LAND USE ASSESSMENT FOR THE GOURIKWA TO BLANCO TO DROËRIVIER 400KV TRANSMISSION LINE, AND SUBSTATIONS UPGRADE

APRIL 2016

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Dear Sir/Madam

REVIEW: LAND USE ASSESSMENT FOR THE GOURIKWA TO BLANCO TO DROËRIVIER 400KV TRANSMISSION LINE, AND SUBSTATIONS UPGRADE

The approach is good. The report is well written and illustrated with maps and diagrams. It strikes the right note and is informative, includes an overview of the environment and a complete list of the potential positive and negative impacts and a full list of specialist studies.

Yours faithfully

NBotha

Narda Botha
Per: Metro Concepts (Pty) Ltd

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1 INTRODUCTION

1.1 Project Background and Scope for Specialist Study

Envirolution Consulting (Pty) Ltd has been appointed by Eskom Holdings SOC Limited to undertake a Environmental Impact Assessment (EIA) process for the proposed construction of:

- GB - a new +/- 60 kilometre, 400 kilovolts (kV) overhead power line, from the Gourikwa Gas Power Station near Mossel Bay to the Blanco Substation at George in the Western Cape
- BD - a new +/- 200 kilometres, 400 kilovolts (kV) overhead power line, from the Blanco Substation at George to the Droërivier substation near Beaufort West in the Western Cape.
- the project will also entail the upgrade of the existing substations at Gourikwa, Blanco and Droërivier to accommodate the addition of proposed new lines to existing infrastructure.

The two proposed 400kV transmission lines, and substation upgrades projects are subject to the requirements of the Environmental Impact Assessment Regulations (2014 EIA Regulations) in terms of the National Environmental Management Act (NEMA, Act 107 of 1998, as amended).

In terms of the National Environmental Management Act, 1998 and the subsequent EIA Regulations (2014), an application for Environmental Authorisation must be submitted and the application is subject to Scoping and Environmental Impact Reporting. A Scoping and Environmental Impact Assessment Report (EIR) must be completed for the proposed project and the information from the EIR must then be presented to the authorities for decision-making. This Land Use Desktop Report forms part of the Scoping phase of the project. Information obtained from other specialists studies and the Public Participation Process (PPP) have been used in the desktop study to assess the land use character of the areas through which the lines will transverse.

- Three route alternatives were proposed for the 400 kV transmission lines between Gourikwa and Blanco Substations.

- Two alternatives were proposed for the 400 kV transmission lines between Blanco and Gourikwa Substations.

- A Corridor of 2 km in width will be assessed for each route alternative These alternatives are shown on the maps below.

