soils along the drainage valleys consist of recently deposited riverine sand and loam mostly derived from the Bokkeveld shales (Mucina & Rutherford, 2006). The OGF consists mostly of a deeply bisected, flattish coastal plateau, resulting in a series of rounded rolling hills and steep-sided valleys.

2.2 VEGETATION DESCRIPTION

Figure 3 illustrates the vegetation units of the OGF area (Cape Farm Mapper, 2019 and Vlok Vegmap, 2006). The dominant vegetation units are Fynbos/Renosterveld Thicket and Drainage line thickets. These vegetation types easily merge and one can be excused from thinking that it is all one uniform single vegetation type in some areas. The drainage line vegetation is however, more concentrated on the bottoms of the valleys. In addition, there are numerous areas that have been agriculturally transformed into grazing pastures and are now an important habitat in its own right. The descriptions of Vlok 2006 were preferred to that of Mucina & Rutherford, (2012) as they were more accurate for the site and were done at much finer scale.

2.2.1 LEEUWKLOOF FYNBOS-RENOSTER THICKET

On the hills and the upper hillslopes this vegetation consists of a medium height and fairly grassy shrubland which is Asteraceous in nature (having numerous plant species of the daisy family). Proteas are dominant in dense stands on the cooler Southern slopes and Ericas become more numerous in the valleys in wetter areas. This vegetation type is typical of the stony outcrops along the tops of the valley slopes (see Plates 1 & 2).

Patches of thicket occur along the fire protected drainage valleys, in places becoming “true forest” with a closed canopy with a leaf littered forest floor. Some of these forest patches were severely damaged in recent fires.

Alien invasive plants like *Acacia mearnsii* (black wattle), brambles (*Rubus cuneiformis*) and bugweed (*Solanum mauritanianum*) occur in disturbed forest and along the valley drainages. The invasive alien *Hakea sericea* occurs on the hillslopes in the Fynbos vegetation.

This vegetation type is a fire-driven ecosystem and consideration will have to be given to establishing a fire management plan which must indicate at which frequency to burn which areas.

Typical plant species that were located in the Fynbos are as follows:

<i>Protea repens</i>	<i>Metalasia densa</i>
<i>Protea neriifolia</i>	<i>Podalyria</i> sp.
<i>Bobartia macrospatha</i>	<i>Anthospermum aethiopicum</i>
<i>Diospyros dichrophylla</i>	<i>Pelargonium botulinum</i>
<i>Leucodendron salignum</i>	<i>Helichrysum petiolare</i>
<i>Leucodendron eucalyptifolium</i>	<i>Pelargonium fruticosum</i>
<i>Leucospermum cuneiforme</i>	<i>Erica chloroloma</i>
<i>Morella quercifolia</i>	<i>Erica versicolor</i>
<i>Passerina corymbosa</i>	<i>Berkheya</i> sp.
<i>Cullumia biscula</i>	<i>Carpobrotus acinaciformis</i>
<i>Senecio rigidus</i>	<i>Pterocelastrus tricuspidatus</i>
<i>Metalasia pungens</i>	<i>Osyris compressum</i>
<i>Muraltia ericaefolia</i>	<i>Halleria lucida</i>
<i>Otholobium fruticans</i>	<i>Oedera genistifolia</i>
<i>Anisodonteia scabrosa</i>	<i>Ursinia discolor</i>
<i>Elytropappus rhinocerotis</i>	<i>Carpobrotus acinaciformis</i>
<i>Euclea recemosa</i>	<i>Ischrolepis capensis</i>
<i>Erica cerinthoides</i>	<i>Anthospermum aethiopicum</i>
<i>Restio triticeus</i>	<i>Hermannia hyssopifolia</i>
<i>Hermannia</i> sp.	

The grasses typical of the Fynbos are *Sporobolus africanus*, *Cymbopogon marginatus*, *Eragrostis capensis*, *E. curvula*, *Themeda triandra*, *Ehrharta racemosa* and *Cynodon dactylon*.

2.2.2 DRAINAGE THICKET AND FOREST

This vegetation is actually a part of what Vlok describes as Leeuwkloof Fynbos-Renoster Thicket but it consists of typical riverine thicket consisting of shrubs and trees typical of the cooler moist valleys in the area and deserves to be described separately. On the upper slopes above the valley floor the Fynbos-Renosterveld contains bushclumps in the upper valleys and consisting of mostly *Searsia*, *Grewia*, *Gymnosporia* and *Diospyros* sp. Thicket patches occur in fire-safe valleys and on some of the lower slopes and in some parts merging with the forest on the valley floor(see Plates 3 & 4).

Most of the forested valley floors were severely burnt out in the 2016 fire that devastated the area, killing many of the mature larger trees.

The plant species observed in this unit were as follows:

Searsia glauca
Searsia tomentosa
Searsia pallens
Diospyros dichrophylla
Grewia occidentalis
Gymnosporia nemorosa
Olea europaea var. *africana*
Podocarpus falcatus
Rapanea melanophloeos
Cassine peragua

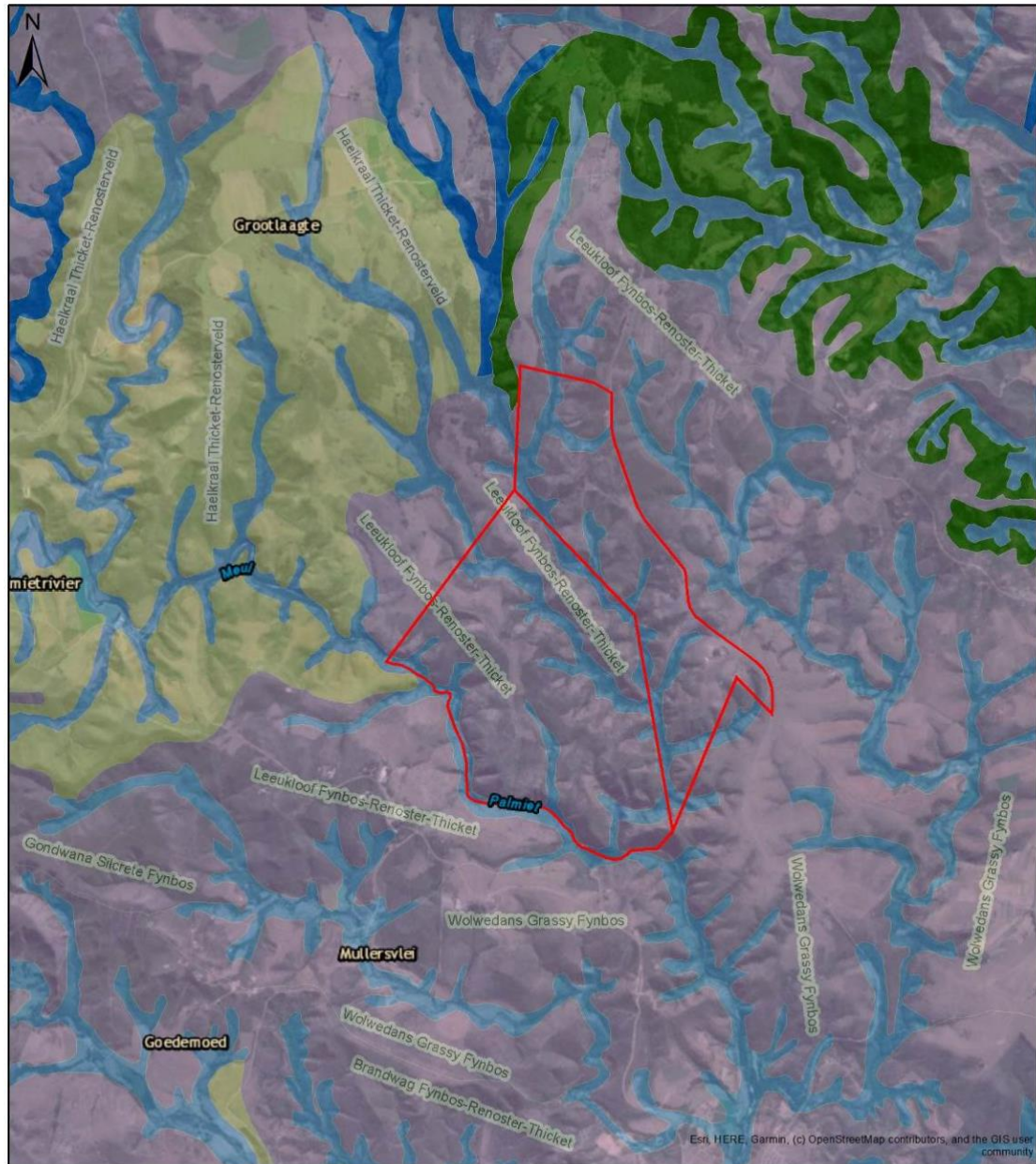
2.2.3 TRANSFORMED PASTURE AREAS

These are areas that were historically transformed for livestock grazing and grain cropping. These pasture areas occur on the hillcrests where Fynbos and Renosterveld were cleared away for the planting of crops like wheat and oats (see Plates 5 & 6).

These croplands were probably also used for livestock grazing. Some of these areas are currently cultivated with grasses

Many of the areas cleared of fynbos and renosterveld to create croplands were originally invaded by renosterbos and weedy *Anthospermum* and *Helichrysum* as a first step in the natural recovery of the vegetation long since removed but regular brushcutting or mowing of these areas maintains the natural grass cover typical of these habitats. All of the pasture areas are now retiled and established with fodder crops for the wildlife to be introduced.

OUTENIQA GAME FARM



Legend

Vlok Vegmap

Drain

Forest

Fynbos

Grassland

Marine

Renosterveld

S Karoo

Source

Thicket

0 0.75 1.5 3 km

Scale: 1:72 224

Date created: January 17, 2020



Western Cape
Government

Agriculture

FIGURE 3: The vegetation of the OGF area (Vlok Vegmap, Cape Farm Mapper, 2019) showing the dominance of fynbos vegetation and drainage vegetation.



PLATE 1: Three year old post fire Fynbos vegetation.



**PLATE 2: Fynbos on the higher ridges and upper valley slopes
This veld was severely burnt in 2016.**



PLATE 3: Thicket/forest in one of the deeper drainage valleys.

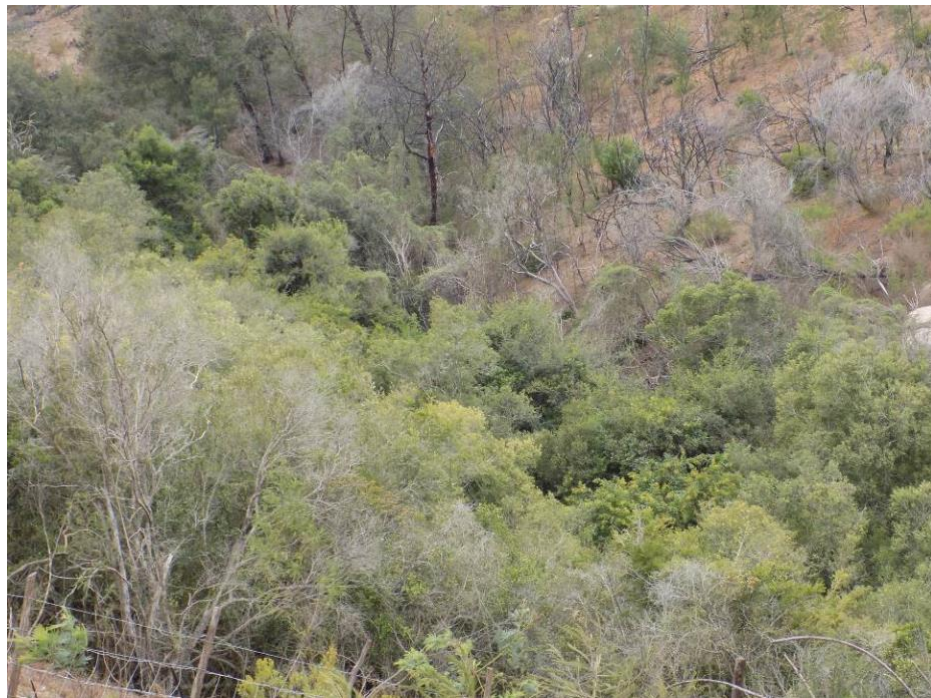


PLATE 4: Thicket typical of the fire safe sites in the upper valleys.



PLATE 5: Cultivated pasture along a ridge-top in camp 2.



PLATE 6: Upland cultivated pastures on a hilltop in camp 2.

2.3 HABITAT CONDITION AND CAPABILITY

2.3.1 HABITAT CONDITION

Veld conditions on the OGF can be considered using two main habitat units, the combined Fynbos and Renosterveld and the transformed, cultivated areas. The drainage thickets will provide additional browsing for species like kudu, eland, nyala and impala.

Fynbos / Renosterveld

This vegetation unit was recently burnt (2016) and is apparently all much of the same age since fire. There are a few areas in which woody shrubs, thickets and forest escaped the fire and are in relatively intact condition. The thicket patches in particular are important as they contain palatable browse trees and shrubs which are important for the browsing and mixed feeding game.

