

PART 2 REPORT- TOURISM & URBAN DEVELOPMENT

ASSESSMENT OF SOCIO-ECONOMIC IMPACTS

*The Proposed Northern-Alignment Power Line Project,
Western Cape, Northern Cape and Free State Provinces
Kronos-Perseus Section*



Mokala National Park: Image courtesy Africam.com (Krukab)

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INTRODUCTION

ADEC has assessed the socio-economic impacts of the proposed 883km, 765kV power line upgrade between the Juno substation in Western Cape Province and the Perseus substation in the Free State. These impacts form one component of an overall Environmental Impact Assessment (EIA) process for the project. The following report focuses on tourism and urban development impacts within the **Kronos-Perseus section** of the project.

Approach and Methodology

ADEC identified the possible “Impact Area” and nodes associated with the proposed power line and upgrades; assessed existing demographic and economic conditions; and analysed business, tourism, and agro-industrial base within the Impact Area and nodes. In Part II of this Socio-Economic Impact Assessment, ADEC analyzed and forecasted the impacts of the proposed projects on tourism and urban development within the Impact Area. This **Part II Report** presents findings from this ***tourism and urban development impact assessment***.

A previous Part I Report presented findings on the project’s impacts on agriculture, the primary economic activity in the region. Additional analysis of socio-economic impacts relating to health and environment may be determined, as possible, based on information provided by other members of the consulting team. All of these impacts, along with the Part II impacts on tourism and urban development, are assessed and described for each of the four sections of the power line.

Again, this Phase II Report presents findings from an assessment of project impacts on the tourism sector and on urban development within the *Kronos-Perseus Impact Area*. A previous report presented findings from analyses of impacts on the agricultural sector.

Limitations and Constraints

ADEC was unable to access detailed information on ESKOM’s power line project and the indicative CAPEX and operating costs, including overall power supply, access, and grid efficiency levels along the route of the new power line. This would have helped in the determination of the positive impacts of the upgrading of service for economic uses including agriculture, tourism and urban settlements. Without information to the contrary, this impact assessment must therefore assume that the proposed power lines would not promote or improve the supply of power directly within the impact area of the power line corridor.

Field mission to the study area was not possible due to scope limitations, and detailed ground assessment of key tourism assets and sites in

the study area was therefore not possible. Field investigations would have helped provide input for determining impacts on tourism, property values, and other land uses. To overcome this constraint, ADEC identified tourism attractions and sites in the study area through Internet research, maps and marketing campaigns. In addition, telephonic interviews were conducted with leading stakeholders in the local and surrounding area along the proposed path of the power line corridor.

Expertise & Staff

The study was conducted by African Development Economic Consultants (pty) Ltd (ADEC), an economic, development and strategic planning consultancy specializing, in among others, socio-economic impacts, fiscal impacts, market potentials analysis, cost-benefit analysis, project feasibility analysis (financial & economic), public policy analysis, and project implementation strategies.

All background research for this study, including determination of impacts was carried out by Golden Chalunda, Research Associate responsible for economic research and analysis. Golden Chalunda brings over 12 years' experience in , among others, assessment of economic impacts, analysis of property markets, conditions, analysis of competitive frameworks, and preparation of strategic inputs for a wide variety of economic development and socio-economic impact assessments. Golden Chalunda has a Masters Degree in Economics from University of East Anglia, Norwich (UK) and Bachelor of Social Science Degree (Economics & Comp. Science) from Chancellor College of the University of Malawi.

The study was managed by Randall Gross, CEO/Director, with over 28 years' experience in strategic economic and development consulting for local, regional and national governments; private companies; and non-profit agencies. Randall Gross has worked closely with local government officials from the U.S., Russia, South Africa and other countries on nearly 600 projects on community revitalization, industrial & economic development, tourism, citizen participation, asset management, and policy formulation. Randall Gross holds a Masters Degree in Public Policy from Georgetown University (Washington, DC, USA) and a BA Arts & Sciences Degree in political science and urban economics from Northwestern University (Chicago, IL, USA)

Section 1. EXISTING TOURISM BASE

This section presents information on the existing tourism base within the region through which the proposed power line will pass. This assessment focuses on natural assets that form the core of the tourism base and are most susceptible to environmental impacts. This tourism base comprise of national parks, nature reserves, game farms and lodges, historic battlefields, and other natural tourism assets along the power line corridor. The assets are inventoried and described in terms of location, use, and existing and planned game hunting and conservation activities. This baseline assessment led to the identification of possible “impact areas” for natural tourism assets that would be affected by the proposed power line and infrastructure upgrades.

The **Kronos-Perseus Section** of the power line would involve the construction of approximately 388km, 765KV power line and substations upgrade extending from Kronos substation near Prieska in the Northern Cape to Perseus substation near Boshof in the Free State. Existing tourism conditions in the Kronos-Perseus section are presented below.

Key Regional Assets

Two of the three proposed Power Line Corridor alternatives would pass through Mokala National Park, which is located within this section of the power line corridor. The Kronos-Perseus Section is also located near several of the corridor’s larger towns and urbanized areas. Several tourism sites and towns fall within a “primary impact area” and may be directly impacted by the development and operation of the power lines. Other towns and sites are located further away from the corridor but may experience some indirect impacts from the power lines. Tourism assets and their location in relation to the Power Line Corridor are described below.

Primary Impact Areas

There are several tourism sites, natural areas, and towns located within or near one or more of the Power Line Corridor Alternative routes through the area. These sites would be most likely to be impacted by development and operation of the power lines. Several key tourism sites and towns are discussed below.

Mokala National Park. Mokala National Park is located in the Plooyburg area. Regional access to the park is provided via the R357 from Kimberly and N12 from Cape Town. Kimberly is the closest major hub for domestic and foreign tourists visiting the region.

This park was only established by SANParks in 2007, making it South Africa’s newest national park. Mokala spans some 26,000 hectares hosting endangered species (e.g., Cape buffalo, black rhino, black wildebeest, roan antelope, white-backed vulture, and smaller species), endemic bird species

(black-chested prinia and chestnut-tinted tit babblers), along with San rock art and Anglo-Boer War heritage. Mokala is an IUCN Category II site with Karoo landscape characterized by rocky terrain as well as large open plains. The park's mokala trees (Setswana for "magnificent camel thorn"), along with umbrella thorns and puzzle bushes, flourish within the arid western interior of the park.¹



Image of Mokala National Park (Wikipedia)

The park offers five lodges for accommodation: Mosu Luxury Lodge, Haak-en-Steek Camp, Mofele Environmental Centre, Motswedi Camp, and Lilydale Rest Camp. The existing facilities have a total of 43 full-service and self-catering units. There are additional self-catering sites and luxury camps

planned for future development.²

The park attracted attendance of 20,438 in 2012, representing an increase of more than 100% since 2010.³ Based on total attendance and capacity assumptions, the park's accommodation facilities generate a total annualized occupancy rate of almost 40%.



Image of Mokala Lilydale, courtesy SANParks

Based on visual interpretation of available maps, Alternative Corridor 2 of the Power Line Corridor *could* dissect the middle of Mokala National Park, whilst Alternative Corridor 3 *could* pass through the northern portion of the park. Alternative Corridor 1 would bypass the park at some distance to the south. The exact locations of the power line alternatives, vis-à-vis boundaries for Mokala National Park, would need to be verified prior at some stage.

Dealesville: The Perseus sub-station is located just north of Dealesville. This small town was established on Klipfontein Farm by John Henry Deale and proclaimed a township in 1899. Dealesville offers a small collection of heritage sites, including the Jan Wessels Museum and a

¹ Mokala National Park website and Wikipedia entry for "Mokala National Park."

² Ibid.

³ Interview with Mokala National Park staff members, September 2013 and SANParks Annual Report 2011.

Voortrekker Monument.⁴ There are game farms and lodges located outside Mokala National Parks oriented to game hunting. These are analyzed and discussed in a later section on Local Area Eco-tourism.

Secondary (Indirect) Impact Areas

In addition to the Primary Impact Area sites discussed above, there are also tourism sites and towns located further away from the Power Line Corridor that may be impacted indirectly from the extension of the power line. For example, some towns serve as the primary lodging and services base for tourists traveling to more isolated sites closer to the proposed Power Line Corridor. Thus, whilst sites located in these towns are not directly impacted by the power lines, the town's business base may be impacted by any changes affecting tourism to sites within the corridors.