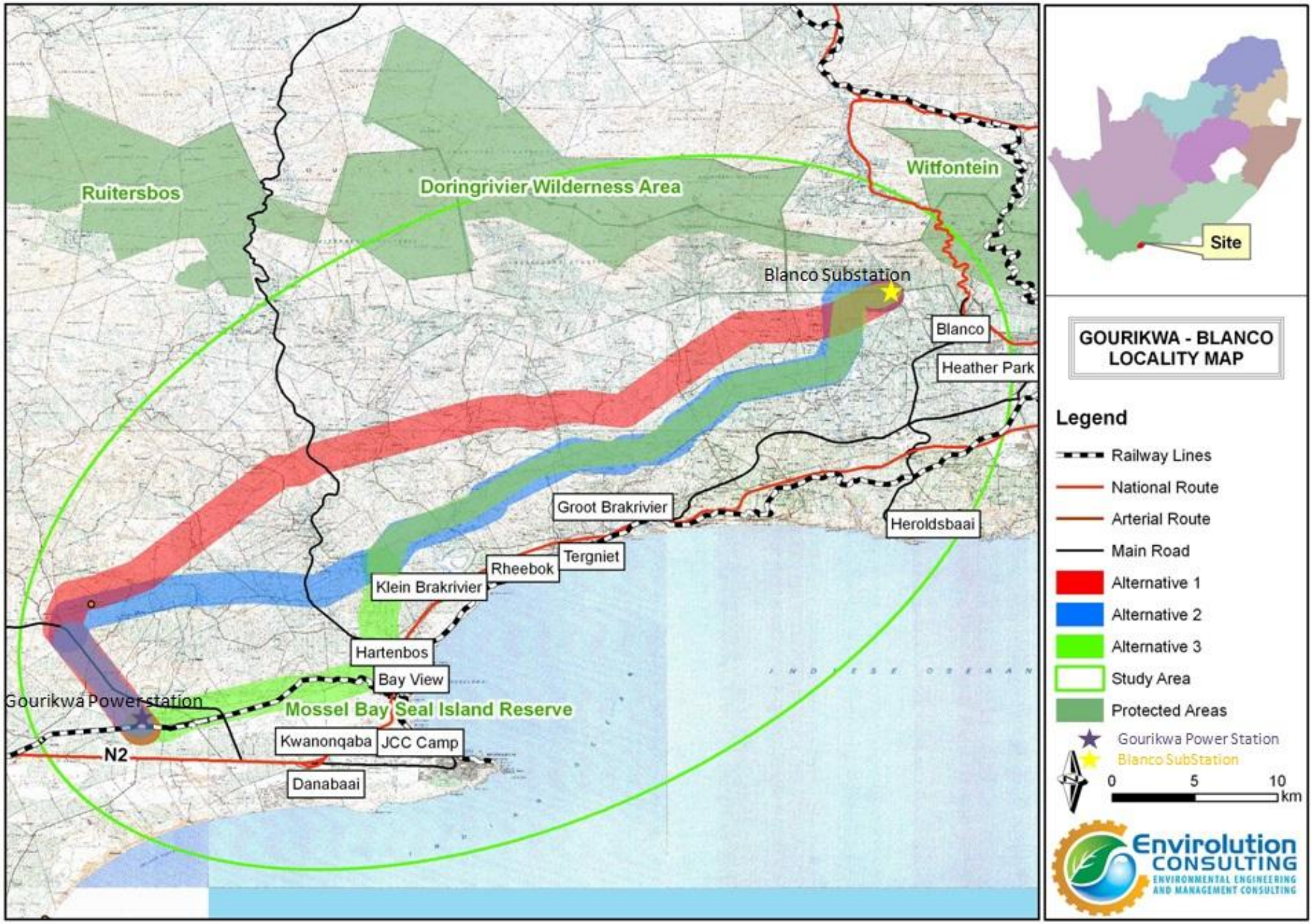


Figure 1. Study Area Gourikwa Substation at Mossel Bay to the Blanco Substation at George