These habitats are all in a relatively intact condition with no sign that there has been any disturbance (other than fire) or overutilization of the browse. The Fynbos / Renosterveld can be considered pristine and certainly conservation-worthy even if relatively unproductive from a wild game-feed point of view.

A fire management plan will help to determine which areas need to burn and at what frequency, how to rotate burn blocks and how the thicket and forest areas can be protected from fire during these management fires. Fire is important for the long-term ecological health of the Fynbos vegetation.

Transformed pasture areas

On the ridgetops, which were probably formerly planted to wheat or oats on very stony skeletal soils, the plant cover now consists of a mixture of typical agricultural pasture grasses like *Eragrostis*, *Panicum*, *Digitaria* and *Cynodon dactylon*. These areas are currently open and sparsely vegetated, are nowhere a dense pasture yet and presently have very little capacity as grazing. However, by the time the game is introduced the grasses will have matured and grown out (see Plates 5 & 6).

In the valley bottoms, which have much more fertile alluvial soils, and where black wattle thickets have been cleared away, the locally indigenous grasses are making a strong comeback. Once this grass cover matures it will become a very important resource for the introduced wildlife.



PLATE 7: Riverine habitat in a valley that was formerly invaded by black wattle.



PLATE 8: Riverine habitat recovering after black wattles were cleared away.

Thicket patches

The thicket areas all represent very good browsing and are currently in a very good condition. There are some signs of occasional light hedging on some of the lower palatable shrubs like *Grewia* and *Searsia* but this is typical of highly selective bushbuck browsing and quite normal in this type of thicket vegetation.

Food production

Approximately half of the farm will not be included in the game camp and the extensive cultivated lands in this area (camp 4 Figure 5) will be used for the production of baled and pelleted feed for cattle and game. There will thus be adequate provision of supplementary food on a sustained basis and particularly during the dry summer period.

Invasive alien plants

Typical in the Southern Cape area, the OGF is invaded by a variety of listed alien pest plants which in terms of agricultural legislation must be removed from the property.

Black wattle (*Acacia mearnsii*), hakea (*Hakea sericea*), bugweed (*Solanum mauritanianum*) and *Eucalyptus sp.* are most prevalent. The landowner of the farm is currently getting rid of the infestations at a very praiseworthy rate, particularly the black wattle which are a threat to the general health of the stream banks and the riparian vegetation (see Plates 7 & 8).

In summary, the veld of the OGF is in a relatively good condition and it is clearly recovering from severe recent fires. Upland pastures are a valuable grazing resource and the control of invasive alien vegetation will continue to be an important and ongoing management activity on the farm.

2.3.2 ECOLOGICAL CAPABILITY

The Fynbos/Renosterveld habitat is fairly grassy and actually contains some good quality grasses but this is not a sustainable grazing resource because the grasses lose their nutritive value in the drier summer periods and they are relatively sparse. It must also be remembered that Fynbos generally occurs on relatively poor acidic soils and the vegetation itself is thus of lower nutritive quality. Many of the fynbos plants have high levels of unpalatable oils, phenols and tannins which makes them less palatable, especially during periods of extended drought when no new palatable chemical-free growth (leaf buds) are being produced by the plants.

After fires in Fynbos game is attracted to the grassy post-fire conditions but this is also a short-lived period (± 3 years) which is followed by the return of sprouting and reseeding fynbos shrubs which have little or no value as wildlife forage.

The Renosterveld typically contains a better grass cover and many of the dwarf shrubs that occur in it are, like the dwarf shrubs of the Karoo areas, quite good forage for game (for example *Anthospermum aethiopicum*, *Metelasia pungens*, *Eriocephalus africanus* and *Felicia filifolia*). On the small scale of these habitats on the OGF it is unlikely that either the Fynbos or Renosterveld areas will provide good, sustainable forage for introduced wildlife. The forage in these areas will probably only be used seasonally and it will largely be the grasses when fresh and growing.

The OGF contains a good and sustainable browse resource in the thickets along the valley drainages and on some of the hill slopes in fire protected areas, that is capable of supporting a variety of browse-dependent wildlife species. Practically all of the thicket tree and shrub species that were located during the survey are known to be utilized by browsing game. The browse resource is, however, limited and care must be taken to avoid the overutilization of the thicket habitat that may lead to its weakening and loss as a valuable resource.

The true value of the farm in terms of wildlife feed lies in the transformed pasture areas (old lands). The hilltop pastures will certainly be the most important grazing resource. There is also the potential to continuously improve the quality of these pastures by seeding-in some of the more useful tufted grasses like finger grass (*Digitaria eriantha*), white buffalo grass (*Panicum maximum*) and “fynsaadgras” (*Erharta calycina*) all of which occur naturally in the area. The upland pastures that are not cultivated, will also be useful grazing but probably only seasonally and they are also highly rain dependent. Here too, good quality tufted climax grasses can be established on an experimental basis.

2.4 CONSERVATION STATUS

All of the OGF area is classed as a Critical Biodiversity Areas (CBA) and most of the seasonal drainages areas are classed (CBA) – aquatic/river. (See Figure 4).

The reasons for these classifications are as follows:

- The area is important to maintain ecological processes.
- Corridors or linkages may be important especially for climate change.
- Important unfragmented habitat.

The vegetation of most of the CBA is suitable for a mixture of browsers and grazers, the browsers being mostly dependant on the thicket areas and the grazers being dependant on the transformed pasture areas. Fortunately, none of the wildlife to be introduced is likely to have any negative impact on the CBA conservation sensitivity if the game is stocked at the recommended stocking rate. The carrying capacity potential of the Fynbos/Renosterveld vegetation is relatively low and it offers low palatability, it is thus unlikely that introduced game will have any negative impact on it as a result of their feeding requirements, if the recommended stocking rates are used.

The proposed stocking rates for wildlife are thus based on the need to conserve the natural vegetation cover, which will ultimately also benefit both the CBA and the ESA objectives.

The grazers and browsers introduced will be stocked at an appropriate stocking rate for the habitat available so the potential risk for negative impact on the more sensitive Fynbos/Renosterveld and thicket/forest habitats will be minimal. See Tables 1 and 2 for proposed stocking rates for above mentioned species.

There is no intention to modify or transform any part of the natural habitat in the interests of the wildlife introduced so all of the natural habitat will be retained intact and will be able to improve with sound veld management (ie: appropriate fire management and the eradication of invasive alien plants). All manipulation of plant cover to improve grazing conditions will be restricted to the already transformed pasture areas, some of which are irrigated.

The CBA and ESA habitats will remain unfragmented, linkages will remain the same, ecological processes will continue and habitats will not be degraded or modified other than to eradicate invasive alien plants. A habitat impact monitoring programme has been recommended that will help to timeously detect deleterious change and the game numbers recommended are well within the sustainable capacity of the available vegetation cover.

A NOTE ABOUT MANAGEMENT:

The local management of the OGF is experienced with respect to game ranch management and has had 10 years of practical experience in the breeding and management of rare game like sable and roan antelope. In addition, he is also qualified and registered as a professional hunter and outfitter.

This experience will help to keep this ecologically orientated game introduction plan “on track” with respect to the recommendations made and also implement the requirements as stipulated by Cape Nature.

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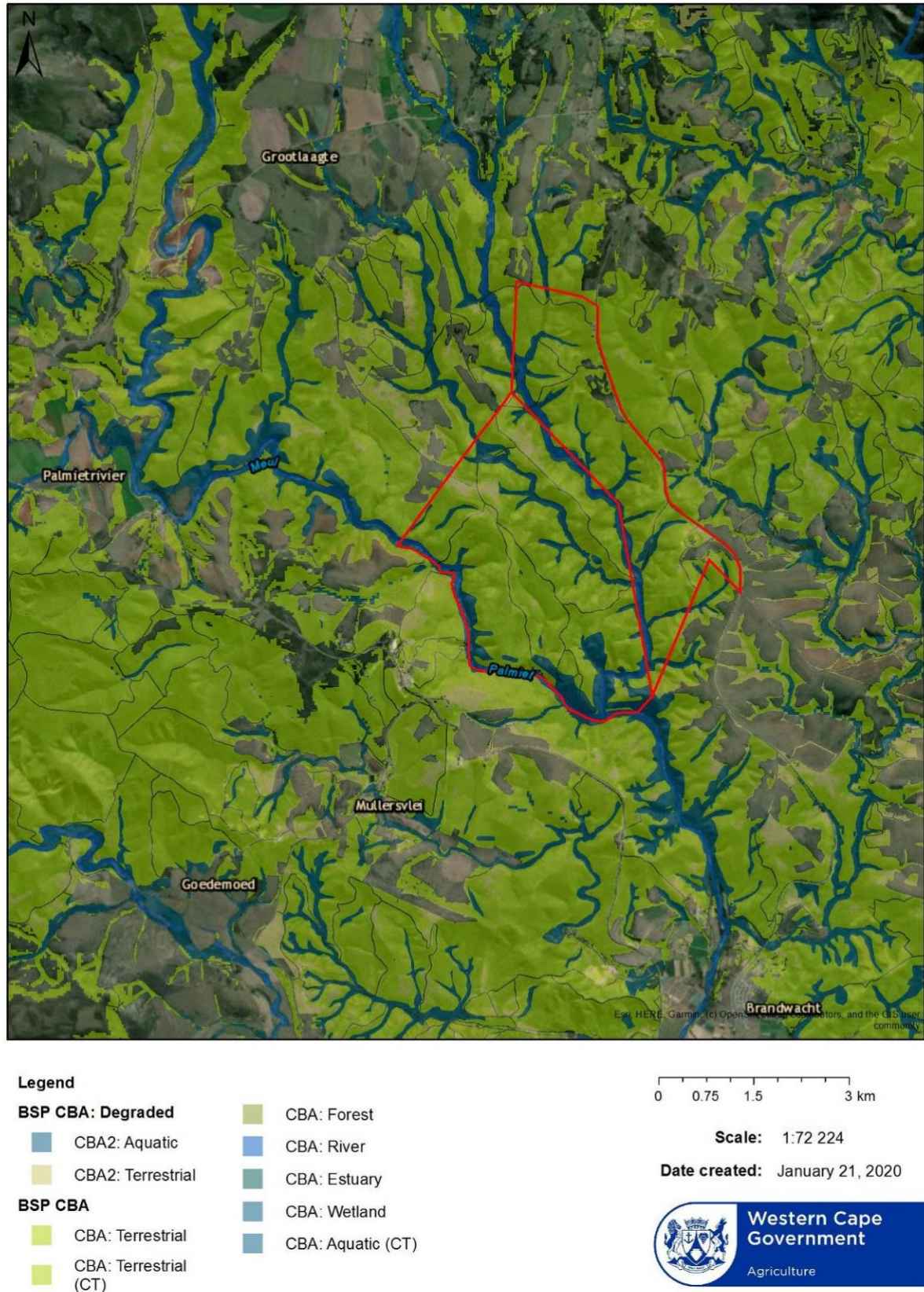


FIGURE 4: Critical Biodiversity Area map for the OGF area.

2.5 ECOLOGICAL CAPACITY AND STOCKING RATE

The Department of Agriculture stocking rate map for the Western Cape indicates that the OGF area should be stocked at around 35 ha/LAU (Large Animal Unit). Boshoff & Kerley (1999) recommend 18,2 to 32,5 ha/LAU for the Grassy fynbos of Suurbraak to Keurbooms but do not specifically mention the central South Cape area. They also recommend between 19,5 and 26,0 ha/LAU for Fynbos/Thicket mosaic habitat which also conforms with what occurs on the OGF. There is no doubt that the Fynbos/Renosterveld of the OGF is grassy so it is a fair assumption to consider it as such when dealing with stocking rates for game animals. An average stocking rate is thus 26 ha/LAU, but a more conservative stocking rate of around 30 ha/LAU is recommended.

As discussed in the previous section, the drainage-line thicket habitat is also sustainably productive and can probably carry many more LAU for much longer, depending on the rainfall. The thicket patches of *Grewia*, *Olea*, *Buddleja*, *Searsia* and *Diospyros* in the valleys can certainly support a greater ecological capacity than the Fynbos and Renosterveld habitats. These habitats are currently utilized by a small number of browsers (bushbuck) without any sign of excessive browse utilization. The agricultural stocking rate estimate of 35 ha/LAU is based on domestic livestock use of the vegetation which does not really cater for the availability and use of browse habitat by wildlife at all, most domestic livestock being grazers. The recommended stocking rate of 30 ha/LAU is considered to be more realistic.

The combined riverine thicket habitat area (including all the smaller forested and wooded valleys) is estimated to be approximately 80ha.

The transformed pasture areas are estimated to be able to sustainably support between 0,5 ha/LAU (irrigated pastures) and 5ha/LAU (dry pastures) depending on rainfall.

A stocking rate of 30 ha per LAU is thus arbitrarily recommended for the Fynbos/Renosterveld habitats, a total area of ± 128 ha. This amounts to only 4,3 LAU. A stocking rate of 25ha/LAU is recommended for the combined riverine thicket habitats of ± 80 ha and this amounts to only 3,2 LAU. The recommended combined stocking rate for OGF will thus be ± 72 LAU. The following Table 1 summarizes the preliminarily recommended stocking rate for the OGF.