Boshof: Anglo-Boer War Heritage. Boshof is located about 50km from the Power Line Corridor. In comparison, Dealesville is 55km away from Boshof and Perseus is 5km to the north of Dealesville. As such, it is not likely to be directly impacted by the establishment of the line but it does operate as a service hub for the broader region. The town was established on the Vanwyksvlei Farm in 1855. The town bears the name of Jacobus Boshof who became the second President of the Orange Free State in 1855. Boshof, a local commando, was involved in the Siege of Kimberley during the Anglo-Boer War. The disruption of the water supply at Riverton is highlighted as one of the key turning points during the military conflict. Thus, Boshof offers its place as a cultural heritage tourism site relating to the Anglo-Boer War.

Kimberley: World-Famous Diamonds. Kimberley is by far the largest city near the proposed Power Line Corridor, with estimated population of 1,166,700 (up from 1,145,861 from 2011 Census)⁵. The city also serves as the administrative, business, and services hub for Northern Cape Province. The city attracts significant tourism thanks to the diamond mining operations marked by the "Big Hole" and the discovery of several of the world's largest diamonds here. Kimberley offered South Africa's first stock exchange. Furthermore, the siege of the second Boer War focused on Kimberley. The city offers air service to major domestic hubs and serves as an industrial and rail transportation centre. Kimberley offers a full range of visitor attractions, led by the Big Hole (recreated diamond mine and museum), McGregor Museum, Pioneers of Aviation Museum, and other sites. The city centre is located about 30km north of Corridor Alternatives 2 and 3, but Kimberley's southern suburbs and "exurbs" like Spytfontein are located just about ten kilometers of these alternative corridors. Still, given the distance, it is unlikely that the power line would have any direct impact on Kimberley's tourism sites. Any impacts on Kimberley would more likely relate to the city's role in supplying tourism services in the broader region.

⁴ Wikipedia Entry on Dealesville.

⁵ <http://www.citypopulation.de/South Africa-UA.html>.

Other Area Tourist Sites and Settlements. Several farmsteads, settlements, or towns are clustered along the main road leading southwest of Kimberley past the Power Line Corridor, namely Emmaus, Petrusburg, Immigrant, and De Brug. Emmaus is closest, at about 25 kilometres south of the Corridor. Other settlements include Plooyburg, Ritchie, Modderivier, Graspan, Grootdoring and others. Each of these farmsteads, settlements, or towns offers its own place in the region's agricultural and heritage context, but none are major heritage tourist attractions in themselves. For example, there are ancient rock-engraving sites like Driekops Eiland (located north of Plooyburg on the Riet River) that are significant, but are not major visitor attractions in themselves. A Boer War Memorial is located in the town of Ritchie.

About 35km east from Dealesville are natural thermal springs which originally attracted the development of health spas at Florisbad. Although Florisbad is out of the study area, it is functionally a part of the relevant tourism market base for sites and attractions within the study area. However, an archaic (estimated 260,000 year-old) hominid skull and fossilized mammalian remains have been discovered at the spring mound and the site is now part of the Florisbad Quaternary Research Department (FQRD) Station, operated by the National Museum at Bloemfontein. The station includes office, laboratories, and collections of the FQRD. A small educational centre at the site is open to the public and the site is awaiting national heritage site status.⁶ The springs are still active, and visitors can still stay in basic rondaval accommodation at the site. The proposed Power Line Corridor lies to the west of Dealesville and would therefore have no apparent direct impact on this cultural heritage site.

Employment Base

Mokala National Park is perhaps the most significant tourism attraction located directly within the path of several Power Line Corridor alternatives. This park is situated in Siyancuma Local Municipality, in Pixley ka Sema District. According to the 2007 Community Census, Siyancuma LM had an economically-active population of 22,862 (2007), of whom 7,800 were employed. Nearly one-quarter of these workers were employed in low-skilled ("elementary") occupations, with another 11% (or 858) in agriculture. Based on SANParks data, it is estimated that about 25 people are employed directly by Mokala, working as field rangers, administration, or in support and other positions. Thus, Mokala accounts for a very small share (0.3%) of the total employment base in the municipality.

However, Mokala NP does generate spin-off in the regional economy, in the form of lodging and retail turnover, which translates into employment. Again based on data collected from SANParks, it is estimated that about 50.7% of park guests spend their stay on-site, meaning that about 49.3% spend their stay in off-site lodging facilities or take day trips to the park. Many of the park's visitors originate in Kimberley or fly to Kimberley from other

⁶ National Museum, Bloemfontein

locations. Thus, some of the park-related overnight stays occur in Kimberley. It is estimated that about 3,500 room-nights are generated off-site, requiring at least 1 to 2 lodging employees to service this demand. Park visitors are estimated to generate about R10,219,000 in retail expenditures per year, such as in fuel, food and supplies (based on average per-tourist expenditures). If captured locally or near Kimberley, these expenditures translate into about 400sm of retail space requiring up to four retail and service workers. Thus, it is estimated that Mokala National Park generates direct and indirect (spin-off) employment for 30 to 35 on-site and off-site workers.

Game Farming Industry

The region extending from Koffiefontein (on the west) and Kimberly West and Boshof (on the east) has a rich wildlife industry anchored by commercial ranches and/or game farms. This region occupies a part of the Kronos-Perseus section where game farming and hunting are carried out alongside irrigation farming and livestock grazing (see Agriculture Impact Assessment Report). The local game farming industry along and surrounding the path of the proposed power line corridor complements Mokala National Park and contributes to both regional and national tourism. The national wildlife ranching industry is highlighted in order to put local game farming activities into context. A caveat is noted here that background data and information was collected, in part, from secondary sources and directly from farmers and stakeholders.

National Wildlife Ranching Trends

The national trends for the South African wildlife industry are presented for scale, provincial coverage, investment, profitability, employment and economic contribution. These trends help in understanding the scope and prospects of local game farming activities in Kronos-Perseus section of the proposed power lines corridor.

Wildlife Ranching Industry. South Africa has more than 9,600 ranches, of which 3,000 are mixed-use enterprises (Dry, 2014). Mixed-use ranches include field crop and livestock farming. South Africa's current wildlife ranching base in 2014 is summarized below.

Table 1. NUMBER OF WILDLIFE RANCHES, RSA, 2014

Attribute	Number
Total	>9,600
Exempted	6,000
Mixed Use	3,000

Source: Wildlife Ranching
South Africa and ADEC.

It must be noted that the majority of wildlife farms in the Study Area are mixed-use farms. There are some farms that are concentrated more in game farming relative to cropping and livestock grazing. According to Dry (2014), the number of commercial farmers in the country has dropped over the years to around 50,000.

Game Ranching Distribution. Commercial wildlife ranching is concentrated in Limpopo, followed by Northern Cape and Eastern Cape. The distribution of wildlife ranching is summarized below.

Table 2. COMMERCIAL WILDLIFE RANCHES DISTRIBUTION, SOUTH AFRICA, 2014

Province	Share
Limpopo	50.0%
Northern Cape	19.5%
Eastern Cape	12.3%
Other	18.2%
TOTAL	100%

Sources: Wildlife Ranching South Africa and ADEC (pty) Ltd.

The Northern Cape is an important player, accounting for one in five of all ranches in the country. The proposed Eskom power lines would pass through or near the prime wildlife ranching region of the Province. Wildlife ranching in the Free State is relatively small but contributes somehow to the 18% share of ranches located outside Limpopo and Northern Cape.

Investment and Profitability. Game farming is capital intensive, with investment ranging R2.5 to R5.4 million. Mixed game farms generate higher profit than exclusive ranching or hunting enterprises. Also, the return on capital is higher for mixed-use and ranching versus hunting.

Table 3. COMMERCIAL GAME FARMING PROFITABILITY INDICATORS, SOUTH AFRICA, 2014

Indicator	Mixed Buffalo Farming Grassland, 400 ha	Buffalo Ranching Lowveld, 100 ha	Hunting Ranch 150 LSU Grassland, 500 ha
Gross operating income	R 1,486,375	R 1,920,000	R 285,823
Gross operating expenditure	R 426,360	R 967,000	R 137,714
Capital investments	R 5,422,250	R 4,462,500	R 2,518,602
Net operating profit before tax	R 1,060,015	R 953,000	R 140,109
Net operating profit	R 5,422,250	R 4,462,500	R 2,518,602
Net operating margin	71.3%	49.6%	51.8%
Return on capital	19.5%	21.4%	5.9%

Source: Wildlife Ranching South Africa.