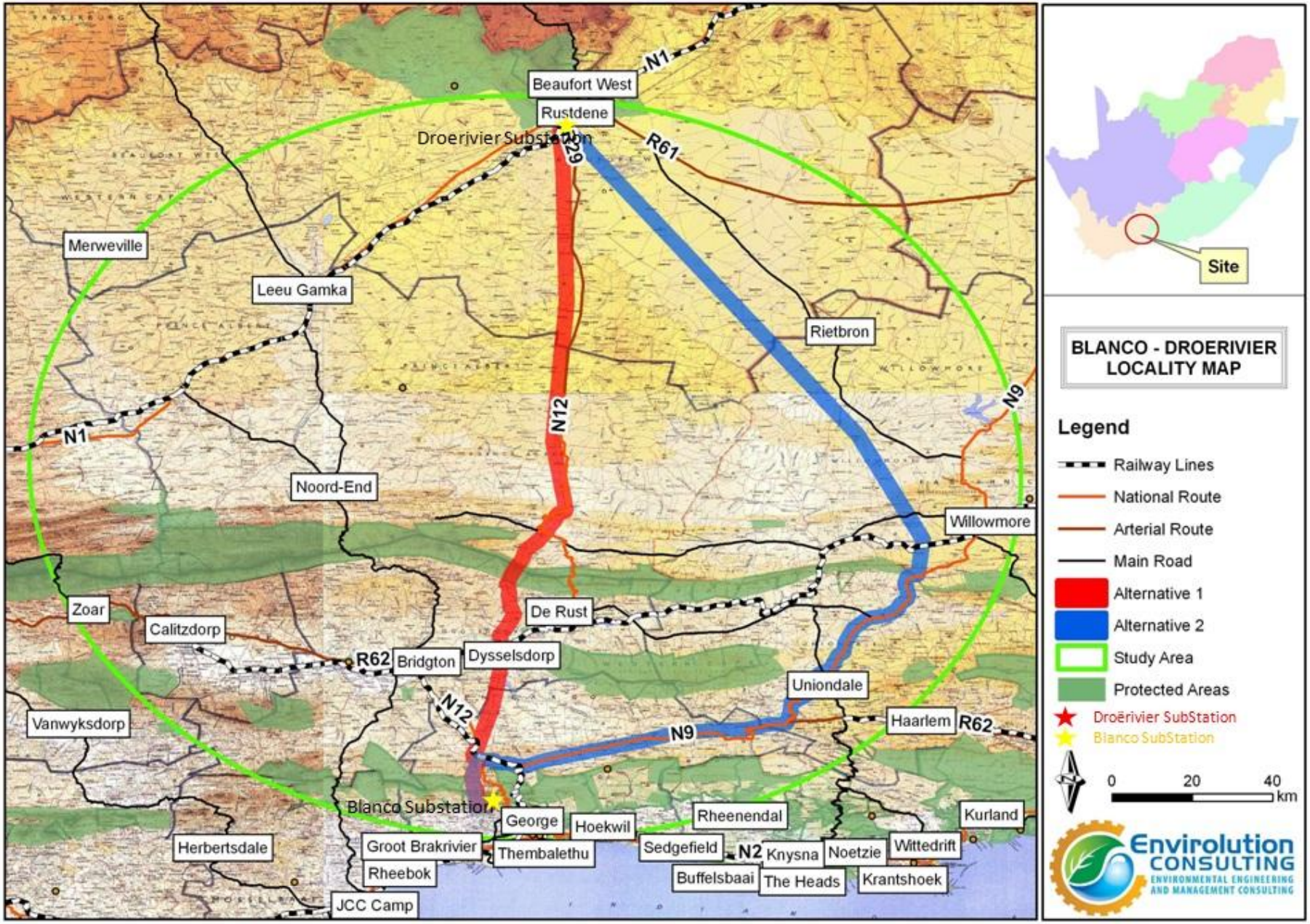


Figure 2. Study Area Blanco Substation at George to the Droërivier Substation at Beaufort West:

1.2 Project locality

Gourikwa Substation at Mossel Bay to the Blanco Substation at George
The study area (Alternatives 1, 2 and 3) for the line between the Gourikwa Substation and **Blanco Substation** is located within the boundaries of the Eden District Municipality in the Western Cape Province.

Blanco Substation at George to the Droërivier Substation at Beaufort West
A section of the study area (Alternative 2) for the line between **Blanco Substation at George to the Droërivier Substation at Beaufort West** is located within the boundaries of the Cacadu District Municipality, in the Eastern Cape, but the preferred Alternative (1) is located in the the Central Karoo District Municipality and in the Eden District Municipality in the Western Cape Province.

1.3 Land requirements

A servitude of 55m is required for a single 400kV power line. A separation distance will be required between the 400kV and other lines, since in some of the areas, sections of the proposed routes will run parallel to existing power lines.

Where the servitude is required next to a road reserve, a distance up to 95m from the centre of road to edge of power line servitude may be required. The land beneath the overhead lines can be continued to be used, as normal, by the landowners. Eskom, however, require that no dwellings or vegetation/crops higher than 2m be established within the servitude.