HABITAT	ESTIMATED AREA	PROPOSED STOCKING RATE	TOTAL LAU
Upland transformed pasture areas	160ha	2,5ha/LAU	64,0 LAU
Thicket/forest in valleys	80ha	25ha/LAU	3,2 LAU
Fynbos/Renosterveld	128ha	30ha/LAU	4,3 LAU
TOTAL AREA	368ha	TOTAL	71,5 (72) LAU

TABLE 1: Preliminarily recommended stocking rates for the habitats of the OGF.

17.

3. WILDLIFE MANAGEMENT

A number of extralimital wildlife species (waterbuck, southern reedbuck, sable antelope, roan antelope and giraffe) are required for introduction. In the following sections it will be shown that these species are not likely to be the cause of habitat degradation or locally indigenous animal displacement provided that the population numbers are controlled as recommended. Similarly, the range of locally indigenous game species required are also not likely to be a threat to Fynbos and Renosterveld conservation if the guidelines provided for animal numbers and habitat monitoring are implemented.

The OGF contains some good natural habitat that is important for the conservation of the Forest, Fynbos and Renosterveld in the area, as well as water resources, and it will be possible to ensure the conservation of these habitats despite the introduction of a range of extra-limital and locally indigenous game species.

It is further recommended that the OGF should become an active member of the Gouritz Cluster Biosphere Reserve and I will do the necessary to help facilitate an application for membership in this regard.

3.2 SPECIES REQUIRED FOR INTRODUCTION

The following wildlife has been considered for this risk assessment:

<i>Tragelaphus oryx</i>	Eland
<i>Tragelaphus strepsiceros</i>	Greater kudu
<i>Antidorcas marsupialis</i>	Springbok
<i>Equus quagga</i>	Plains zebra
<i>Oryx gazella</i>	Gemsbok
<i>Kobus ellipsiprymnus</i>	Waterbuck (extralimital)
<i>Syncerus caffer</i>	Cape buffalo
<i>Hippotragus niger</i>	Sable antelope (extralimital)
<i>Hippotragus equinus</i>	Roan antelope (extralimital)
<i>Giraffa camelopardalis</i>	Giraffe (extralimital)
<i>Damaliscus p. pygargus</i>	Bontebok
<i>Aepyceros melampus</i>	Impala (extralimital)
<i>Tragelaphus angasii</i>	Nyala (extralimital)
<i>Redunca arundinum</i>	Common/Southern reedbuck (extralimital)

3.3 NATURALLY OCCURRING SPECIES

The wildlife that still occurs naturally in the area OGF area includes the following:

<i>Pelea capreolus</i>	- grey rhebok.
<i>Sylvicapra grimmia</i>	- common duiker.
<i>Raphicerus melanotis</i>	- grysbok.
<i>Tragelaphus scriptus</i>	- bushbuck
<i>Raphicerus campestris</i>	- steenbok
<i>Potamochoerus larvatus</i>	- bushpig
<i>Cephalophus monticola</i>	- blue duiker (possibly)

18.

3.4 WILDLIFE OCCURRING ON NEIGHBOURING PROPERTIES

It is not known to what extent the surrounding properties have been stocked with game. The nearby Gondwana Game Reserve have introduced a variety of species including lion, elephant, black wildebeest, red hartebeest, hippopotamus, eland, kudu and Cape mountain zebra. Cape Nature records of adequate enclosure will provide all the details of wildlife introduced in the rest of the surrounding district.

3.5 INDIVIDUAL WILDLIFE SPECIES ASSESSMENT

The objective is to provide minimal numbers of animals for resident game viewing and enjoyment. In terms of the Cape Nature Translocation policy of 2014, Animals that are not indigenous (extralimital) to the Western Cape Province need to be assessed in terms of potential risks that may occur as a result of an introduction. The following is such a risk assessment for the extralimital species as well as an assessment of other indigenous species that may require assessment in terms of the 2014 GTUP policy.

A. SABLE ANTELOPE (*Hippotragus niger niger*)

Sable antelope are high value animals and are also a popular species for hunting and game viewing, which are the reasons why they are required as a free-ranging species and not in breeding camps. The potential risk associated with the introduction of the extralimital sable is evaluated as follows:

a. Subspecies: Only the subspecies *Hippotragus niger niger* or Southern African sable may be introduced. Hybrids and sable from Angola, North Zambia and Malawi may not be introduced.

b. Hybridisation risk: Sable can hybridise with the closely related roan antelope under conditions of extreme confinement. Roan are also required but will be confined to a breeding camp (camp 3) while sable will be confined to the larger game camp (camp 1). The more than adequate boundary fences around these camps will further help to eliminate any potential hybridisation risk.

c. Habitat risk: Sable are primarily grazers, favouring grassy habitats and well grassed pastures. Long experience in the Western Cape has shown that sable generally keep to the grassy areas such as along drainages and transformed pasture areas especially if provided with supplementary feed. They will thus be no threat to the more sensitive fynbos and renosterveld areas of the OGF.

The sable will be given supplementary feed daily to maintain good condition, particularly during summer drought.

d. Management: The sable will be free ranging but will remain relatively tame by means of the supplementary feed provided. Sable numbers will be kept well below the threshold for sustainable grazing. This will ensure that there will be no negative impact on any of the natural habitats if utilized.

19.

The monitoring of grazing and supplementary feeding success will help to determine maximum population size once the population reaches 10 animals.

Sable antelope are very susceptible to cold, wet (Cape) weather but the wooded valleys and thicket patches along the pastures will provide adequate shelter which they can use to shelter during inclement weather.

e. Risk of disease introduction: There is the potential that animals introduced from areas beyond the Western Cape may carry parasites that could introduce new diseases to the province. This has not been recorded to date, despite all the years of “ill-advised” game movement, but there is still the risk.

It is therefore recommended that sable antelope introduced, and those introduced later to maintain genetic fitness, be sourced from existing populations in the Western Cape and those sourced from outside of the Western Cape should be treated for external parasites at source by means of a pour-on or sprayed-on acaricide. This treatment for external (and internal) parasites will help to eliminate the disease risk. This is not considered to be a high risk and if animals are sourced from already existing populations in the Western Cape, the risk will be completely eliminated. Only occasional new breeding bulls and cows may be sourced from other provinces, but these animals can be treated individually for parasites by the attending veterinarian.

B. ROAN ANTELOPE (*Hippotragus equinus equinus*)

The intention is to introduce roan and to establish a small breeding herd in the breeding camp (camp 3), see Figure 5, where they will be managed intensively and will receive supplementary feed on a daily basis in the camp. Excess bulls will be removed at weaning age and will be sold off to hunting farms and other breeders. There will thus be no opportunity for hybridization between roan and the related sable.

As roan are extralimital, the potential risks associated with the species are addressed as follows:

a. Subspecies: Only the subspecies *H equinus equinus* may be introduced into the Western Cape (GTUP, 2014). This is the original southern subspecies of the former Transvaal, Zimbabwe and southern Malawi (Skinner & Chimimba, 2005). The northern subspecies may not be introduced (ie, *H equinus cottoni*, *H equinus langheldi*, *H equinus koba* and *H equinus bakeri*).

b. Hybridization risk: Roan can hybridize with sable antelope, which are also required for intensive farming on the OGF. However, there will be no direct contact as they will be accommodated in separate camps (see Figure 5), the potential for hybridization is thus eliminated.

The plan is to keep the roan in a dedicated roan camp (camp 3) which is a separate camp to that used for sable (camp 1) to ensure that hybridization does not occur (with these very high-value species, hybridization will be disastrous in terms of the economic value of both species). There will thus be no opportunity for hybridisation to occur.

20.

c. Habitat risk: Roan are primarily grazers, favouring grassy habitats and well grassed pastures. On the OGF they will be provided with good quality grazing on the transformed pasture areas and also along the drainages.

In their dedicated camp, the roan will also be provided with supplementary feed on a daily basis to ensure peak condition.

d. Management: The roan will be kept relatively tame by means of supplementary feed provided within the intensive roan breeding camp. Roan numbers will be kept well below the threshold for sustainable grazing and they will also be given high quality supplementary feed. This will ensure that there will be no negative impact on the available grazing resource. A preliminary ceiling of 10 animals and an introduction of 8 or 9 animals is recommended. Experience will help to determine a suitable population size once the population reaches 10 animals and it will be the capacity of management to provide adequate supplementary feed that must determine roan numbers in the long term.

Feeding sites will be located on hard surfaces, such as shale patches, and will be rotated every 3 months to facilitate site recovery and to limit negative impact.

Management of the roan antelope will be much the same as for sable in terms of social management, supplementary feeding and utilization.

e. Risk that the roan antelope may outcompete locally indigenous game species: In terms of the maintenance of the roan, none of the naturally occurring indigenous species are likely to be negatively impacted. All of them are highly selective browsers and mix-feeders, which are not likely to be affected by a large grazer such as the roan, which will in any case receive supplementary feed.

The grysbok are most sensitive in this regard, but it is unlikely that a large grazer like the roan will have any adverse effect on the grysbok population due to a clear niche and habitat separation. Competition for grazing resources between the larger ungulates will be eliminated by careful population management.

Roan numbers will initially be maintained at or below 10 animals so there is no risk of an overpopulation of roan simply “swamping” out any of the smaller antelopes, or any of the other natural occurring species in the camp.

f. Risk of disease introduction: There is the potential that game introduced from areas beyond the Western Cape may carry parasites that could introduce new diseases to the province. This has not been recorded to date, despite all the years of “ill-advised” game movement, but there is still the risk.

It is therefore recommended that when introductions are made (for initial establishment and new blood), either roan from existing populations in the Western or Eastern Cape be sourced or that animals from outside of the Western Cape be treated for external parasites at source by means of a pour-on or sprayed-on acaricide.

The landowner has indicated that he plans to source the roan from outside the Western Cape.

21.

These will be suitably treated for external and internal parasites at source in order to eliminate the disease introduction risk.

This is not considered to be a high risk and if animals are correctly treated, the risk will be eliminated.

g. Summary: It can be summarised that the introduction of roan antelope presents very little risk, other than the potential for hybridization. The hybridization risk will be strictly and easily mitigated by means of keeping the roan and sable in separate camps and by introducing both sexes of the respective species, allowing normal social inter-action.

C. WATERBUCK (*Kobus ellipsiprymnus*)

The intention was to introduce waterbuck to establish a small free-ranging population for game viewing.

Waterbuck are extralimital to the area and the potential risks of the introduction are addressed as follows:

a. Hybridization risk: The waterbuck is a member of the *Reduncini* tribe which contains all the reedbucks, mountain reedbuck, lechwe, puku and grey rhebok antelopes. On the study area, the related species are common reedbuck and the grey rhebok.

Grey rhebok belong to a completely different genus of the *Reduncini* (*Pelea*) to the waterbuck (*Kobus*) and it is highly unlikely that the large waterbuck ($\pm 200 - 270$ kg) will attempt to mate and hybridize with the small rhebok (20 kg) or the other way around. The animals are not confined in any way, will have enough of their own kind to mate with, will have adequate space for normal social behaviour and are very different in their habitat use and behaviour to the grey rhebok. The same applies to the common reedbuck. They belong to a different genus and will not be confined anywhere together with the waterbuck. There is thus no risk of hybridization between reedbuck and waterbuck.

b. Habitat impact risk: Being a large grazer, waterbuck will most likely spend most of their time in the lower-lying grassy riverine areas where there is good grazing and water. They will probably also utilize grazing on the lower slopes of the hills, where favourable grasses occur. The habitat impact risk will be mostly confined to the transformed pasture areas where they will compete with other grazers for grazing. Conservative numbers will limit the risk of severe competition and possible degradation of nearby natural habitat.

Melton (1978) placed waterbuck with buffalo and zebra in a favourable category, as they did not over-utilize grazing areas, as was the case with impala and warthog, in the Umfolozi Game Reserve. This is confirmed by personal observation of waterbuck habitat use elsewhere in the Southern Cape and in the Karoo.

c. Risk that waterbuck may outcompete locally indigenous game species: In terms of the introduction of waterbuck, none of the naturally occurring more sensitive species are likely to be negatively impacted.

22.

All of them are highly selective browsers which are not likely to be affected by a large bulk grazer such as waterbuck, which will make most use of the tall palatable grasses on the slopes and in the riverbeds and will not compete in any way with the small

browsers. Competition for grazing resources between the large ungulates will be managed by means of population control and monitoring.

Waterbuck numbers will be maintained at or below 8 animals, so there is no risk of an overpopulation of waterbuck simply “swamping” out any of the smaller antelopes or locally indigenous grazers.

d. Risk of disease introduction: There is the potential that game introduced from areas beyond the Western Cape may carry parasites that could introduce new diseases to the province. This has not been recorded to date, despite all the years of “ill-advised” game movement, but there is still the potential risk.