Overall, game farming is more lucrative than livestock farming. The landscape, geography and vegetation are important factors. That said, buffalo ranching generates the highest return on capital than mixed buffalo farming. Game hunting generates just over 5% return on capital.

Contribution to SA Economy. The national wildlife ranching industry covers roughly 50 million hectares of land, with commercial ranches accounting for some 17%. The rest of the land is for government and industry conservation and agriculture uses. Commercial game farming contributes US\$1.1 billion (or roughly R10 to R12 billion) to SA's GDP and also accounts for more than 20% of the country's red meat supply. Commercial ranches provide employment for around 120,000 people. Overall, private game farms employ three to four times more personnel than livestock farms while the rewards of game farming are higher than for livestock farming (Dry, 2014).

Ranch Size and Employment. The size of a semi-intensive game ranch is at least 2,500 ha. A typical ranch employs around 100 people, of which +/-15 are general farm workers. Unlike a crop or livestock farm, a game ranch requires a qualified staff complement comprising a ranch manager, assistant ranch manager, secretary/administration officer, a mechanic, four field rangers and six skilled workers (Maretha, 2014). A game ranch/farm is expected to employ more people than a crop/livestock farm.

Local Game Farming

Game farming is quite extensive in the local area and co-exists alongside irrigation farming and livestock grazing at some of the area's 120 to 160 farms situated mostly in the two magisterial districts of Jacobsdal and Douglas. There are around 20 game farms within proximity of the Kronos-Perseus section of the proposed power line corridor. Two of these farms are situated to the immediate east of Kimberly and Megerfontein. The Jacobsdal area has game farms that offer professional game hunting experience. In both regional and local context, these game farms are very expensive enterprises to operate vis-à-vis irrigation and livestock farming.

Current estimates from local operators suggest that the regional game hunting industry generates around R1 billion per annum. Northern Cape alone has about 50 businesses earning between R150 and R200 million in total turnover per annum. A typical game farm in the Study Area earns between R100,000 and R2 to R3 million per annum. . Game farms host a diverse collection of animals, including lions, rhinoceros, springboks and kudus

Game farm size

A typical game farm would be in the region of 6,000 to 8,000 ha of land. This compares with the national average size of at least 2,500 ha for a semi-intensive game ranch. A typical ranch employs around 100 people, of which +/-15 are general farm workers (Maretha, 2014). Game farms in the area operate mostly alongside irrigation farming and livestock grazing. It is

important to note that the overall farm size should account for all these three agricultural farming activities.

Typical Farm

The character of a typical farm in the area is provided below for land use, hectareage, and output values for two sample farms. The first is an exclusive game hunting enterprise while the second is a mixed-use “old generation” farm (these samples are also presented in the Agriculture Impact Assessment Report).

Sample Farm. This is an exclusively game hunting enterprise located in the Kimberly/Modder River area. The farm has a guest lodge which also acts as a base for game hunting operations. This farm is situated directly under power line Alternative 3, while the lodge is only 200 to 300m away.

The game farm stretches from Free State (to the west) to Northern Cape (to the east), and covers 8 to 9 km or 8,000 ha. The farm has over 20 species, with 2,500 animals; including eland, buffalo, giraffe and plain game. The farm caters for a niche market of 30 to 40 international (foreign) hunting tourists and another 8 to 10 local (South Africa) groups per annum. The hunting season is short and extends over six months in a year (i.e. April - October).

The game farm has been in operation for the past 17 years and employs 10 people. The gross income from animal hunting is R2.5 million per annum. The farm includes a none-core livestock farm of a herd of 100 cattle and 50 sheep.

Animal Breeding

The sample farm noted above also breeds rare and endangered animals, an activity that goes back 11 years. Animal breeding is a lucrative venture that generates gross income of roughly R3.5 million per annum. The animals command good market prices, for example R700,000 to R 1 million for a roan antelope and R300,000 for a sable. Other farms in the area also breed wild animals.

Other Game Farms. The rest of the game farms are relatively small in terms of the share of game hunting activities vis-à-vis irrigation farming and livestock grazing. However, game farms allocate more land for game hunting as compared with field crops. Grazing land is based on the standard 13 ha per cow. An example of such a farm is provided on the next page (presented in detail in the Socio-economic Impacts Agriculture Report).

**Table 1. SAMPLE FARM, JACOBSDAL AREA,
KIMBERLY - BOSHOF REGION, 2015**

Farming Activity	Ha	Tons/units	Value
Irrigation Farming../1	292	4,181	R 8,222,000
Livestock Grazing	1,300	140	R 210,000
Game Hunting	2,000	150	R 100,000
TOTAL	3,592	N/a	R 8,532,000

Note: ../1 Multiple rotation crops.

Sources: Area farmers and African Development Economic Consultants (pty) Ltd.

This typical farm generates more income from irrigation farming and livestock. As can be seen, 56% of the land for game hunting and 36% for livestock grazing, for a combined 92%. However, the farm only allocates 8% of its land for irrigation farming, which accounts for 96% of its revenue. The farm employs six people.

Indicative Area Land Values

Current land values range from R2,000 to R20,000 per ha, according to local area farmers. The land for irrigation farming and game hunting is the most valuable (see below). The land values in the local area (also presented in the Agricultural Report) are summarized below.

**Table 3. INDICATIVE LOCAL
LAND VALUES, 2014**

Land Use Type	Rand Per Ha
Irrigation farming	R 20,000
Game hunting	R 15,000
Livestock grazing	R 2,000

Sources: Area operators and ADEC.

As noted earlier, land values increase substantially with investment, especially the land used for irrigation farming. The Table that follows (also presented in the Agriculture Report) demonstrates a farm with relatively high land values. This is attributed to investment in infrastructure and allied structures and facilities. Irrigation farming is capital-intensive and depends on

Table 4. INDICATIVE LOCAL LAND VALUES, 2015

Land Use Type	Rand Per Ha
Irrigation farming	R200,000 - R300,000
Game hunting	R16,000 - R20,000
Livestock grazing	R4,000 - R5,000

Sources: Area operators and ADEC.

irrigation systems for field crops (as highlighted in the Agriculture Report) while game hunting requires high value game stock, high-end lodging, specialized equipment and professional game hunting personnel. Not much is invested in grazing land, although information suggests that livestock farming is carried out in conjunction with irrigation farming and game hunting. This explains the relatively high land values, which would apply to Sample 2 farm above, for example.

Planned Expansion Plans

There are plans in the area to expand both irrigation farming and game hunting enterprises. Plans at two farms are indicative of what is likely to happen at some of the area's farms (also captured in the Agriculture Impacts Report). One such farm indicated plans to add 70 hectares to its existing farm at a cost of R17.5 million (or R250,000 per ha). This farm will also settle small animals for its game hunting operations. A second game farm plans to invest R40 million (or R20,000 per ha) in additional 2,000 ha of land for game farming and hunting. The farm will also introduce a modest number of small game. Suffice to note that one of the established game hunting farms has no plans to expand, citing satisfaction with current scale of operation.

Employment

As indicated in the Agricultural Impact Assessment Report, farming and game hunting employ around 1,100 permanent workers, of which 160 are based in Jacobsdal. Unlike irrigation farming and livestock grazing, game hunting does not engage casual workers. For those farms that also carry out game farming, the number of people employed in game hunting activities alone is, on average, more than the number of employees in irrigation farming and livestock grazing.

Employment on game farms is over and above the average of 8 people per farm (engaged in irrigation farming and livestock grazing activities). Game hunting requires additional people whose roles and duties are distinctively different, for example professional hunters and tourist guides. Again, national trends suggest that a typical game ranch employs around 100 people, of which +/-15 are general farm workers. The qualified staff complement comprises ranch manager, assistant ranch manager, secretary/administration officer, mechanic, four field rangers and six skilled workers (Maretha, 2014).

Summary

A high-level review of existing tourism assets within this section of the corridor suggests that Mokala National Park is the primary tourism site located within or near the Power Line Corridor. Other key regional tourism sites are clustered in urbanized areas like Kimberley and Boshof, or at other sites like Florisbad, located further away from direct path of the power line. At the local level, there are about 20 game farms within the proximity of the power line corridor. The majority of these game farms operate as part of mixed-use enterprises alongside irrigation farming and livestock grazing. In terms of functionality, they are distinctively different from Mokala National Park and other regional tourism attractions as they offer exclusive professional game hunting experience for foreign and local niche markets. This assessment also recognizes the possibility for the existence of other lesser-known sites of cultural or natural heritage significance that have not been identified herein but which may hold potential as tourist attractions.