It is anticipated that a 6m strip will be cleared to facilitate access and construction, except where tower erection and stringing requires more space. Eskom have their internal guidelines and standards for Bush Clearance and maintenance within Overhead Power line Servitudes. This document provides minimum clearances for overhead conductors that will need to be taken into account in the formulation of any power line development.

Negotiations will be conducted by Transmission negotiators with each legal landowner to acquire the rights to construct power lines over their properties. Rights will also be acquired from affected statutory bodies and mineral right holders. All land and rights acquired for the purpose of building power lines are registered at the Deeds Office as either title deeds for land or servitudes for rights.

After the project has been completed, all affected properties are rehabilitated to their original status. Landowners sign off release forms to confirm the rehabilitated status.

2 GENERAL CHARACTER OF THE STUDY AREA

The Karoo region is divided into two regions, the Great and the Little Karoo. The Great Karoo is a semi-desert area totaling 400,000km² and stretches from South Africa into Namibia. A large part of the Great Karoo stretches across the Northern Cape, the largest of South Africa's nine provinces and into the Southern Cape. The Little Karoo, or locally known as The Klein Karoo is the smaller and more southerly region bordered by the Swartberg in the north and Langeberg and Outeniqua Mountains in the south. The borders of the Klein Karoo are not clearly defined and generally, Barrydale and Uniondale are considered the southern and eastern boundaries.

Two main routes lead south from Oudtshoorn into the Southern Cape and the Garden Route. The N12 route leads to George via the fantastic Outeniqua Pass and the R328 leads to Mossel Bay via the Robinson Pass. Before the Outeniqua Pass was constructed, the Montagu Pass was the only route between George and Oudtshoorn and today still exists mainly as a historical and tourist attraction.

The R328 from Oudtshoorn to Mossel Bay is a winding route through the Outeniqua Mountain via farms and small villages in the Ruiterbos Valley region. The Ruiterbos Valley is a farming community and many of the farms date back to the 1820 settlers and have a strong family history. The unique 80 year old Eight Bells Mountain Inn is also located in this area.

Figure 3. Eight Bells Hotel in the Ruiterbos Valley near Mossel Bay

2.1 Towns along the routes

i. Eden District

The Eden District Municipality (EDM) is located along the south-eastern coast and hinterland of the Western Cape Province. It stretches roughly for 350 km along the Indian Ocean coast, from the Bloukrans River in the east to Witsand at the Breede River Mouth in the west and covers approximately 23 330 km^2. The northern boundary of the EDM is formed by the Klein and Groot Swartberg Mountain ranges from the town of Anysberg in the northwest to Toorwater in the northeast. The EDM comprises seven municipalities, namely Oudtshoorn, Kannaland, Mossel

Bay, George, Hessequa, Knysna and Bitou (Plettenberg Bay). **Of the aforementioned, the Municipalities of Oudtshoorn, Mossel Bay and George are relevant to this study.**

The wards that will be impacted upon are the following:

Blanco Droeriver Alt 1	
Beaufort West	7, 2
Prince Albert	4
Oudsthoorn	11, 9
George	25 , 22
Blanco Droeriver Alt 2	
George	22, 25, 24
Baviaans	1, 4
Beaufort West	2, 7
Gourikwa Blanco All alternatives	
Mossel Bay	7, 4, 14, 5
George	22

Migration in the area occurs mostly from rural to coastal areas. Agriculture, trade and services are the prominent economic sectors where the property and tourism market are growing. Several game farms have been established within the past 10 years and this land use creates a growing tourism attraction.