It is therefore recommended that any waterbuck introduced initially and later for genetic health reasons should be sourced from either existing populations in the Western Cape or that animals sourced outside of the Western Cape must be treated for external and internal parasites at source by means of a pour-on or sprayed-on acaricide and helminthics.

It will be most advisable to introduce waterbuck from one of the nearby game farms to ensure that the animals are already “immune” to local diseases and to eliminate the risk of disease introduction from afar.

This is not considered to be a high risk and if animals are sourced from already existing populations in the Western Cape, (or nearby), the risk will be eliminated. A small population of only 8 animals is required and genetic heterozygosity will be maintained by means of regular introductions of replacement male animals.

Although the coastal areas are typically not ideal habitat for waterbuck, they do thrive in these areas in small numbers. Competition for the limited grazing resource will occur and zebra, gemsbok and even eland will also compete for grazing. There is little risk that the waterbuck population will “explode”, as the available grazing is limited and seasonal and therefore sub-optimal.

D. BUFFALO (*Syncerus caffer*)

Buffalo are historically indigenous in the OGF area (Skead, 2011) and have been introduced under intensive management conditions onto a number of game ranches in the Western Cape area with complete success.

Buffalo are required mostly for their game viewing “charisma” and also for their high resale value. They are extremely hardy, adapt easily and are relatively easy to manage in small game camps. The buffalo will be kept in a dedicated 103 ha buffalo camp (camp 2) where they will have irrigated grazing and where supplementary feed will be provided daily.

23.

The buffalo will be managed as a small free-ranging group. Initially the project will be launched with approximately 5-7 animals with a preliminary future ceiling of ±12 animals.

The introduction of buffalo is, however, conditional to the state veterinary protocols. (See below). Buffalo are classed as a dangerous species, so the entire buffalo camp boundary fence will be electrified at three heights above the ground. (See *Fencing*). A robust boma can be used for handling/loading buffalo with respect to sales or introductions.

It is critical that the social interactions of mature or maturing buffalo bulls are closely monitored. A situation where competing mature bulls in the buffalo camp can result in break-outs must be avoided. The intention is to maintain only one mature breeding bull with a group of mature cows at a time in the group. Younger maturing bulls will be timeously removed at about 18 months age before they are old enough to try challenge the dominant herd bull.

RISK ASSESSMENT

a. Habitat risk: Buffalo survive very well in almost any kind of habitat provided that food, shade and water is available. Negative habitat impact by the buffalo in a confined area will be mitigated by establishing the buffalo breeding camp in an area that is already partly agriculturally transformed with irrigated and dryland pasture grazing. A survey of the transformed pasture areas found that in addition to planted pasture grasses, these areas also contain numerous palatable grass species as follows, *Cynodon dactylon* being dominant:

Cynodon dactylon

Eragrostis curvula (co-dominant)

Pennisetum clandestinum (alien but palatable and highly productive)

Digitaria eriantha

Lolium perenne

Chloris Guyana

Sporobolus africanus

As already discussed, buffalo will have been a natural component of the drainage areas and vleis ecosystems in the historical past and there is thus no reason why the area should not be able to support them again, provided that the numbers are suitably managed as recommended.

b. Disease risk and veterinary protocols: All of the required veterinary protocols will be adhered to, at the source of the animals, during transporting and once offloaded. All the necessary permits from Cape Nature (George) and also the Department Veterinary Services (George) will be obtained.

The following is a summary of the steps that must be followed and the permits that must be obtained before disease-free buffalo can be acquired and transported:

24.

The Seller:

- The seller must contact the local State Veterinarian or private veterinarian to inform him of the planned capture date and to confirm his/her availability on the

day of the planned capture. The local state vet is responsible for doing the necessary blood work.

- The state veterinarian should contact the lab which will conduct the testing to confirm the availability of *Fortutum*, which is used in testing for TB. The state veterinarian must order and receive the necessary buffalo test packages from Onderstepoort.

- The identified animals must be captured via passive or chemical capture and placed in a temporary holding facility (boma).

- The buffalo must then be immobilized, after which the compulsory TB injections, skin measurements and blood work is completed by the state veterinarian. The animals are again immobilized, 72 hours after the initial TB injections and the necessary blood work is completed. This is a good time to tag and microchip the buffalo.

- The blood samples must then be delivered to the predetermined testing laboratory within 6 hours after the extraction. Test results are then valid for 60 days after which the buffalo would have to be immobilized and tested again.

- The tested buffalos are then kept in quarantine until they are loaded by the buyer. The state veterinarian must be present at the loading and a Red Cross permit must be issued and the transport truck must be sealed by the state veterinarian.

- If the animals are sold and moved outside the Western Cape Province, then written permission must be obtained from the Provincial Directorate of Veterinary Services. The seller must also apply for an export permit from Cape Nature Conservation.

- If the animals are not transported outside the relevant provincial boundaries, then the seller need only apply for a transport permit from Nature Conservation. This must be acquired well before the planned date of transport.

The Buyer:

- The first step in obtaining buffalo is to apply for and receive a CAE from the Nature Conservation authorities.

- The second step is to register the property with the Provincial Director of Veterinary Services for the keeping of buffalo as prescribed by Regulation 20 A (2) of the Animal Disease Act (Act 35 of 1984).

- Once in possession of a valid CAE and buffalo registration certificate, then the buyer can start sourcing and buying animals.

- If the desired animals have been purchased, all the necessary tests have been completed and tests have come back negative, then the animals can be transported. The state veterinarian must be present at the off-loading and must be responsible for breaking the seal on the transport crate doors.

- However, the buyer must first apply for a transport permit and an import permit, if the buffalo are bought from outside the applicable province (province where property is registered).

25.

- It is also the prerogative of the buyer to demand a copy of the test results prior to loading the animals.

c. Fencing: The entire buffalo camp (camp 2) will be completely fenced with a 2,4m

game fence that fully complies with the standard required for buffalo with electric wires on the inside of the fence at 500mm and 1 000mm above the ground (Cape Nature Fencing Policy, 2013). The electric wires will be held in offsets away from the fence and a standby alternative power source will be installed as required. This will be provided by means of a solar-powered 12-volt battery for each fence energiser used.

d. Contingency plan for escapes: In the event of buffalo escaping from the OGF, the following procedure is recommended.

- *Warn immediate neighbours of the escape.*
- Locate the escapees.
- Mobilize the vet that usually assists to bring darting equipment and arrange for a helicopter if necessary, otherwise darting can be done from a vehicle.
- Repair the breakage in the boundary fence / locate the reason for the escape (eg, disturbance or electric fence failure, flooding, etc). □ Dart and move the buffalo back into the OGF.
- Repeated escapes will necessitate the complete removal of the “culprit” animal from the farm and an improvement of the problem fence.

E. GIRAFFE (*Giraffa Camelopardalis*)

a. Introduction: It is the intention of the landowner to introduce giraffe for the sake of game viewing. Only a small number (2 to 3) are required for this objective.

b. Giraffe distribution: The giraffe is extralimital to Western Cape and South Cape general area. In Southern Africa, the general natural distribution is restricted to the northern parts of the Transvaal, Botswana and Namibia (Skinner & Chimimba, 2005). Skead (2011) reports historical records for giraffe in the Orange River, Kuruman and Molopo River areas, as well as for Northern Namaqualand, but no further south.

c. Social behaviour: Giraffe have a loose herd structure, the herds mainly made up of females and young, but bachelor herds and mixed herds also occur. Social bonds are not strongly developed and herd membership continuously changes. Leadership is thus arbitrary and not very obvious (Skinner & Chimimba, 2005).

Giraffe social structure thus permits fairly large groups without the problems of competition or territorial aggression.

Giraffe do not defend a territory and the home ranges of herds can vary from 22,8 km² to 161km², depending on conditions and resource availability. Giraffe that have been introduced into small areas (ie, <3 000 ha) in the Western Cape in small numbers (ie, 2 - 4) have settled well and appear to be thriving.

26.

There is thus no social behavioural reason why the OGF situation should be problematic as giraffe are not territorial and their typical social structure can accommodate both larger and smaller groups.

d. Habitat requirements: Giraffe occur in a wide range of different dry savannah habitats as well as desert habitats. They occur in sparse scrub veld to woodland habitats, their occurrence depending on the availability of the range of food plants that are necessary to sustain them seasonally. Although water is taken when available, giraffe are able to derive sufficient water from their diet (Skinner & Chimimba, 2005). The habitats available on the OGF are marginally suitable for giraffe in carefully controlled numbers. The extensive riverine thicket areas as well as the upper valley thicket areas will provide more than enough habitat of an acceptable quality.

e. Adaptability: Giraffe have been successfully introduced in many areas which were not part of their historical distribution range. The classic example is their introduction into the game reserves of Natal where they have since flourished. More recently, giraffes have been introduced, with success into the Orange Free State, Eastern Cape and Karoo areas. Successful introduction is dependent on the sustainability and quality of the available forage and there have been ill-advised and unsuccessful introductions in the Karoo and Little Karoo due to shortcomings in this aspect. Giraffe prefer a high nitrogen, low fibre diet, sustained throughout the year (spanning the variation in seasonal conditions). There is thus no reason why giraffe should not be able to adapt well enough to conditions in the Southern Cape, provided that the quantity and quality of browse is suitable. There are, in fact, a number of examples where small groups of giraffe that were introduced into similar habitat in the general area have been successful (Nyar, Berg en Dal).

f. Habitat impact: The potential for negative habitat impact as a result of giraffe introduction is relative to the size of the area and the density of giraffe. In the literature, negative habitat impact has been reported from some of the areas where giraffe have been introduced, but in each case, it was because of the high densities of giraffe or uncontrolled population increase. The low number of ± 3 recommended for the OGF is unlikely to have a negative habitat impact.

Impact on ground cover: In the Karoo, we are most sensitive about ground cover conditions due to the long-term impact of past overgrazing of the ground cover with livestock. Giraffe will have little or no impact on this area of concern because they browse on trees and shrubs more than a meter above the ground cover layer and will thus not reduce ground level plant cover. It will thus be possible to rehabilitate a good ground cover even with the giraffe present.

Vegetation (browse): Giraffe do have a significant impact on the vegetation that they browse. Owen-Smith (1992) lists a number of examples where giraffe browsing severely reduced the growth of regenerating *Acacia* species, making them vulnerable to fires.

He also reported tree canopy distortion due to heavy giraffe browsing. Bond & Loffeil (2001) found that heavy giraffe browsing resulted in altering tree species composition and tree species distribution in the Itala Game Reserve in Kwazulu-Natal.

27.

These observations were made when the stocking rate for giraffe was 1,8/ km² (or 1/50 ha). Other studies indicated variable giraffe densities of between 0,7/km² and 2,6/km² (Owen-Smith, 1992).

The longer term impact of group giraffe browsing on the study area is not yet known, but with low giraffe numbers (*ie*, a maximum of 3), it can be expected that the favoured shrubs and trees will have sufficient time between browsings to produce new shoots and maintain a productive status (*ie*, flowering and seed set) (also see food provision).

Giraffe are not destructive feeders like elephant, kudu and eland. They either tip or strip branch tips, never breaking down branches. Their impact will thus be minimal, provided that the population is maintained below the productive ability of the favoured browse plant species. The proposed density of ± 3 giraffe is probably in line with this objective. It is, however, recommended that a giraffe browse monitoring programme be established when the giraffe are introduced and that the impact of giraffe browsing be monitored for a full five years after introduction.

Impact on soil: Giraffe will have no more impact on the alluvial soils of the drainage areas than any other hoofed large animal (such as eland or buffalo). The large size of their hooves may, in fact, have less of a disturbance impact on the soil of the study area.

According to Savory (1999), larger animals speed up the return of uneaten old plant material to the soil surface through the plant litter that they trample down. They also chip and break hard-capped soil surfaces, opening them to aeration, water and seed introduction. The giraffes will occur at very low numbers so excessive soil trampling will be avoided. The sandy soils and shale gravels are also resistant to compaction and capping. Trampling will rather occur as a useful, occasional criss-crossing of tracks between favoured feeding areas.

Impact on other ecosystem services: Large animals speed up the breakdown and reduce the volume of primary plant material returned to the soil surface in the form of their dung and urine (Savory, 1999). The introduction of giraffe dung and urine to the drainage habitat areas will certainly benefit the quality of the soils and soil mulch. Germination and plant growth will benefit as will the micro-organisms that feed on dung or other dung-dependent organisms. Ungulate dung is also instrumental in the spread of beneficial mycorrhiza.

The giraffe will also contribute to the dispersal of tree and shrub seeds in their dung. They are fond of pods (*Acacia*) and also of fruits (*Diospyros* and *Searsia*) and much of the seed ingested passes unharmed through the animal and is dispersed in the droppings which can provide a suitable growth medium for germinating seedlings.

Miller (1995) found that 42% of *Acacia tortilis* seed and 35% of *Acacia nilotica* seeds ingested by giraffe germinated in giraffe dung under controlled growth experiments. (The passage of seed through the giraffe promotes germination due to abrasion of the seed coat and the effect of digestive juices). Miller (1995) also recorded that about 20% of the seeds of *Acacia karroo* ingested by giraffe germinated in giraffe dung.