Section 2. TOURISM IMPACTS

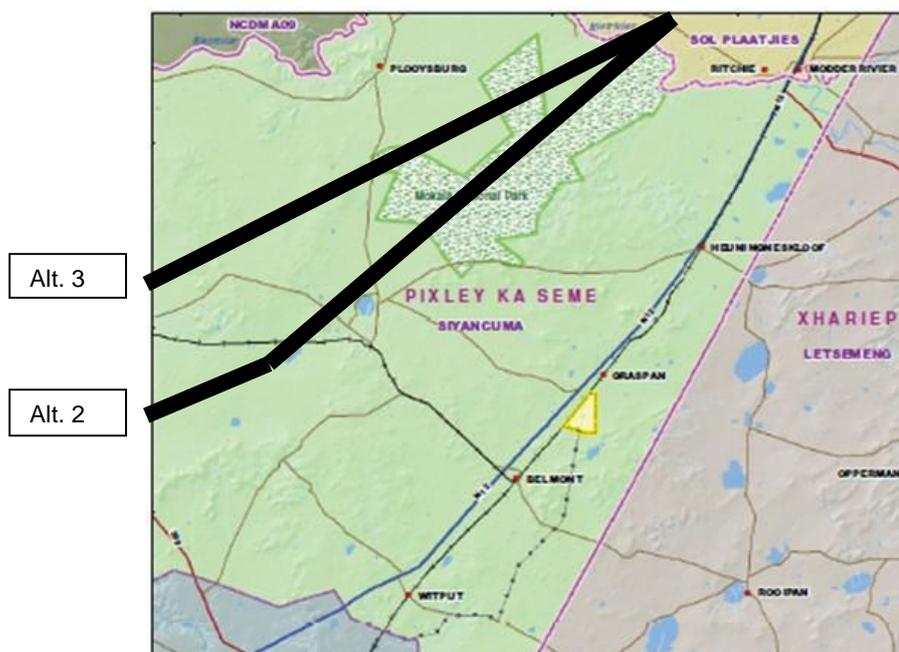
The impacts of the proposed power line project on tourism in the Kronos-Perseus section of the Impact Area are presented herein. The impacts were determined based on factors such as the possible interruption of view-sheds and participation in recreational activities due to the placement of power lines directly through or near natural areas. These “interruptions” or disruptions in tourism were translated into impacts on attendance, expenditures, and associated business activities; which in turn translate into an impact on employment and income within the local communities. Impacts of the Kronos-Perseus Section of the corridor on tourism activity are summarised below.

Possible Physical Impacts

The construction and operation of power lines through the corridor will establish a visual presence for the power infrastructure in an area that otherwise lacks major visible utility infrastructure. That being said, there are only a handful of significant tourist attractions within the primary impact areas of the Power Line Corridor. The most important of these is Mokala National Park, which would be traversed by Corridor Alternatives 2 and 3. Outside of Mokala National Park, there are game farms that offer game hunting experience. These game farms and possibly other forms of tourism activity through the remainder of this section are the most to be affected by the imposition of new power lines. The impacts on game farming and game hunting are presented after the impacts on Mokala.

Mokala National Park

Mokala National Park is the only major reserve within the power line corridor. As illustrated below, the route for Alternative Corridor 2 and 3 could dissect the park if developed as proposed. A review of maps suggests that Corridor 3 would skirt the park’s northern boundary, crossing through the park at two separate places. Corridor 2 would pass through the entire length of the park, from northeast to southwest. Corridor 1 would bypass the park completely. Without direct field reconnaissance and/or computer simulation, it would be nearly impossible to determine the exact locations where the power line corridors pass through the park or the extent of visual disturbance at various specific sites for view sheds within the park. Reference should be made to the results of the specialist visual impact assessment report.



Alternate Corridors 2 and 3 in relation to Mokala Natl. Park (hatched green).

Visitors to Mokala National Park are there to enjoy its natural serenity, big game, and other wildlife. The presence of overhead power lines traversing the park, especially as suggested by the routing of Alternative Corridor 2, would have a negative impact on the typical visitor experience, since such lines will interfere with the natural view sheds provided by the park and with opportunities for wildlife photography.

Within this “high-level” assessment of economic impacts, it is not possible to determine a precise level of downgrade in the visitor experience. Such level can only be determined effectively through surveys, market analysis, and comparability assessments. However, professional experience suggests that overhead power lines (especially in Alternative Corridor 2) will distract from the overall visitor experience and will reduce the tendency of certain patrons to visit the park. Assuming that 25% or one-quarter of visitors would not attend due to their pre-trip knowledge of the visual interference, then the overall impact would reduce current attendance by over 5,100. Given the growth trends in attendance, the number of fewer visitors to the park would increase over time to a projected 7,660 per annum by 2018.

Local Game Farming Impacts

The impact of the power lines would be mostly on game farming *vis-à-vis* irrigation farming and livestock grazing. The impacts on game hunting are visual or visual pollution. According to leading game farm operators, foreign hunters refuse to come and hunt in an area that is “spoilt” by power lines. The impact on game farming would extend some 20 km on either side of the power line. This translates into a view shed of up to 40 km across. The plain and flat character of the area has much to do with this implied “exclusion zone” for the proposed power lines.

Game Hunting Implications

The owner of one of the leading game farms has categorically stated that he will shut down his enterprise after 17 years of successful business operations, if the power lines are constructed over his land. This will involve the closure of a lodge, loss of revenue of R2 to R3 million per annum, plus eight jobs. In addition, the lodge is built on a heritage site commemorating the Magers Anglo-Boer war of 1889. The owners of this farm feel the proposed power lines will not just shut down his game hunting business but may also affect other farms in the area. It must be recalled that game farmers run composite business set-ups that include irrigation farming and livestock grazing as a mixed-use business model. Failure of one component is likely to affect the performance of the other lines of business.

Game & Livestock Comparative Profitability

As presented in the Agriculture Impact Assessment Report, game farms are more profitable than livestock farms, based on national trends. Location, altitude, and vegetation are important factors, according to assessment by Wildlife Ranching South Africa. Buffalo-mixed farming generates the highest return on capital, followed by eco-tourism. Game hunting performs marginally better than livestock.

**Table 4. PROFITABILITY OF GAME AND STOCK FARMING, 2007
(1,000 LSU CAPACITY, MARGINAL LAND USE AREAS)**

Category	RETURN ON CAPITAL				
	Grassland	Lowveld	Highveld	Kalahari	Karoo
Hunting	6.0%	3.0%	5.7%	9.0%	8.3%
Cattle	4.8%	0.9%	1.9%	N/a	N/a
Sheep	N/a	N/a	N/a	7.0%	7.2%
Eco-tourism	N/a	10.9%	13.0%	N/a	N/a
Buffalo - Mixed Farming	19.5%	21.4%	N/a	N/a	N/a

Source: Wildlife Ranching South Africa.

The study area for the proposed power lines falls largely within the Karoo region, and so the applicable farming categories are hunting, sheep and cattle. The trends above show that game hunting generates a higher return than sheep and cattle. These uses are prevalent in sections of the power line corridor.

Ultimately, the choices that farmers make between game, crop and livestock farming are, in part, determined by profitability considerations. The proposed power lines would negatively impact on buffalo-mixed farming, which is assumed to include crops. While livestock farming would not be affected as much, the impacts on game hunting would be more pronounced. The impacts would translate into a reduction in the return on capital. The disruption of the local area's +/-20 farms would translate into a loss of revenues, and is also likely to affect the sustainability of the mixed-use

farming enterprises. The impacts on game farming/hunting activities are likely to also affect the viability of irrigation farming and livestock grazing.

Impact on Land Values

The introduction of power lines in the local area will dislocate a number of game hunting enterprises and crop and livestock ventures, with a knock-on effect on land values. In quantitative terms, the proposed power lines will reduce land values from R15,000 per ha for irrigation farming and R20,000 per ha to just R2,000 per ha. The value of R2,000 per ha is for land used for livestock grazing. Current land values (also presented in the Agriculture Impact Assessment Report) are summarised below.

Land Use Type	Rand Per Ha
Irrigation farming	R 20,000
Game hunting	R 15,000
Livestock grazing	R 2,000

Sources: Area farmers and ADEC.

The above land values would be for a lower-end farm. Comparable land values for a 'relatively expensive' farm would be R4,000 - R5,000 per ha for land used for cattle grazing, R16,000 - R20,000 per ha for game hunting, and between R200,000 and R300,000 per ha for land used for irrigation farming. The value of the land is significantly affected by the level of investment. The biggest asset on a game farm is the game itself, while centre pivots/scheme irrigation infrastructure play a critical role in irrigation farming.