ii. Great Brak River

The proposed GB project (Alternative 2) is located north of Groot Brak River. This historic town originated in 1859, when the tender for Keeper of the Toll Bridge at Great Brak River was awarded to Charles Searle, an English paper-mill hand who emigrated to the Cape from Surrey with his wife and four children. His elder brother Richard was originally a laborer and immigrated to South Africa to work for the Central Road Board in 1850 following a sea voyage of 68 days. At that stage the toll bridge consisted of a toll-house, a small boarding house called Ferreira's and a farmhouse on the Mossel Bay side of the river. The Searle family prospered and soon their business expanded to include shops, accommodation, a tannery, shoe-making and timber businesses in the village, which was in turn shaped by these enterprises. Their boarding house was known as the Temperance Hotel, as the Searles were staunch abstainers from alcohol and expected everyone else in the village to follow suit. From the outset, therefore, they opposed the sale of liquor and, in time, Great Brak River became known in the neighborhood as "Prohibition Village". The 1904 census indicated that Great Brak River had a population of 362.

Figure 4. Groot Brak River and surrounding land use

iii. Klein Brak River

Little Brak River is a suburb of Eden, in the Western Cape and is located between Hartenbosh and Rheebok, south of the town of Groot Brak. The proposed GB project (Alternative 2) is located north of Klein Brak River and the deviation (Alternative 3) to the west. The landuse in this area is made up mainly of residential areas, holiday homes, caravan parks/resorts and farms.

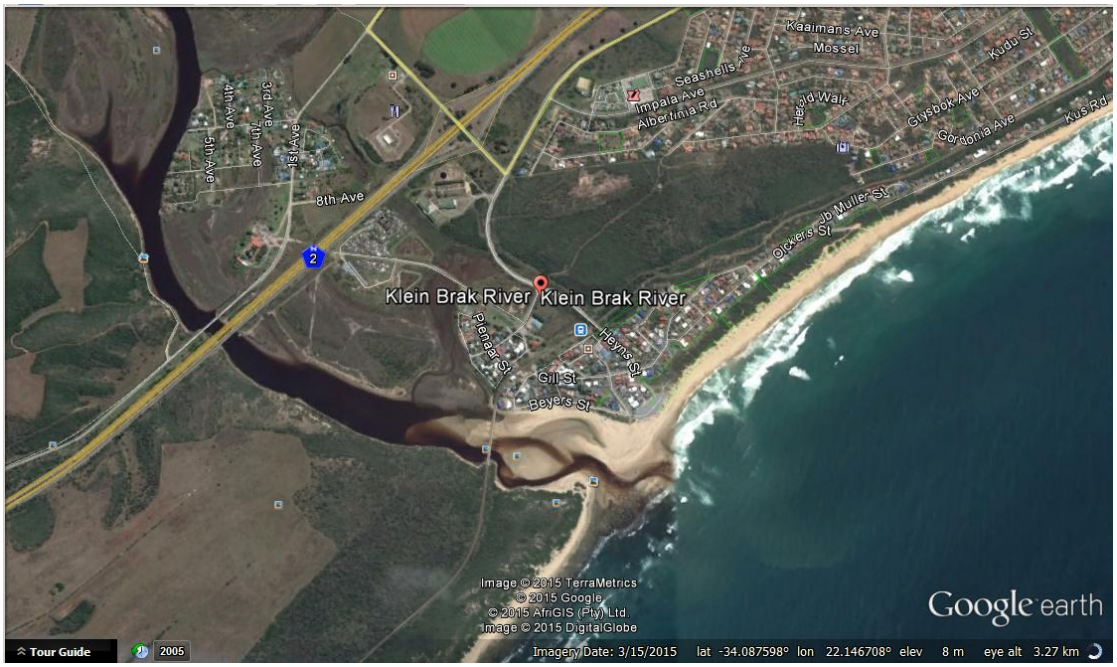


Figure 5. Klein Brak River and surrounding land use

iv. Mossel Bay

Mossel Bay Local Municipality is one of 7 municipalities in the Eden District Municipality. It has an estimated population of over 89 430 and a population density of 44 people per km2. Mossel Bay is the major town with an estimated population of 59 031 according to the 2011 Census.