28.

This is a well-documented occurrence in elephants (Dudley, 1999; Miller, 1995; Bainbridge, 1965), but it is not well documented for giraffe. Another large browser, the eland, is also known to effectively disperse tree, shrub and grass seeds in its

dung. On the OGF the giraffe may help to disperse the seeds of *Searsia*, *Grewia*, *Diospyros*, *Chrysanthemoides* and other trees and shrubs.

Giraffe may impact on the successful flowering and seed set of some of the most favoured forage plants through selective browsing. The low number of only ± 3 giraffe, however, should eliminate the chances of any significant impact and the suggested monitoring programme must focus on this aspect.

g. Conclusion and recommendations: It is estimated that the introduction and maintenance of ± 3 giraffe and the later introduction of replacement giraffe for genetic integrity in the future will have little or no negative impact on the indigenous wildlife of the area, nor is it likely to permanently damage or destroy the natural vegetation of the area. The giraffe group, however, should be restricted to ± 3 animals, which is all that is required to achieve the game-viewing objective.

Use of this area for giraffe game viewing is considered to be a better land use option (than livestock like goats and sheep) in terms of ground cover maintenance, as giraffe usually do not feed at ground level.

It is, however, recommended that giraffe browsing impact on OGF be monitored and assessed on an annual basis for at least 5 years.

Giraffe are large animals which are easily located. They are consequently an easy species to control in terms of population growth. There is thus little risk that such an introduction of an extralimital species will become a “problem” if they manage to escape in the area. Their large size makes locating and removing animals a very simple matter.

F. SOUTHERN REEDBUCK (*Redunca arundinum*)

There are historical records for reedbuck for the Southwestern Cape but these are today considered to be misidentifications (Skead, 2011) as there was probably confusion between it and Grey rhebok and further East, the mountain reedbuck. The common or southern reedbuck is thus treated as extralimital for the OGF area.

The reedbuck occurs in floodplain and drainage line grassland and habitat throughout northern and southern Savanna of Sub-Equatorial Africa. Although reportedly once present as far south as Swellendam, today reedbuck no longer occur naturally in the Orange Free State, The Western Cape Province and only remnant populations occur in the Eastern Cape.

Reedbuck are habitat specialists and are able to utilize habitat that few other herbivores can. Dense reedbeds and tall rank grass (2m) habitats close to water is the preferred habitat of the species. These habitats are variable and occur on Savanna plains, as well as in wetlands, pan veld in the Bushveld and grassy foothills with seeps (Furstenburg, 1999).

29.

Reedbuck take refuge in these tall grass/reed areas and are thus not able to tolerate alteration of the habitat through drainage, excessive burning, or heavy competition with other herbivores. The tall grass cover is more important to the reedbuck than the actual food value of the grasses, particularly for newborn young concealment

(Howard, 1986). This attachment to a specific habitat type results in a patchy distribution and decreasing habitat availability due to the impacts of human activities. Reedbuck have been shown to avoid open veld (Howard, 1986).

Reedbuck are intermediate to tall grass grazers and are not selective for grass species, utilizing both sour, mixed and sweet grasses. Feeding takes place between 8cm and 120cm with the softer, green parts of most grass species being utilized. Preferred feeding height, however, is at 80cm to 110cm. They are able to utilize grasses of relatively poorer quality which few other herbivores do, which reduces competition. Grasses eaten include *Hyparrhenia* sp, *Trachypogon* sp, *Panicum maximum*, *Heteropogon contortis*, *Andropogon amplexans*, *Cenchrus ciliaris*, *Sporobolus* sp, *Leersia hexantha*, *Chloris gayana* and *Phragmites australis* (Furtenburg, 1999). From this mix of grass species it can be deduced that they will most probably utilize any reasonably palatable grass

Reedbuck are semi-social animals with no fixed family ties. Animals are either solitary, in pairs or in small breeding herds of between 3 – 6 animals. Breeding pairs are territorial but spaced, often 30 – 80 cm between the male and female with little social contact. A ram of 4 years will aggressively defend his territory against other dominant rams. Territories range between 35 – 60 ha. The vigour with which territories are defended is dependent on the available resources, ie: strictest defence in marginal habitat and reduced defence activity in optimal habitat. The actual home range of each territorial group (which contains the defended territory) is seldom greater than 100 ha (Furtenburg, 1999). An average population density is about 5-7 animals per km² (Estes, 1997).

Breeding occurs throughout the year, but there is a lambing peak in the summer months. The lamb is hidden in rank vegetation for the first 6-8 weeks during which the ewe feeds the lamb (once or twice a day) and moves it to a new holding place.

Although there will be some suitable habitat development along the riverine areas now that the black wattles have been cleared, it is also clear that, due to the particular habitat specificity of the southern reedbuck, specific areas of cover habitat may have to be created and maintained for this species. This will entail the establishment of reedbeds and areas of tall grass/wetland along the drainages. This may be difficult to maintain with all the other grazers present.

A small group of 6 reedbuck is recommended.

G. BONTBOK (*Damaliscus pygargus pygargus*).

There is currently great concern for the conservation of genetically “pure” bontebok and the Western Cape conservation authorities try to ensure that bontebok are kept where there is at least some potential for viable population expansion and reduced chance of hybridization with the closely related blesbok or existing hybrids of the two.

30.

As a result of the above concerns the introduction of bontebok is subject to a habitat evaluation by Cape Nature (GTUP 2014 and BCTUP, 2014).

Bontebok prefer open grasslands and fynbos edge habitat in the southern Cape, but, given the choice, are most often found on transformed short grazed pastures.

The bontebok occurred only in the Bredasdorp and surrounding south Cape area historically (Skead, 2011), but translocation is now permitted into other parts of the south Cape area where habitat conditions are suitable (Range Extension, Western Cape Game Translocation Policy, 2014). Cape Nature, however, have new concerns about the future of the endangered bontebok, most of which stem from hybridization with the closely related blesbok.

The following is provided as additional motivation in support of the introduction of bontebok into the OGF:

a. Grazing and habitat quality: The grazing should be more than adequate and consists largely of the type of grazing that is preferred by bontebok, *ie*, open grassy plains on relatively flat habitat with adequate water. Bontebok will compete with waterbuck, springbok, gemsbok, zebra and sable antelope for grazing, so the careful management of total grazer numbers will be very important.

b. Conservation value: Bontebok kept on good quality grazing, will produce well and the excess can be used for restocking areas in the natural distribution range. By increasing bontebok numbers, the price per animal can be kept at a reasonable level and this may encourage more landowners in the natural distribution range to stock bontebok for conservation purposes rather than as a “money-spinning” species. Small game farms like the OGF can play an important role in supplying this demand. We all need to promote bontebok more (and we do) within the natural distribution range of the species.

c. Bontebok security: These guidelines outline the need for the monitoring of the habitat. It is thus unlikely that any severe disadvantage to bontebok security will occur as a result of habitat deterioration for whatever reason. Perhaps the management plan could be approved provided that the landowner acknowledges that the bontebok is recognised as a species of high conservation value and that it should not be disadvantaged by any other species or landscape management practice.

Game numbers on OGF are relatively low and will be monitored, as will the habitat. It will thus be possible to detect any potentially severe competition between the bontebok and the other game species. The landowner has spent vast amounts of money on this property and will do so on the game as well - it is thus unlikely that the wellbeing of any particular valuable species will be permitted to deteriorate as a result of competition from another, particularly on such a property where many investing residents will have an interest.

d. Genetic conservation: The bontebok must be DNA-tested and proved to be the pure genetic strain of bontebok before introduction. It makes good sense to establish a number of pure populations throughout the extended range and the rest of the Western Cape.

31.

Smaller populations can be managed by regular controlled introductions of DNA-tested breeding males from other sources to maintain genetic heterozygosity (genetic health). These small populations can then be used as sources of “pure” bontebok for introductions into more viable areas, or simply to provide “new blood” to other “pure” herds.

There is thus no reason why a well-managed small population cannot contribute significantly to the long- term viability of the greater metapopulation.

e. Bontebok behaviour: Experience has shown that bontebok rams can be problematic on smaller areas, particularly after introduction and while settling. The recommendation of 10 animals is preliminary and based on 2 family groups plus some additional bachelor rams. Problems related to territoriality and aggression between mature rams will have to be managed selectively as they occur.

H. ELAND (*Tragelaphus oryx*)

Eland are historically indigenous to the entire Western Cape and thus need not be assessed in term of risk (GTUP, 2014). They may be translocated with a valid transport permit from Cape Nature.

I. GREATER KUDU (*Tragelaphus strepsiceros*)

Kudu are historically indigenous in the nearby Little Karoo areas and thus need not be specifically motivated in terms of risk (GTUP, 2014). Habitat along the drainages on the OGF is near to optimal and the hilly Renosterveld also provides some cover and suitable browsing. They may be translocated with a valid transport permit from Cape Nature.

J. SPRINGBOK (*Antidorcas marsupialis*)

Springbok are indigenous to the drier parts of the Western Cape and thus need not be specifically assessed (GTUP, 2014). The upland pasture and Renosterveld habitat on OGF is certainly suitable and it is likely that predators will keep their numbers low. They may be translocated with a valid transport permit from Cape Nature.

K. PLAINS ZEBRA (*Equus quagga*)

Although the plains zebra is extralimital in the Southern Cape area, it has been widely introduced throughout the Western Cape in the past as an ecological equivalent of the now extinct quagga, which was in fact a southern form of the plains zebra (or Burchell's zebra). This species need not be assessed in terms of risk except where the Cape Mountain zebra also occurs, which is not the case on the OGF. A Certificate of Adequate Enclosure must be obtained from Cape Nature to keep zebra (GTUP, 2014).

32.

L. GEMSBOK (*Oryx gazella*)

Gemsbok are historically indigenous to the drier parts of the Western Cape and thus need not be assessed in term of risk (GTUP, 2014). They may be translocated with a valid transport permit from Cape Nature.

M & N. IMPALA (*Aepyceros melampus*) & NYALA (*Tragelaphus angasii*)

Both species need to be assessed in a separate risk assessment which is to follow in a separate document.

3.6 GAME CAMP MANAGEMENT & ANIMAL NUMBERS

3.6.1 GAME CAMPS:

The priority for the OGF is to move already acquired sable antelope and roan antelope onto the property as soon as possible, preferably before March 2020.

The OGF property will shortly be divided into a main game camp (camp 1) and a cattle farming and food production camp (camp 4) (see Figure 5). The main game camp (1) will initially be subdivided into a smaller interim game camp into which the sable antelope (camp 2) will be introduced. Once the outer game camp boundary fence is completed the sable antelope can move into the larger game camp area (camp 1) and the interim game camp (camp 2) will then be permanently used for buffalo farming (camp 2).

The roan antelope will be permanently housed in the “house camp” (camp 3) (see Figure 5). The game management setup will thus finally consist of a larger game camp for most of the game (camp 1) and two smaller camps, one for the intensive farming of roan (camp 3), and the other (camp 2) for buffalo farming (see Figure 5).

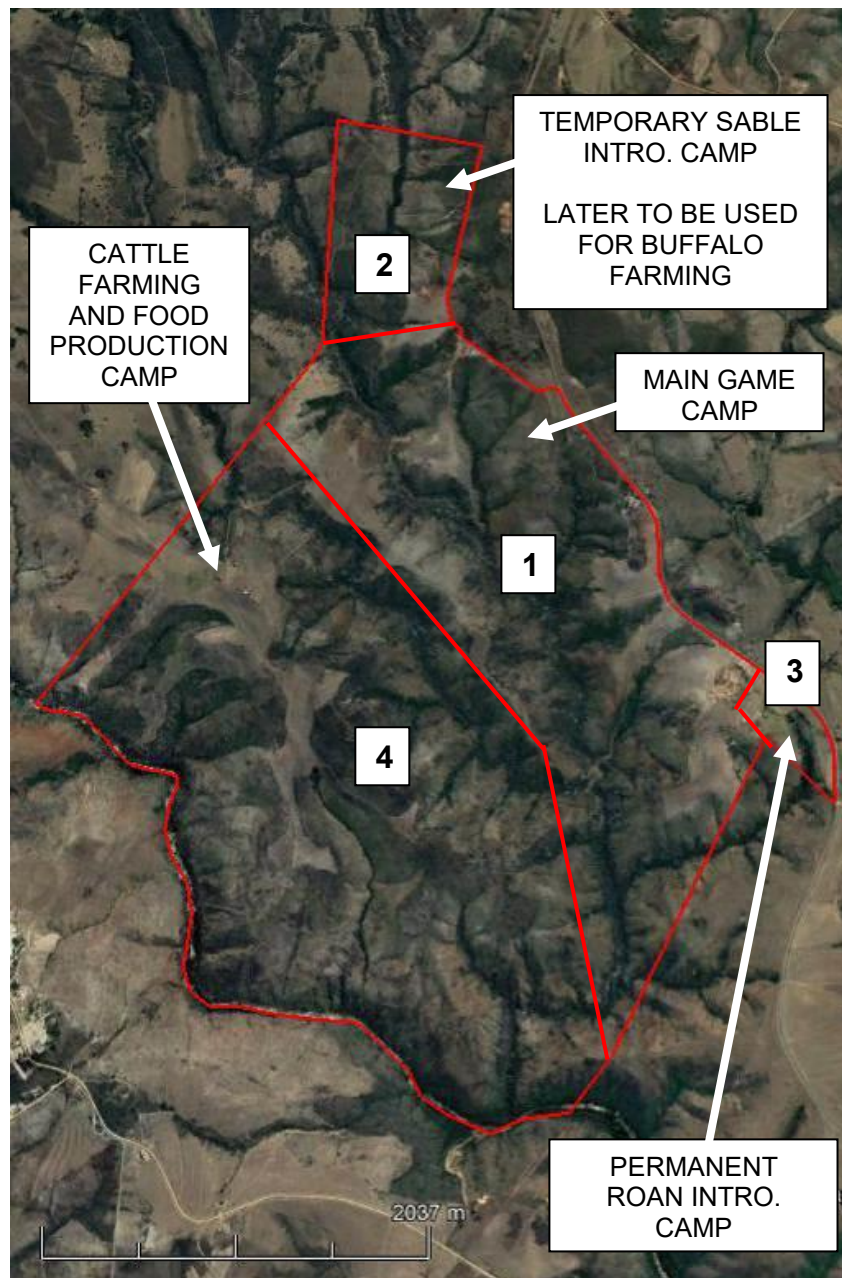


FIGURE 5: The layout of the OGF game camps.