Both irrigation farming and game farming would become less profitable. Current irrigation and game farming land would be used only for livestock grazing, but the current owners are not located in the area for livestock grazing. So, it is likely that livestock grazing would also be negatively impacted, as owners have no plans to downgrade operations from lucrative irrigation farming and game hunting to livestock farming. In fact, a number of the farms actually moved out of extensive livestock farming activities partly as a reaction to stock theft, but certainly due to the lucrative nature of game farming.

Shadow pricing. Over and above the indicated negative impacts that the power line would have on land values, stakeholders advocate using shadow pricing to demonstrate the economic and/or financial impact of the power lines. Using the higher-end value of R15,000 to R20,000 per ha for land currently used for irrigation farming or game hunting as a base, the question to ponder is "how much a prospective investor would be willing to pay for that land if power lines were introduced in the area?"

It is important to note that land is attached to operational business enterprises as going concerns with installed infrastructure and assets. There is a high likelihood that it would be difficult to find buyers for these farms. As indicated earlier, the land values are expected to fall significantly as the land could then only be used for livestock grazing. Again, it is hard to imagine that farmers would switch from irrigation farming and/or game hunting (i.e. game farming) to livestock farming.

Other Negative Impacts

There are a number of other impacts relating to animal theft and the security of Eskom personnel likely to work on maintenance and repair once the power lines are constructed. These impacts are highlighted below.

1. **Animal Breeding.** The proposed power line will disturb animal breeding programmes in the area. While it would be difficult to say exactly what the extent of the impact would be. One of the leading breeders estimates that the proposed power lines would affect 50% of his breeding programme.
2. **Bird life.** The power line will negatively impact on bird life. The existing irrigation farms attract big and endangered birds which live in the area/region. Death caused by power lines is a known phenomenon not just in the study area but across South Africa. This is one of the reasons not welcoming power lines on existing irrigation farms.. This is an environmental impact, and is here for noting.
3. **Animal theft.** Animal theft is non-existent at the moment. The power line will bring with it intrusion into the area's secluded animal breeding programmes by way of people accessing farming property to repair and service the power lines. As people, come into the area, interest will be generated leading to likely thieving activities and poaching.
4. **Security.** Eskom personnel would be exposed to live bullets from fired from hunters' firearms. Farmers strongly feel that sheep theft would increase.. In the past, there were large populations of livestock, and sheep theft was a major problem. In fact, most of the people currently engaged in game farming come out of livestock farming. A plausible assumption would be that people would not desire to go back to large scale livestock farming again.

These impacts, especially theft of domesticated and wild animals, and safety of Eskom personnel, are also mentioned in the Agriculture Impacts Report. These other impacts also apply to irrigation farming and livestock grazing.

Employment & Earnings

The presence of power lines (especially in Alternative Corridor 2) could have an impact on the existing and future attendance of Mokala National

Park, as indicated above. A 25% decrease in attendance, as assumed above, would result in 5,100 fewer visitors today and 7,660 fewer visitors by 2018. The reduction in attendance will negatively impact on lodging, retail, and services turnover, both on-site and off-site. Based on the employment ratios discussed in the previous section, the reduced attendance would result in the loss of about five to seven full-time accommodation and services jobs, both on-site and off-site (such as in Kimberley). Overall retail expenditures, which were discussed in the previous section, could decrease by R3,066,000 per year by 2018 (assuming a 25% reduction in attendance). The impact on earnings is estimated at R114,000 to R176,400, again assuming a 25% reduction in attendance.

The local area +/-20 game farms would be severely impacted and some would be forced to shut down operations. Besides loss of revenues and degradation of land values, an estimated 200 jobs would also be lost equivalent to losses in earnings in the order of R600,000 per month or R7.2 million per annum. Finally, farmers are convinced that they would not be able to find buyers for their game farms. The viability of these businesses would be reduced significantly with the installation of power lines in the area. Livestock farming would be threatened as it is likely that farmers would abandon this activity once they lose the two lucrative lines of their mixed-use enterprises (game and irrigation farming). As noted earlier, livestock grazing is ancillary to game farming (and irrigation farming).

Caveats

A caveat is noted that, without direct in-person field reconnaissance for each tourism site, private game farm and hunting lodge, it is not possible to state with certainty that (or how and where) the intervention of power lines would disrupt tourism activities at the specific locations. The visual impact assessments were gathered via simulated access through Internet web sites, maps and through research into the tourism attractions and marketing for the area. That said, in-person telephonic interviews were conducted with leading stakeholders in the local area, which provided detailed information on game farming and game hunting operations *vis-à-vis* impacts of the power lines, specifically the disruption on game farming and game hunting activities (including irrigation farming and livestock grazing). The impacts in this study are ascertained based on assessment of available secondary information, results of interviews with stakeholders, and assumptions using the consultants' professional judgment. If needed, surveys, market analysis, and comparables assessment may be necessary to confirm this impact assessment.

Section 3. URBAN SETTLEMENT ECONOMIC BASE

The Kronos-Perseus section of the Power Line Corridor has farmsteads situated around small settlements, along the rail lines and highways. This section of the corridor is situated close to the region's largest city, Kimberley, an important administrative, economic and transport hub for the broader region. However, neither Kimberley nor other large towns are located directly within the path of the proposed power line. It is important to note that settlements within the corridors lack significant urban infrastructure.

There are several transportation nodes and roadways passing through the corridor. Alkantpan Aerodrome is located immediately north of the Kronos sub-station. The R357 Regional Road passes through this point providing a link to Prieska, to the north. The N10 (to the east of Kronos) traverses the proposed Power Line Corridor from southeast to northwest, linking settlements to the north and south of the corridor. Route 12 links Kimberley to areas in the south, passing through the corridor. Several relevant settlements within or near the power line corridor are described below

Dealesville

Dealesville is a town located in Tokologo Municipality (in Lejweleputswa District Municipality, Free State), within 5km of Perseus sub-station but outside of the Power Line Corridor. The town is surrounded by salt pans and natural springs and is located 55km southwest of Boshof, 70km northeast of Bloemfontein, and 111km southeast of Kimberley.

Demographic Base

Dealesville had a population of 5,445 (Census 2011), with a household base of 1,625. In 2011, the town had 930 employed residents, plus 442 unemployed, yielding an unemployment rate of 32.2%.

Land Use & Economic Activity

Dealesville is predominantly a mixed-farming area. As noted previously in this report, an anthropology research station is also located nearby, at Florisbad, 35km to the east. . It is important to note that although Florisbad is situated outside of the physical "boundaries" of the study area; it is functionally a part of the relevant market base for both tourism and agricultural activities of the Impact Area.

Heuningneskloof

The small community of Heuningneskloof is located on Route 12 within the path of Corridor Alternative 1. This community has access to the

rail line, serving agriculture in the region. There are less than 20 housing units within this community, based on a review of satellite images.

Salt Lake



Salt Lake is a salt pan located between Corridors 2 and 3, not far from the Free State-Northern Cape provincial boundary. Because of its proximity to these corridors, it is included within the primary impact area. Satellite images suggest that the pan is being mined for salt. As such, it is an active economic node. There is some settlement relating to this activity, with about 20 housing units visible from

satellite images.

Copperton

Copperton is a mining town located about ten kilometres northwest of the Power Line Corridor, close to the existing Kronos substation (to be upgraded). The town is situated in the central Karoo region⁷ and forms part of Siyathemba Local Municipality (in Pixley ka Seme District, Northern Cape). The economic base in Copperton is summarized below.



The Mine (Image by Chris Smit)

Demographic Base



The population of Copperton was only 59, occupying 37 households, according to the 2011 Census. The number of people employed in Copperton was reported to be 14, with only 3 unemployed, in 2011.

Depressions from mining operations (Image by Chris Smit)

⁷ <http://en.wikipedia.org/wiki/#p-search>

Land Use & Economic Activity

Copperton was formerly a copper and zinc mining centre which, at its peak between 1970 and 2000, hosted about 3,000 workers. Much of the mining activity has since disappeared. The former mine at Copperton is currently used by Denel as a missile test site. This activity utilizes the few mining buildings that remain. As a result of the closure of the mine, the Copperton area has lost most of its economic activity and population.