3.6.2 ANIMAL NUMBERS: The following Table (Table 2) summarises the preliminarily recommended numbers of the wildlife species to be introduced and the equivalent in Large Animal Units (LAU). The proposed ceiling number can be adjusted in time according to changes in habitat condition or the findings of regular monitoring but the recommended numbers provide a rough guideline for population management.

These numbers represent a guideline for game management, ceiling numbers must however, be determined in time through further experience, the rainfall patterns and with the help of the proposed monitoring programme.

The recommended 53 LAU in Table 2 is well below the recommended 71 LAU (Table 1). The recommended stocking rate provided in Tables 1 and 2 can be used as an initial guide which can be later refined through the results obtained from the required habitat monitoring programme, the rainfall and management experience. The impala and nyala are included in this table although they will probably only be introduced at a later stage.

The recommended wildlife numbers are a good reflection of the habitats available to the animals, showing that it is estimated there is much more forage available for the browsers and mixed feeders and bulk grazers than for the concentrate grazers.

The bulk grazing buffalo and roan will be kept in dedicated breeding camps, on irrigated lands and will also be fed so they are not included in the camp 1 evaluation of total LAU.

Browsers and mixed feeders: 28,1 LAU (53,0%)

Bulk grazers: 16,6 LAU (31,3%)

Concentrate grazers: 8,0 LAU (15,1%)

The small and highly-selective, territorial antelopes (steenbok, duiker, grysbok, grey rhebok and bushbuck) were not included in this stocking estimate because it is problematic to compare them to an agricultural Large Animal Unit due to the vast differences in feeding ecology. These antelopes have self-regulating populations and need thus not be specifically managed other than to protect their habitats from overutilization by the introduced wildlife.

SPECIES	COMMON NAME	NUMBER	LAU TO GAME CONVERSION*	LARGE ANIMAL UNITS (LAU)
<i>Tragelaphus strepsiceros</i>	Greater kudu	±8	2,38/LAU	3,4
<i>Equus quagga</i>	Plains zebra	±8	1,52/LAU	5,3
<i>Antidorcas marsupialis</i>	Springbok	±30	6,67/LAU	4,5
<i>Oryx gazella</i>	Gemsbok	±8	1,79/LAU	4,5
<i>Kobus ellipsiprymnus</i>	Waterbuck	±8	1,82/LAU	4,4
<i>Aepyceros melampus</i>	Impala	±15	5,88/LAU	2,6
<i>Tragelaphus angasii</i>	Nyala	±10	3,85/LAU	2,6
<i>Damaliscus p. pygargus</i>	Bontebok	±10	4,55/LAU	2,2
<i>Tragelaphus oryx</i>	Eland	±10	0,98/LAU	10,2
<i>Hippotragus niger niger</i>	Sable antelope	±38	1,72/LAU	6,9
<i>Giraffa camelopardalis</i>	Giraffe	±3	0,63/LAU	4,8
<i>Redunca arundinum</i>	Common reedbuck	±6	4,76/LAU	1,3
			TOTAL	52,7 (53) LAU

TABLE 2A: Preliminarily recommended numbers for the wildlife species that will be kept in the main game camp and the equivalent in Large Animal Units. (* Bothma & Du Toit, 2016).

The roan antelope (camp 3) and buffalo (camp 2) will be confined to their breeding camps which contains irrigated pastures and in which the animals will be given supplementary feed daily. The stocking rates used in these camps will relate more to pasture grazing and supplementary feeding than to the capacity of the natural vegetation in these camps to provide sustainable grazing. The calculation of a stocking rate for each species in these two camps will thus be of no relevance.

SPECIES	COMMON NAME	CAMP SIZE	NUMBER	LAU TO GAME CONVERSION*	LARGE ANIMAL UNITS (LAU)
<i>Hippotragus equinus</i>	Roan	±25ha	±10	1,61/LAU	6,2
<i>Synceros caffer</i>	Buffalo	±103ha	±12	0,90/LAU	13,3

TABLE 2B: Preliminarily recommended numbers for the animals that will be confined to breeding camps and the equivalent in Large Animal Units.
(* Bothma & Du Toit, 2016).

3.6 POPULATION MANAGEMENT

3.6.1 POPULATION NUMBERS AND REMOVALS

Regular timeous removal of excess animals will become necessary to avoid damage to the natural vegetation. The OGF lies within an endangered vegetation type and the potential for damage to the sensitive vegetation could be high if wildlife numbers were to exceed the ecological capacity of the vegetation.

Table 2A provides a rough guideline for population numbers. Removals should be done from each population when the recommended maximum number per species is exceeded by ± 5 -10 animals. One must be practical about removals and it will make sense to co-ordinate removals of all the species combined so that the cost and effort of capture and transport is made worthwhile. For example, there is no point in removing only two or three of any species if, in the following year, the extra animals can be removed and transported together with the excess of some of the other species.

The numbers recommended in Table 2 are thus the preliminarily estimated numbers to “get back to” after each game “thinning” operation. It is critical, however, that animal numbers are effectively controlled when necessary and that excess animals do not “stand over” and continue to put unnecessary pressure on the browsing and grazing when it is least needed, such as during a prolonged dry period or if specific habitat damage is identified.

All introduced wildlife will have to be carefully managed to ensure the overgrazing does not occur or that the browse resource is not overutilized.

Expectations for animal numbers should not be high, this is a relatively unproductive area and the largely winter rainfall does not favour a completely sustainable grass cover during the drier summer period.

3.6.2 PASSIVE CAPTURE

Passive capture could be considered on the OGF if all excess game is not to be removed through hunting. The following regarding passive capture may be of use.

A smaller game ranch such as the OGF lends itself very well to passive capture for the removal of excess game as animals are easily attracted to pastures and supplementary feeding. This simply involves using a camp system and passively moving animals into it by means of food and water provision. Once the animals are used to the provision of feed within the camp, which they access via a number of gates, they can be easily enclosed by closing the gates by degrees so that the animals get used to using a single gate which can be closed when required.

This passive capture camp can connect to a holding “boma”, consisting of a number of partly roofed pens, via a connecting passage. A typical passive capture system is illustrated in Figure 6. This layout conforms to the passive capture bomas already in use on numerous other “free-range” game ranches. The holding part of the system can be modified according to the local need.

Passive capture is not recommended here as a prescription, but rather as a viable option when live animals need to be removed. Locally-adapted animals will become valuable for sale in the future and passive capture can be the least stressful and most cost-effective way in which to achieve this.

3.6.3 LIVE CAPTURE AND CULLING

Excess game that is not successfully captured passively can be removed through live capture (mass capture or darting) or culling. Every effort should be made to do so in the least disruptive way possible, so that the game do not become “wild” and run away each time a vehicle approaches. Animal removals on the OGF will mostly be through hunting but passive capture can be used for groups of animals and darting (chemical immobilization) can be used for selected individuals (eg, buffalo, roan or sable antelope). Hunting can be used for selective removals of less valuable species and for the pot.

3.6.4 MAINTAINING GENETIC HETEROZYGOCITY

Because of the relatively small populations of game on the OGF, it will be necessary to supplement the genetic integrity of the introduced animals with additional unrelated individuals of each species from time to time. An introduction of one or two animals is required for each introduction per species.

These animals should be sourced from different localities to the original population in an effort to obtain “different” genetic strains. This should take place every 5 years, in each population and both female and male animals can be introduced, but at least one mature breeding male should be introduced to replace the original breeding males.

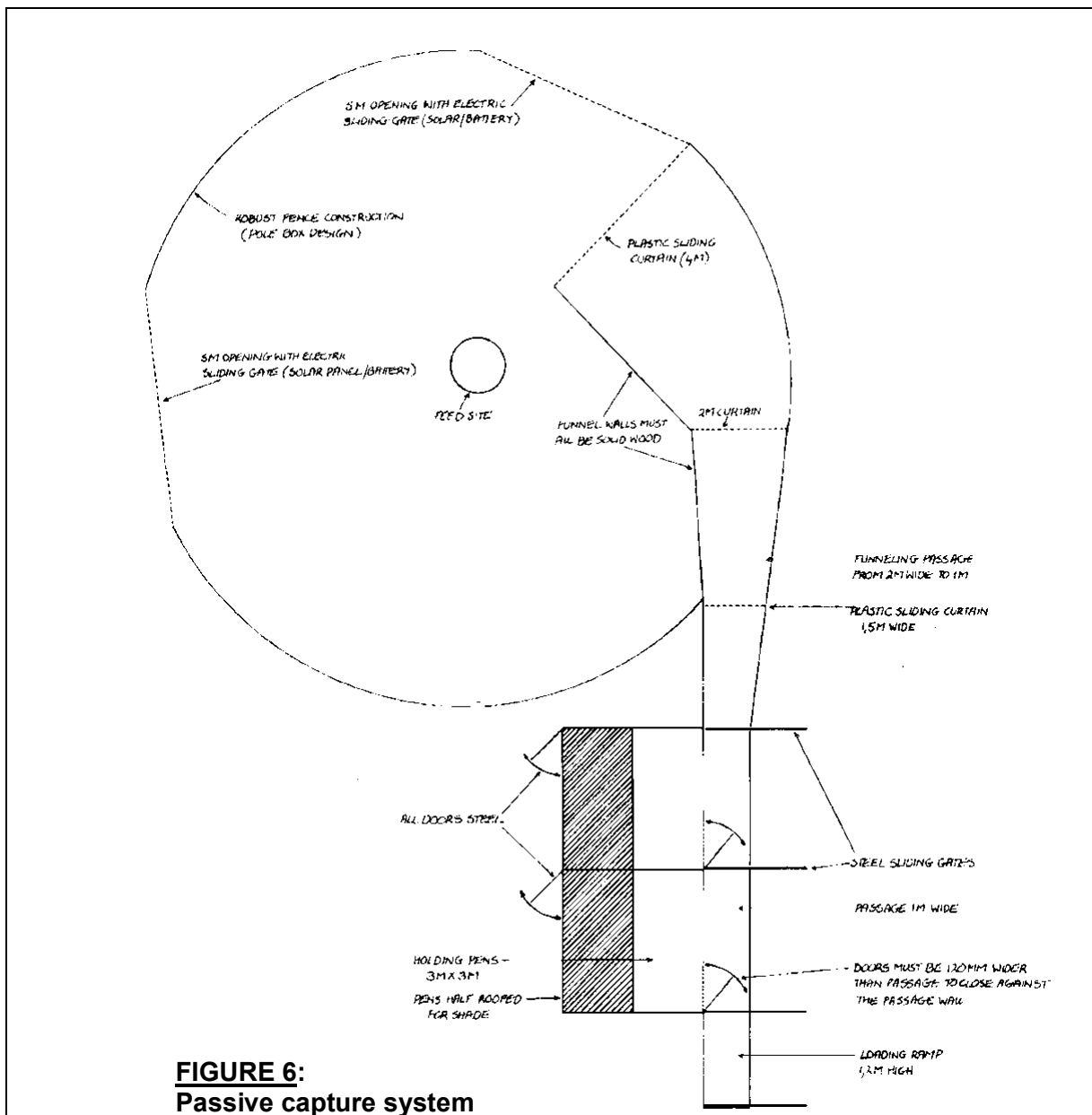


FIGURE 6:
Passive capture system

3.6.5 SUPPLEMENTARY FEEDING

Provision will be made for supplementary feeding whenever necessary and the game can be provided with carefully planned supplementation for nutrients. Lucern and baled grass (*Eragrostis teff*) or baled oat hay, which is produced in abundance in the area, can be provided when necessary. Specially formulated game cubes will be supplemented daily to the animals in the breeding camps. Game pellets will be manufactured on-site and from the crops grown for the purpose (lucern, wheat, oats, corn).

Contact Dr Francois van Niekerk - Cell: 082 440 7599 / tel: 042 - 2471469 (office) / fax: 042 - 247 2033 / email: voernet@vodamail.co.za.

It is important that the supplementary feed be provided in a manner that prevents expensive waste and water-logging, etc.

Excellent feed “bins” or “bakke” that incorporate tick acaricide roll-on applicators all around the edges are recommended for use (see Plates 9A & 9B).

Contact Wallie Stroebel of *Conservation Management Services* at 049 - 891 9017 or cell: 082 493 1441 for details of design and cost.

3.6.6 FENCING

The entire property boundary will be completely fenced with a 2,4m game fence that fully complies with the standard required for eland, kudu and impala (Cape Nature Fencing Policy, 2013).

The boundary fence of the buffalo camp (camp 2) will be completely electrified to fully comply with the standard required for buffalo with electric wires on the inside of the fence at 500mm and 1 000mm above the ground (Cape Nature Fencing Policy, 2013). The electric wires will be held in offsets away from the fence and a standby alternative power source will be installed as required. This will be provided by means of a solar-powered 12-volt battery for each fence energiser used. A small release boma will be used for the initial introduction, veterinary tests and release.

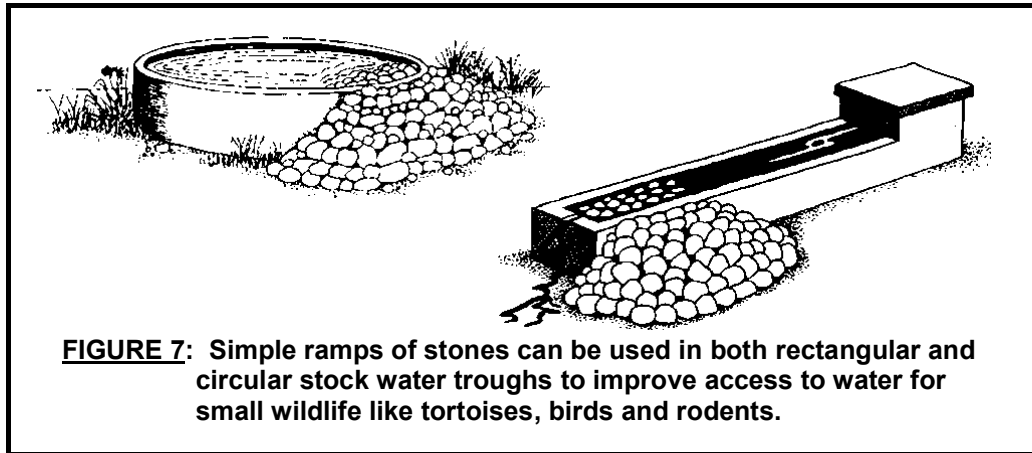
Care will be taken to ensure that the boundary fence is kept in a good condition through regular fence inspection and maintenance. The boundary fence specification that was used (2,4m) is of an adequate standard and it will certainly serve as adequate enclosure for all game species contained.

A strategy for the management of the potential for escapes is recommended and consists of the following steps:

- The landowner accepts full responsibility for escapes. His agreement to this is conditional for approval to introduce extralimital game species.
- If any escapes occur, the landowner has one month to either retrieve or cull the escapees.
- If the landowner does not comply (or ask for extension), the escapees may be culled/captured for his account, under the jurisdiction of Cape Nature and with the neighbour's approval.

3.6.7 WATER PROVISION

In addition to natural stream water, a number of borehole sites, each with water are available to develop into a wider range of watering points for game. The combined water availability will be more than adequate for all introduced game. Consideration can be given to the improvement of existing water troughs to make them accessible to small wildlife as illustrated in Figure 7. These modifications provide access for small wildlife like tortoises and birds which often cannot reach the water in typical livestock trough structures.



3.6.8 GENERAL GUIDELINES

EXTERNAL PARASITES

The use of feed basins with rolling acaricide applicators around the edges is advised as a means for the control of tick infestations on all the wildlife that may need to be given supplementary food. (See Plates 9 & 10).



PLATES 9 & 10: Feed bins that also double-up for tick control.

INTERNAL PARASITES: The build-up of internal parasites in confined feeding areas is a particular problem which requires preventative management. The following is recommended in mitigation:

- i. Change the location of feeding sites on a regular (monthly) basis to prevent the build-up of parasites.
- ii. Provide feed in bins raised above the ground to prevent animals ingesting faeces contaminated with internal parasites (Plate 11).



PLATE 11: Metal feed baskets for the provision of baled feed. The feed is also kept fresh and dry due to air circulation.

- iii. Do monthly parasite counts in faeces collected from a selection of the herd (*ie*, not one animal). The parasite count is done by a veterinarian, but the collection and delivery of the faeces must be done by the landowner.
- iv. Treat for internal parasites with antihelminthic *Panacur* (at the vet's recommendation) whenever necessary, usually added to a supplementary feed preparation.

4. MONITORING AND AUDIT

With the wildlife management system being in a relatively sensitive area, it will be necessary to carefully monitor the browsing and grazing impact of the wildlife on the habitat, and particularly on the potential impact on the Silcrete Fynbos.

There are numerous ways in which to measure this impact but basic and practical monitoring methods are given here by means of which to record and measure the impact of game on the veld (Coetzee, 2016). This monitoring programme is a prescription which is required by Cape Nature for the introduction and management of extralimital wildlife.

4.1 FIXED-POINT PHOTOGRAPHY AND ENCLOSURES

It is recommended that an objective veld condition monitoring system be established. This should consist of a number of fixed-point photo sites, a number of fixed-point browse monitoring sites and a fenced (15m x 15m) enclosure in each major habitat type. The monitoring of veld condition at these sites will help to determine whether there is any long-term negative grazing or browsing impact on the vegetation. The fixed-point photo "system" is illustrated in Figure 8A and the enclosure in Figure 8C. It is recommended that the localities of these monitoring sites should be determined together with the landowner in order to ensure "buy-in" with the monitoring plan.

A plot with a radius of 10m should be surveyed at each of the fixed-point photo sites to determine grass species composition and utilization pressure at each fixed point at the time of each monitoring survey.

A survey record sheet for fixed-point photo sites is shown in Figure 8B. The browse monitoring method, which is also fixed photo based, is illustrated in Figure 8D and the browse record sheets in Figure 8E.

Monitoring should occur no less than every second year, but preferably annually. It is recommended that the landowner appoints a suitably competent person to help institute and carry out the required monitoring plan.

4.2 GAME POPULATION MONITORING

Accurate records should be kept of wildlife introduced (initial introductions and future introductions for genetic management), numbers and mortalities. An example of a simple game register is shown below. Accurate game numbers will help the manager (and the landowner) with wildlife population planning.

OUTENIQUA GAME FARM: WILDLIFE REGISTER						
SPECIES:				CAMP:		YEAR:
Date	Births	Deaths	Number Removed	Number Introduced	Total Adjusted	Source of Introductions
TOTALS						

A simple register that can be used to keep basic records of game populations.

The register can also be suitably modified by the manager/owner to include specific information about breeding performance. In this way, a stud book can be developed in which records can be kept regarding the origin of each animal, and so forth.

The numbers of most of the game on intensively managed game farms is well known, and need not be specifically counted, as the animals are kept in small game camps and fed and watered on a daily or weekly routine basis.

For those species that are not kept in dedicated game camps, a regular assessment of numbers should be made on an annual basis, preferably at the end of the period during which most species drop their calves and lambs, which for most species will be from October till February.

For most species, counts can be done from March to April, but counts can also be done in May. There are a great variety of methods that can be used to count animals but a simple known group method will be practical for most of the smaller game farms.

KNOWN GROUP METHOD: This technique can be applied by the manager and his staff who should have an intimate knowledge of the property and the groups of animals on it. It works well on highly visible species living in open habitat and that aggregate in large groups, such as wildebeest, bontebok, gemsbok, red hartebeest and zebra.

Groups are located and counted over a short period – usually a morning or afternoon, and preferably not more than a day. A systematic coverage of the whole property is not attempted; the manager merely goes to all the localities that he knows they frequent (usually in a vehicle), and notes the locality and size of each group seen.

The total count is calculated by adding all the known groups. Because of the possibility that one or more groups may have moved into an area they do not usually visit, and therefore been missed, it is worth repeating the count at least once. The count can also be checked with the general game observation records that are made throughout the year. Individual groups will be recognised by their composition and certain characteristics of one or more members, eg, broken horns, scars, sex, size etc. Game counting work can be done during March to April, when most species have completed calving and lambing, but before they start rutting and breeding.

The populations of other wildlife species like grey rhebok, duiker, steenbok, klipspringer and mountain reedbuck can be roughly estimated, based on field observations of their occurrence and group size throughout the year.

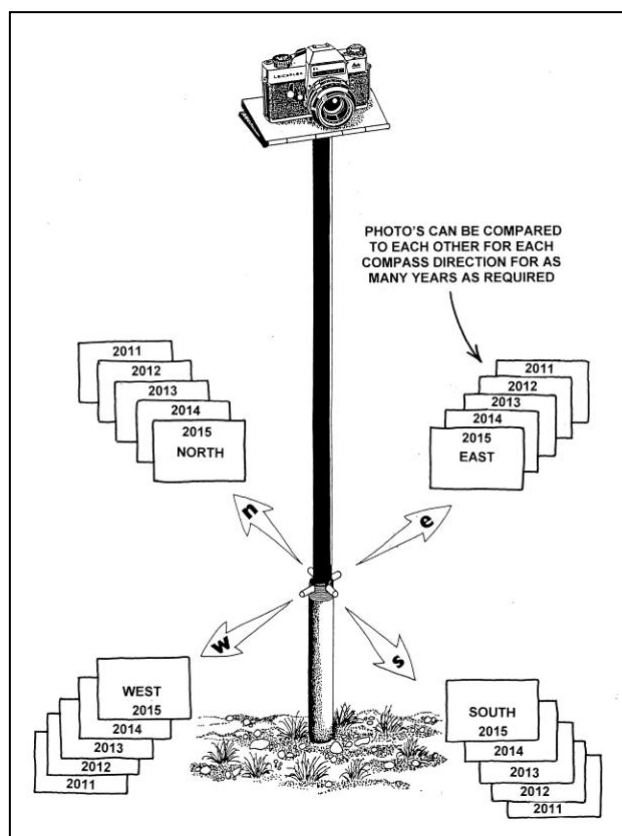
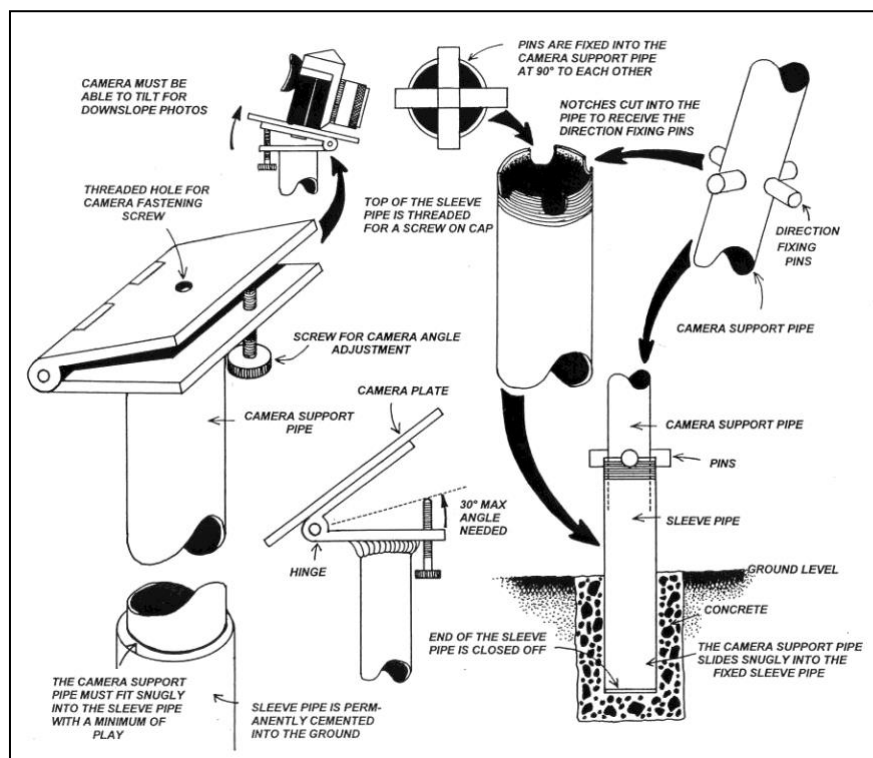


FIGURE 8A: The fixed point photo monitoring method.