Grootdoring

Grootdoring is a small settlement with a railway siding, situated between Alternative Corridor 1 and Alternative Corridor 2. This settlement lies in Pixley ka Seme District Municipality. Grootdoring has a railway siding along the main track that passes through the region. Population is estimated to be less than 50 people.

Railway siding at Grootdoring (Google.com)



Plooyburg

Plooyburg is a small settlement about half-way between Ritchie and Douglas. This settlement is located about 5km north of Alternative Corridor 3. The community serves the surrounding agricultural areas along the Riet River. There are an estimated 20+ households plus services including a church, retail store, and police station. Plooyburg is the closest settlement to Mokala National Park, located just to the south and east.

Ritchie - Modderrivier

Ritchie is a farm and market town situated on the north bank of the Riet River in Frances Baard District Municipality, in the Northern Cape. The town of Ritchie, along with the adjoining township of Motswedimosa and the railway node at Modderrivier, together form a small urban agglomeration and economic hub. This agglomeration is situated around the confluence of the Riet River and Modderrivier, a rich agricultural node with extensive irrigation within an otherwise arid region. The area is located about eight kilometers south of Alternative Corridors 2 and 3, and about 20km north of Alternative Corridor 1. Thus, the area is situated between the proposed power line corridors.

Demographic Base

Ritchie had a population of 7,610 in 2011, a sharp increase from 2001, when the town's population totaled 5,706. Ritchie had about 1,880 households in 2011. The adjacent township of Motswedimosa (located north of Ritchie's centre) had a population of 7,240 in 2011, up from 5,509 in 2001.

Modderrivier, about three kilometers to the east, has an estimated population of about 250 people, based on housing settlement. Thus, the overall area has a total population of about 15,100, up by about 31.7% since 2001.

In 2011, Ritchie had an employment base of 1,748, plus another 821 unemployed, yielding a 32% unemployment rate. Given the substantial increase in the area's population base since 2001 (both in formal and informal settlement areas), it can be surmised that economic opportunities continue to grow and support people locally.

Land Use and Economic Activity

Ritchie is a formal agricultural market town with commercial, civic, medical, residential and other uses. There is extensive farmed land in Holpan along the R705, to the southeast of Ritchie and between Riet River and the N12. Other uses include a railway line running along the N12. Housing prices are averaging around R1.0 million in Ritchie, based on a review of current listings. Commercial properties are listed at more than R7.2 million on average.



Motswedimosa includes formal and informal township settlements, built to a somewhat higher intensity than the formal town of Ritchie. Modderrivier is a rail transport node that also serves as a distribution centre, with warehousing and storage uses oriented to the surrounding agricultural industry. Land surrounding Modderrivier to the south and east appears to be intensively farmed, based on satellite images of the area.

Jacobsdal

Jacobsdal is a small farming community situated in Letsemeng Local Municipality (in Xariep District Municipality). The town is located about four kilometers north of Corridor Alternative 1 and 25km south of Corridor Alternatives 2 and 3, thus between the northern and southern routes of the

proposed power line. The town's origin dates back to 1859 when Christoffel Jacobs laid out its foundation on Kalkfontein farm. Today, the area around Jacobsdal is home to 6,500 people.

Demographic Base

The population in Jacobsdal was 3,505 in 2011, whilst the number of households was about 1,000. Ratanang, located nearby, had a population of 4,233 and 1,110 households. The two areas together thus provide a population base of about 7,740.

According to Census data, Jacobsdal had 766 people employed, versus 289 unemployed, yielding an unemployment rate of 27.4%. Ratanang had 874 people employed and 268 unemployed, for an unemployment rate of 23.5%.

Land Use and Economic Activity

Irrigation-fed agriculture helps drive the area's economy, with extensive water canals supporting farming of Lucerne, potatoes, wheat, cotton, ground nuts, olives, maize, and table & wine grapes. Jacobsdal has some downstream economic activity building on this agricultural base, including two wine cellars (Landzicht and Wilreza), plus dairies and other processing facilities.

Other Towns and Settlements

Among the other settlements located near the Power Line Corridor are Groveput, Higgs Hope, Spytfontein, Ondraaisvlei, and Oraspan. A number of farmsteads with limited settlement, such as Witkoppies, Emmaus, Hedley Plains, Eureka, Die Dam, and Jagt Drift are located within the power line alternative corridors. Places like Graspan are small farming settlements with perhaps 20 houses at most. Several, like Diemansputs, are located between corridor alternatives. There are also several larger cities located within a short drive of the corridor, including Boshof and Kimberley.

Kimberley

Kimberley is a city of almost 100,000 people, with roughly 250,000 in the broader Sol Plaatje Local Municipality area. By far the largest city in the region, Kimberley is the administrative, economic, and transport hub for the Northern Cape. Kimberley is located about 25km north of Corridor Alternatives 2 and 3, and about 50km north of Corridor Alternative 1. However, Kimberley's southern suburbs and places like Spytfontein almost reach the northern edge of the primary impact area for Alternatives 2 and 3.

The Kimberley Mine yielded 2,722 kilograms of diamonds between 1887 and 1914. The "Big Hole" has been nominated as a World Heritage Site because of its role in the development of Kimberley and of the mining industry in South Africa. Kimberley remains an important centre for mining and

agriculture, as well as the home of the Provincial legislature. A new institution of higher education, Sol Plaatje University, is proposed to open in 2014.⁸ Because of its role as an economic, administrative, and transport hub, impacts on economic activity within the broader region can impact indirectly on Kimberley such as through the supply of labour and material to the agricultural sector discussed in the Part 1 Report.

Boshof

Boshof is a town located in Tokologo Local Municipality (in Lejweleputswa District Municipality, Free State), within 50km north of Corridor Alternatives 2 and 3, and slightly over 50km from Alternative 1. The town has served as the administrative centre of the goldfields region of the Free State. Today, Boshof has a population of about 3,900, in nearly 1,000 households. The local unemployment rate was 31.6% in 2011, according to Census data. The town has a mix of small residential and commercial uses in support of the surrounding farming areas.

Prieska

Another substantial town located within a short drive of the Power Line Corridor is Prieska. This town of 14,250 people is located off the N10 national road, about 20 to 25km northwest of Corridor Alternatives 3 and 2, respectively. Prieska is situated on the banks of the Orange River and mainly serves as a market place for the surrounding farming communities.



Prieska at dusk, image courtesy Prieska Property (Seeff)

⁸ Wikipedia entry for Kimberley.

Section 4. URBAN SETTLEMENT ECONOMIC IMPACTS

Impacts on the economy in settlements within or near the power line corridor were determined as they relate to land use and economic activities. Examples of the types of impacts that could occur may include the use of otherwise marketable residential or industrial land for power line construction, the visual impact of power lines on the marketability of private housing, or the impacts of power lines on local heritage sites otherwise suitable for tourism development, including game farms and game hunting activities. There are also farther-flung impacts on suppliers and other businesses dependent on activities within the power line corridors. Impacts on agricultural activity in the broader region are discussed in the Part 1 Report. The economic impacts of the power line alternatives on urban settlements within the Kronos-Perseus section are described below.

Heuningneskloof

Heuningneskloof is among the only settlements, other than individual farmsteads, situated directly in the path of the Power Line Corridor (this being Alternative 1). However, it is nearly impossible to determine the exact location of the power lines in relation to specific properties within Heuningneskloof without more information on the routing of the line. Based on satellite images of this sparsely-populated settlement, it can be assumed that the power line would not necessarily pass directly over or adjacent to housing located here. However, there is the possibility that the power line would extend through the centre of this small settlement, crossing over one or more of the small number of houses located here. Based on housing sales in comparable communities in the region, it can be assumed that a small house would be valued in the range of R350,000 to R700,000, with larger farmhouses in the range of R1.0 to R1.6 million. There is insufficient information to determine whether or not the power lines would actually pass over or near residences in this area

Communities Outside of the Corridors

The power lines will not supply electricity to nearby towns like Copperton or Boshof or communities between the alternative corridor routes. So the power lines will have no positive impacts from a power supply point of view. However, towns and communities in the area may benefit from the establishment and strengthening of nearby substations. That said, information has not been provided on the extent of activity at these substations. It can be assumed that there may be regular maintenance of the sub-station facilities, if not some limited full-time staffing. Temporary or permanent staffing at the sub-stations will help generate some limited demand for retail, services and housing in these areas.