FIXED POINT PHOTOGRAPH RECORD SHEET			
PLOT NO:		DATE:	SURVEYOR:
GPS CO-ORDINATE:			
GRID REF NO:			
POINT DESCRIPTION: (How to find the marker)			
HABITAT DESCRIPTION: (use back of form, if necessary)			
VEGETATION TYPE:			
TREE & SHRUB SPECIES:			
DWARF SCRUB SPECIES:			
HERBACEOUS PLANT SPECIES:			
COVER DESCRIPTION:			
COVER TYPE	HEIGHT	% OF PLOT	DOMINANT SPECIES
CANOPY COVER			
GROUND COVER			
UTILIZATION:			
BROWSING INTENSITY:		PLANTS BROWSED	BROWSING HERBIVORES
HEAVY			
MODERATE			
LIGHT			
GRAZING INTENSITY:		PLANTS GRAZED	GRAZING HERBIVORES
HEAVY			
MODERATE			
LIGHT			
OTHER NOTES:			

FIGURE 8B: Fixed-point photo record sheet.

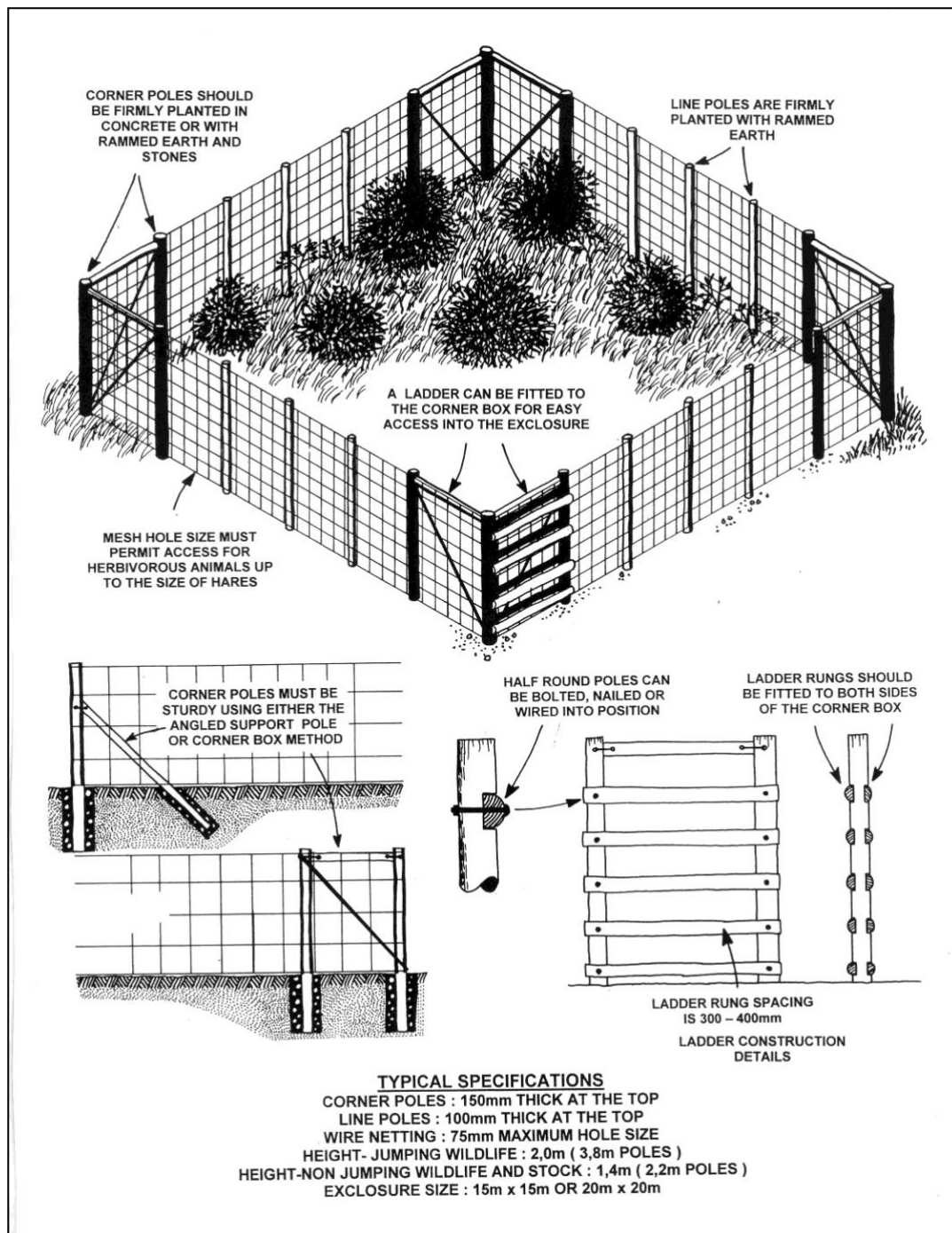


FIGURE 8C: The wildlife enclosure.

4.3 GAME RANCH MANAGEMENT EVALUATION (AUDIT)

Game ranch Management Evaluation (also known as Game Ranch Auditing) is a management tool comprising a **systematic**, **objective** and **periodic** evaluation of the management of a particular farm or ranch.

The results can be used to gauge performance and progress with the prescribed management objectives (prescribed by Cape Nature) for the property.

The prescribed management objectives are set by the landowner and are contained in the management plan, together with the conservation management objectives as determined by Cape Nature. The evaluation must thus be based on the assessment of compliance with the objectives and prescriptions outlined in the plan, for both game production as well as for nature conservation.

The projects or tasks listed in the OGF management plan can be summarised as follows:

- i. Manage the approved wildlife species at or below the estimated 71 LAU.
- ii. Animal numbers: Use the preliminary population numbers recommended in Table 2 of the plan for the management each wildlife species.
- iii. Removals: When numbers increase by $\pm 5-10$ for all species, reduce back to the recommended number (depending on the species). Removals can be by means of live capture or hunting.
- iv. Passive capture: (suggestion only) Establish a passive capture system and use the system for supplementary feeding.
- v. Live capture: If passive capture is not used or successful, remove excess animals by means of live capture (mechanical or chemical) if not hunted.
- vi. Genetic health: Introduce new unrelated male/female individuals into all populations on a 5-year basis. Source animals from different populations to the original introduction groups, and introduce 1 or 2 individuals at a time, preferably male animals. Remove original breeding males when the introduction is made.
- vii. Supplementary feeding: Provide specially formulated game cubes and hay/lucerne hay daily for all species during the dry summer drought periods (when necessary) and for all game in the breeding camps.
- viii. Monitoring: Implement the recommended veld and game monitoring programme consisting of fixed-point photography, browse monitoring and exclosures. Determine monitoring sites together with landowner and advisor.
- ix. Game register: Register all acquisitions, deaths, births and other details of each population.
- x. Auditing: Initiate an annual game ranch/farm audit using this management plan as an audit guide.

- xi. Fencing: maintain a high level of fence inspection and maintenance.
- xii. Conservation: Ensure that the sensitive vegetation (Fynbos, Renosterveld and Riverine thicket/forest) is not compromised through any aspect of the game introduction, ranching or related management of the game.

The evaluation process, which should be carried out by a suitably qualified and independent game and veld management expert, consists of a field visit during which information is collected and later collated into a standardised game ranch/farm management evaluation report. The evaluation report is then submitted to the persons responsible for the management of the site and to the relevant authority that requires the audit report (*ie*, Cape Nature) as proof of compliance with conditions, prescriptions or objectives that have been established for the property.

The game ranch/farm management evaluation should be carried out at least annually by means of the same standardised procedure. An annual evaluation will be invaluable to the persons responsible for the management of the OGF because it pinpoints the particular shortcomings or needs of the farm and also emphasizes the priorities for implementation. Similarly, it helps to gauge the effectivity or practicality of the prescriptions. An example of a simple audit form follows:

GAME RANCH / FARM MANAGEMENT EVALUATION SHEET			
PROJECT:			
OBJECTIVE	PROJECT STATUS		COMMENT AND RECOMMENDATION
	Needs attention		
	Partly undertaken		
	Significant progress		
	Completed		
	Needs follow-up		

5. ECOLOGICAL THREAT ANALYSIS

The risks are related to animal genetics, disease and veld condition as listed in Table 3 below. An ecological threat analysis is necessary in order to gauge the potential for the damage of sensitive habitats by the introduced extralimital (and locally indigenous) wildlife species.

POTENTIAL THREAT	PROBABILITY OF OCCURRENCE	MITIGATION
Related species may cross-breed and create hybrids	Low	- Roan and sable will be housed separately The related species are unlikely to hybridize if a suitable sex ratio is maintained in all populations and the area is big enough to permit normal social behaviour.
Game animals may damage or destroy sensitive natural vegetation	Low	- Numbers will be kept low. - Numbers will be strictly controlled. - Monitoring will help to identify problems - Sensitive habitats are not attractive to game
Over-browsing/over-grazing of the slopes may result in soil erosion	Low	- Game numbers are conservative. - Monitoring will help detect problems. - The slopes do not contain sustainable grazing
Expanding game populations may be difficult to control, resulting in habitat damage	Low	- The business of the farm is game farming, population control will thus not be a problem - Passive capture is particularly effective where supplementary feed is provided. - Mechanical or chemical capture can also be used to reduce numbers. - The alternative of culling or hunting exists as a last resort. - Most populations are small, easily observed and counted. - Animal numbers will be re-evaluated annually.
Potentially problematic game species may escape into neighbouring property	Low	- The property is fully enclosed with an approved game-proof boundary fence. -The boundary fence will be continuously checked for breaches or breaks and maintained accordingly. - A strategy for dealing with escapees is in place.
Seasonal drought may impact on sustainability of natural forage	Low	- Monitoring will help to detect problems. - Supplementary feed can be provided. - Animal numbers are conservative. - Animals can be easily reduced through hunting, live capture or culling.
Introduced animals may bring "foreign" parasites and diseases into the area	Low	- All introduced animals must be treated at source for external parasites. - Animals should preferably be sourced from as nearby as possible.
Poor or ill-advised management may	Low	- The land is blessed with an owner who is experienced with livestock management and understands the need to restrict game

result in habitat destruction.		population growth. in this he will be supported by Conservation Management Services. - Game numbers will be carefully monitored and controlled. - Veld condition will be monitored. - A veld improvement programme has already been initiated.
Introduced animals in small populations may become inbred	Low	- New breeding males can replace original males on a 5 to 7-year basis for all species.

TABLE 3: Threats and mitigations.

6. ADDITIONAL MANAGEMENT RECOMMENDATIONS

The following aspects are not directly related to the introduction or management of game, or the requirements for game introduction approval, but they may require attention in time. It is important to note that significant progress has already been made with the general improvement of habitat condition on the farm. It is suggested that the following aspects should be considered for additional investigation and the provision of management guidelines in the future:

- i. Invasive alien plant control.
- ii. Improvement of the grass cover on the “upland” transformed pasture areas.
- iii. Drainage management (bank stabilization).

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APPENDIX 1: UNDERTAKING BY LANDOWNER

WRITTEN UNDERTAKING TO IMPLEMENT THE OUTENIQUA GAME FARM GAME MANAGEMENT/RISK ASSESSMENT PLAN FOR THE INTRODUCTION OF INDIGENOUS AND EXTRALIMITAL WILDLIFE:

I, Mr. Clint Smith (ID 7409025117082) owner of Outeniqua game farm (Farms 118 & 350), Mossel Bay district hereby confirm to implement the submitted Game introduction and Management Risk Assessment Plan for the Outeniqua Game Farm in its entirety.

I undertake to implement the following additional activities as mentioned in the management plan:

- i. A fixed - point photographic vegetation monitoring program as described in the approved game management plan.
- ii. A monitoring program to evaluate the impacts that all introduced extralimital species have on biodiversity, both fauna and flora, as well as the sensitive vegetation on my property. If the impacts of these species, is deemed detrimental, I undertake to implement management interventions that will reduce the effects caused by these species. Furthermore, if remedial action renders that the impacts to my property and surround sensitive vegetation cannot be mitigated significantly, I confirm that CapeNature reserves the right to instruct the removal of these species at my expense. Such instruction will be dependent on the relevant scientific monitoring data submitted for consideration.
- iii. That I will maintain a Class 1 (2.4m) game fence to prevent these animals from escaping my property, the Outeniqua Game Farm.

Furthermore, I understand and confirm the following:

- i. That this risk assessment plan does not exempt me from any other legislation, policies or international conventions applicable to the translocation of game into, from or within the Western Cape Province.
- ii. That this risk assessment plan does not exempt me from any transport permits including the permit requirements from any other organ of state or conservation authority.

- iii. That I undertake to implement the conditions and terms set out in the National Environmental Management Act (NEMA) and the National Environmental Management: Biodiversity Act (NEM:BA). These conditions and obligations are applicable to any management actions undertaken on the farm.
- iv. If approved, I undertake to submit monitoring reports, as prescribed in the risk assessment, to CapeNature with three (3) months after the three-year trial period for consideration. Failure to do so I understand that future permits can be revoked.
- v. If approved, I undertake that the letter of approval must accompany all translocation applications to and from my property.

Regards,

_____ Date:

C. Smith

Owner: Outeniqua Game Farm (Farm 118 & 350), Mossel Bay