Caveats

As noted above, without information on any changes in the local distribution of power from the new power lines, it is impossible to determine whether or not there would be any positive impact from access to power. According to consultant understanding, the proposed power will not supply electricity directly to the local areas lying along the path of the power lines corridor. Similarly, without visual contact with the existing residential and other land uses on the ground, it is challenging to determine whether there would be any direct impact on land use, such as on the use or value of property within these areas. That being said, an understanding of the existing situation has been established and assumptions applied based on standard market economics. In the following Section, mitigation measures for dealing with the impacts are defined alongside impact areas, rationale and specific measures.

Section 5. IMPACTS MITIGATION MEASURES

The power lines will impact negatively on existing lucrative game hunting (and irrigation farming) activities along and surrounding the proposed path of the power lines. The high land values for irrigation farming and game hunting would be reduced to grazing land values, while current investment and infrastructure installed on the farms would become less useful. The immediate consequences are a reduction in existing game farming and game hunting activity and a likely stoppage of all planned and proposed eco-tourism development in the area.

The principal mitigation measure is a detour of the path of the power lines to avoid existing irrigation farming and game hunting areas. This calls for relocating the power lines to an existing Eskom power line corridor or a new corridor that would lie, as far as a possible, to the south of the study area. These deviations are presented below in order of preference.

1. **Deviation 1.** Eskom must relocate the power lines to the south of Jacobsdal. This would follow an existing corridor where Eskom already has existing power lines. In geographic terms, this would take the power lines to Oppermans, roughly halfway between Jacobsdal and Kalkfontein. This is the best option for stakeholders as the power lines would be as far away as possible from existing and potential farming areas.
2. **Deviation 2.** Eskom could alternatively construct the power lines to the south of Kimberly in order to keep them out of existing and potential game farming areas. As indicated in the earlier in this report, game hunting enterprises can only thrive in an environment that is not “polluted” by power lines and support infrastructure.

Motivation for Mitigation

The motivation for these mitigation measures arise from two factors. Firstly, an existing fully functional power line corridor is routed along a path that would conveniently avoid the impacted areas and meet Eskom’s engineering needs. Secondly, these mitigation measures are grounded in the best economic and environmentally friendly use of the land. The existing farming and game hunting activities would continue to preserve the rich pristine and eco-tourism character of the local area.

Existing power line corridors

The rationale for the use of existing power lines corridors is based on the fact that negative impacts can be minimized in the subject impact area. The future cost of the proposed power lines can be ascertained from the lessons learnt from experience with similar projects near the study area and elsewhere in South Africa. These lessons relate to land degradation and

negative impacts on the environment. In other words, the local and surrounding areas where these power lines pass through have already been impacted. So extending the proposed power lines into these corridors will not generate new or incremental socio-economic and environmental impacts. The addition of new power lines will have limited at-place impacts but would help avert all socio-economic and environmental impacts that are the subject of this study.

Cost of “Moving” Power Lines

The cost of removing the power lines is prohibitive. While Eskom provides the option to “move” power lines out of farm property, farmers cannot simply meet the cost. In addition, moving the power lines will require demanding engineering and geophysical considerations. The proposed power lines are large super structures, very expensive, and visible up to a distance of +/- 40km. Once installed, the power lines are expected to stay in the area for many years. This is one of the reasons for recommending re-routing of the power lines to avoid existing and potential farming and game hunting areas.

Compensation by Eskom

Information from local sources suggests that Eskom provides compensation for the construction of infrastructure on farm properties. Consideration should be made to accommodate the impacts of ground support structures / power line towers and loss of production. Stakeholders note that power lines can “sterilize” a corridor of up to 4km across (or 2km on either side) along the path of the power lines.

Employment Impacts

A typical irrigation farms employs 8 people, on average. It is common practice for people employed on an Irrigation farm to also look after livestock (i.e. livestock grazing). This compares with a game farm which employs about 2 to 3 workers to look after wild animals, plus additional 10 to 15 deployed in lodging, domestic work and patrols. Game hunting activities also employ additional hunters and workers in animal skinning and taxidermy industry. The proposed power lines will have negative impacts on game farming (and irrigation farming) . The employment impacts will be mostly borne by game farms on a per-farm basis. Game farms employ more people than irrigation farming and/or livestock grazing. Note that local area impacts address farm level employment as opposed to regional employment impacts, which are based on land-take-up by the construction of power lines.

Best use of land

Ultimately, this study finds that the area along and surrounding the proposed path of the power line is valuable and best suited for tourism-oriented game farming, including irrigation farming and livestock grazing. The findings from this study suggest that the proposed power lines will lead to a reduction in existing lucrative game hunting activities (including irrigation

farming), and also impact negatively on green fields for the future development of tourism...

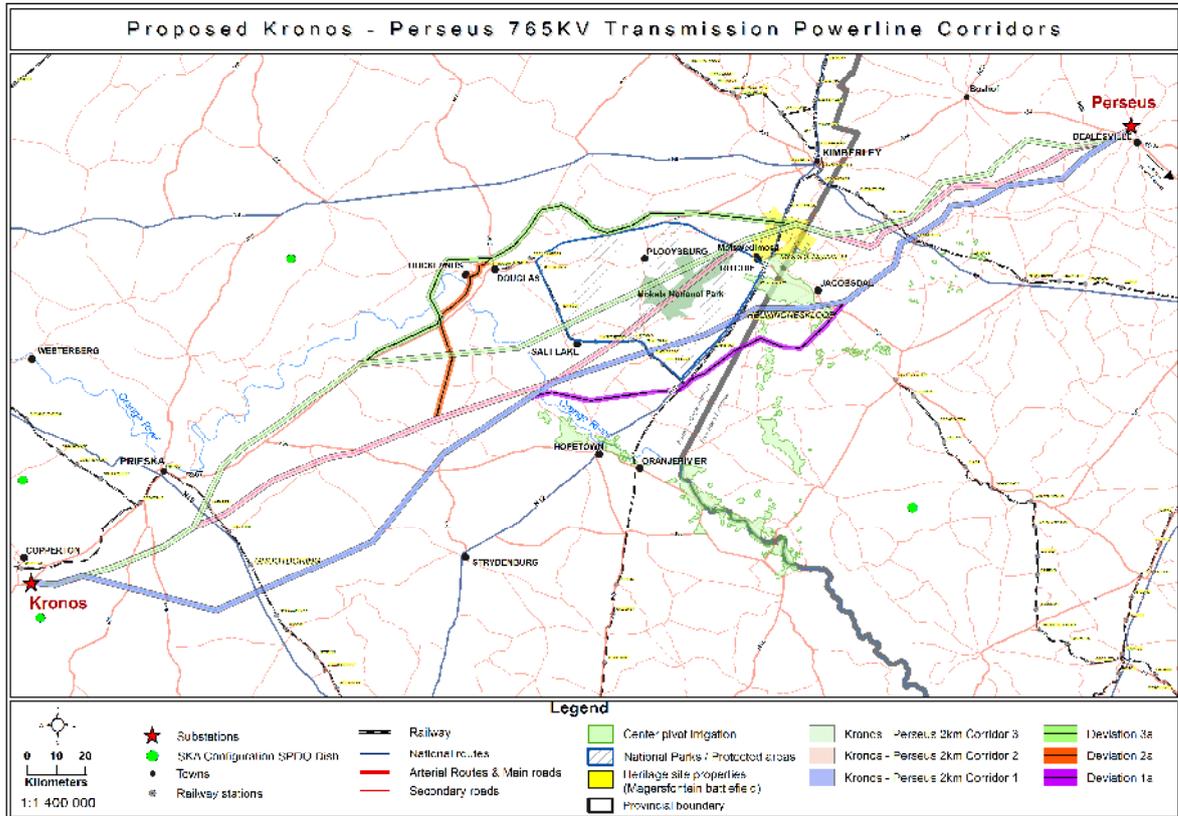
The viability of existing and future game farming and hunting critically depends on the absence of power lines. Based on the analysis and impacts of the power lines, this study advocates preserving the local area for tourism-oriented purposes.

Mitigation Measures

Based on the above motivation factor, this study recommends that the proposed power lines should be re-routed and constructed in existing “brownfield” corridors. Perhaps, it is important to point out that the existing corridors are in operational condition. Specific impacts of the proposed power lines and corresponding mitigation measures were prepared based on the results of this socio-economic impacts study. The impacts and mitigation measures are elaborated in Appendix Table 1 of this report

APPENDIX

Locality Map: Kronos-Perseus Section



Source: Mokgope Consulting cc

Table 1: Mitigation Measures (Socio-Economic – TOURISM & URBAN SETTLEMENT)

Impact	Mitigation Measures
<p>Reduced Marketability for Tourism Attractions:</p> <p>The construction of the power lines may impact on the “marketability” of several of the region’s tourism attractions. Many of these attractions are oriented towards a market that values physical isolation and/or harsh but beautiful environments. Adventure tourists and film crews are drawn to this area in part <i>because</i> of its <i>lack</i> of urban infrastructure. Visual pollution caused by power lines can interrupt or reduce the perception of isolation and tranquillity. Other tourists and photographers are drawn to parts of the region by floral seasonal bursts of colour. Power lines and tall pylons situated within flower fields or even on distant hills can ruin the image generated for photographers and other tourists drawn to the region’s natural setting.</p>	<ul style="list-style-type: none"> • The only way to mitigate for the impact of visual pollution on tourism sites is to ensure that power lines and pylons are situated as far away from high-quality view sheds as possible. This will require extensive research and seasonal micro-mapping to ensure the most appropriate routing, even within the basic corridors that have already been identified. Distance is critical especially for the floral view sheds in Namaqualand. • In the case of several large pan sites, there are opportunities to reduce impacts by ensuring that power lines extend only along less-utilised portions of the sites. • Corridors 2 and 3 are likely to have a moderate to high impact on Mokala National Park and its visitor base. As a result, it is highly recommended that Eskom pursue Corridor 1 around the park to avoid impacting on the park’s potential for generating tourism and economic development spin-offs for the region.
<p>Severe Reduction in Game Farms & Game Hunting</p> <p>The construction of the power lines will bring visual pollution to the game hunting industry. The visual impact extends +/- 20 km on either side of the power lines or view shed of up to 40 km across. The plain and flat character of the area is attributed to this implied “exclusive zone” for the proposed power lines.</p>	<ul style="list-style-type: none"> • Power lines must be constructed away from current game farms and game hunting areas. This would require changing the path of proposed power line corridor. • Two deviations are recommended, as below: - <ul style="list-style-type: none"> ○ <u>Deviation 1</u>. Relocate power lines to the south of Jacobsdal, following existing Eskom corridor (i.e. close to Oppermans, roughly halfway between Jacobsdal and Kalkfontein. ○ <u>Deviation 2</u> (preferred). Construct power lines to south of Kimberly, out of the game farming areas. • Recommended principle mitigation measure is for Eskom to use existing “brownfield” corridors, with no new & incremental socio-economic and environmental impacts.

Impact	Mitigation Measures
	Note: Deviation 2 subsumes Deviation 1.
<p>Loss of Game Farms & Wild Animal Stock</p> <p>The construction of power lines will lead to the collapse of the game farms and game hunting enterprises.</p> <p>Direct losses include investment capital in property, equipment, and wild animal (game) stock.</p>	<ul style="list-style-type: none"> • Game farmers must be compensated for loss of investment and game hunting enterprises as “going concerns”, including future revenues streams for the projected lifetime of the businesses. • Compensation must take into account “knock on” effect on the viability of the other mixed-use business lines i.e. irrigation farming and livestock grazing, as appropriate.
<p>Game (wild animal) Poaching</p> <p>The introduction of power lines will require Eskom service and repair personnel to access game farm properties and intrude secluded animal breeding programmes, leading to generation of interest and possible poaching activities (note: animal theft and poaching is non-existent at the moment).</p>	<ul style="list-style-type: none"> • The path of the proposed power lines must be as far away as possible from existing game farms.
<p>Reduced Attendance & Revenue for Tourism Attractions</p> <p>The impact area does not have a significant number of major commercial tourism attractions although it does have natural areas that generate tourism income for surrounding communities. The reduction in marketability associated with visual pollution could also result in a reduction in attendance to tourism sites.</p>	<ul style="list-style-type: none"> • A loss in attendance and revenue at tourism sites and parks could be avoided through appropriate positioning as noted above. The view sheds are ultimately very critical to tourism in this region, so ensuring that visual pollution and interruption is minimised in sensitive areas will help mitigate against a loss of attendance and site revenue.
<p>Loss of Revenue for Tourism-Related Businesses:</p> <p>As noted above, the region offers natural assets (e.g., giant salt pans, unique environments, and Namaqualand’s floral kingdoms) that, whilst not themselves major tourist “attractions,” then do bring visitors to the region. Those visitors generate revenues in lodging, restaurants, tour operations, transport, supplies and equipment, etc. Thus, a reduction in attendance at isolated attractions can result in a loss of revenue for businesses that may</p>	<ul style="list-style-type: none"> • The primary mitigation approach would be to avoid sensitive view sheds, as noted above. • Where there is still visual pollution or interruption despite the aforementioned mitigation measures, then there may be a need to compensate business operators as claimants who can show a dependence on revenue generated by tourists visiting these natural areas and parks. Compensation would best be assigned based on actual average revenue numbers tracked before and after project implementation.

Impact	Mitigation Measures
be located kilometres away in the region's towns.	
<p>Loss of Tourist-Related Employment: If a business (i.e., tour operator) loses revenue generated by tourism, there is the possibility that overall operations will become less profitable. Businesses will sometimes reduce their overhead charges or operating costs in order to stay afloat. Tourism businesses are very labour intensive. Thus, a somewhat minor reduction in tourism revenues can still result in the loss of employment.</p>	<ul style="list-style-type: none"> Mitigation in the form of a temporary subsidy is recommended where there is a direct layoff of tourism-related workers resulting from construction of power infrastructure. Such temporary compensation would be provided directly to claimants, equivalent to 3/5th annual salary and wages, for a period of up to two years.
<p>Loss of Household Income: As noted above, there is a possibility of a reduction in employment resulting from the loss of tourism. A reduction in employment can also include a loss of hours worked by those who remain employed. Clearly, either a reduction in hours or full-time job loss will result in reduced household income for the worker.</p>	<ul style="list-style-type: none"> As noted above, a subsidy could be provided for tourism workers who are shown to have been laid off or had their hours reduced as a result of the construction of power lines through a tourist area or site. This subsidy could help ameliorate the impact on household income generated by the loss of work hours and/or employment. That being said, compensation should only be provided where workers' claims are shown to be related directly to power infrastructure at a specific tourism-related site or business.
<p>Reduction in Property Values: If power lines and infrastructure are developed proximate to residential property, there is a strong possibility of a negative impact on property values. Whist insufficient information is available on the exact interface between the proposed corridors and residential properties, the possibility still exists that there may be an impact on the value of a limited number of residential properties. Property values are impacted negatively primarily due to the visual pollution caused by the presence of the towers and lines. Proximity is a key factor, and where the pylons and lines are close to residential properties, the impacts are likely to be greatest.</p>	<ul style="list-style-type: none"> Mitigation can include compensation to residential property owners who can show that their property values have or will be impacted by the power infrastructure. Compensation would be made in the form of a negotiated (or economist-determined) percentage of fair market property value, representing the impact.
<p>Stoppage of Planned & Proposed Farm Expansion</p>	<ul style="list-style-type: none"> Game farmers must be compensated for preparation costs already incurred in the

Impact	Mitigation Measures
<p>Projects</p> <p>The construction of power lines will stop immediate planned and proposed eco-tourism expansion projects spread in the area along and surrounding the path of the proposed power line corridor.</p> <p>The path of the proposed power lines transgresses identified potential land for earmarked for future development of game farms, including areas with existing water rights.</p>	<p>form of investment in land and equipment, among others.</p> <ul style="list-style-type: none"> • Land for future development must be marked as “hot spots” to be avoided by the proposed power lines. • Land with existing water rights must be also marked as “hot spots” to be avoided by the proposed power lines.
	<ul style="list-style-type: none"> •

PERSONAL INTERVIEW LIST

1. Steven M. Squires, Chairman, Riet River Water Users Association, Jacobsdal.
2. Phillipus Nel, Chairman, Riet River Farmers Association, Jacobsdal.
3. Christo Meyer, Representative, Farmers' Union, Prieska.
4. Ian Conroy, Farmer (crop, livestock & game), Jacobsdal.
5. Piet Roux, Representative, Farmers' Union, Prieska.
6. Kempen Nel, Chairman, Kalkfontein Water Users Association.
7. A. J. Brand, Land Owner, Loop 10
8. Andrew Conroy, Chairman, Jacobsdal Pilots Association, Jacobsdal.
9. Greg Edwards, Entrepreneur, Magersfontein Safaris (game farm), Kimberly West.
10. B.J. Voolgraff, Land Owner, Brandvlei.

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