Other towns include Hartenbos (population 4 196), Little Brak River (population 2 037), Reebok (population 1 112), Tergniet (population 1264) and Great Brak River (population 10 619). South west of Mossel Bay are a number of smaller coastal villages, including Boggomsbaai and Vleesbaai. Herbersdale (population 666), Brandwacht (population (1 470) and Friemersheim (population 1 235) are situated in the interior of the municipality closer to the mountains. The municipality covers an area of 2 011 km2.

Of the three alternatives, Alternative 3 is located closest (north) of Mossel Bay. The project is unlikely to impact directly on the town itself but impacts such as job opportunities and traffic on the N2 would be experienced. Farms and holiday homes or residential estates on the outskirts of Mossel Bay may be impacted upon If located in the wards 7, 4, 14 or 5 of Mossel Bay. Some property owners in the jurisdiction of Mossel Bay have indicated their concern during the PPP.

Figure 6. Mossel Bay in relation to the project area

v. Hartenbos

The proposed Alternative 3 for the line between Gourikwa and Blanco is located north of Hartenbos and the residential character (eco-estates) and tourism value of this holiday town should be kept in mind. Discussions with developers of eco-estates were included in the Public Participation Process.

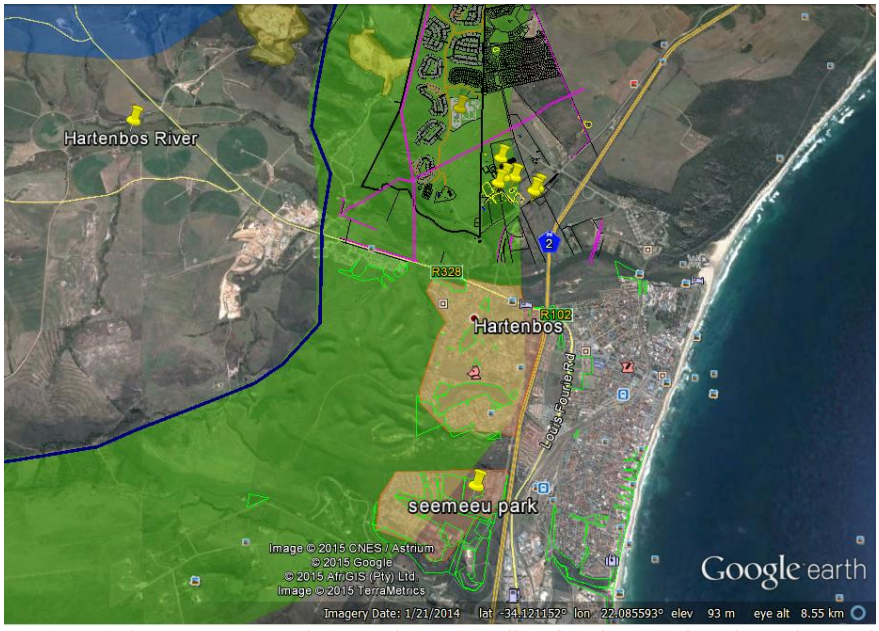


Figure 7. Hartenbos and surrounding land use, showing Alternative 3

vi. George

George is approximately 15Km inland at the toe of the Outeniqua Mountains. George is the oldest and central city as well as industrial hub of the South African Garden Route. It is the sixth oldest town in South Africa and was named after the reigning monarch in 1811, King George III[1]. The Outeniqua forests were the reason the Dutch East India Company, in 1776, established a woodcutters outpost on the site of what became George in 1811. It was declared a drostdy by the Earl of Caledon on 23 April 1811. George gained municipal status in 1837. The project affects wards 22, 24 and 25 of George, and community sstructures, as well as the cultural/heritage value of the town should be kept in mind when the proposed power lines are erected.

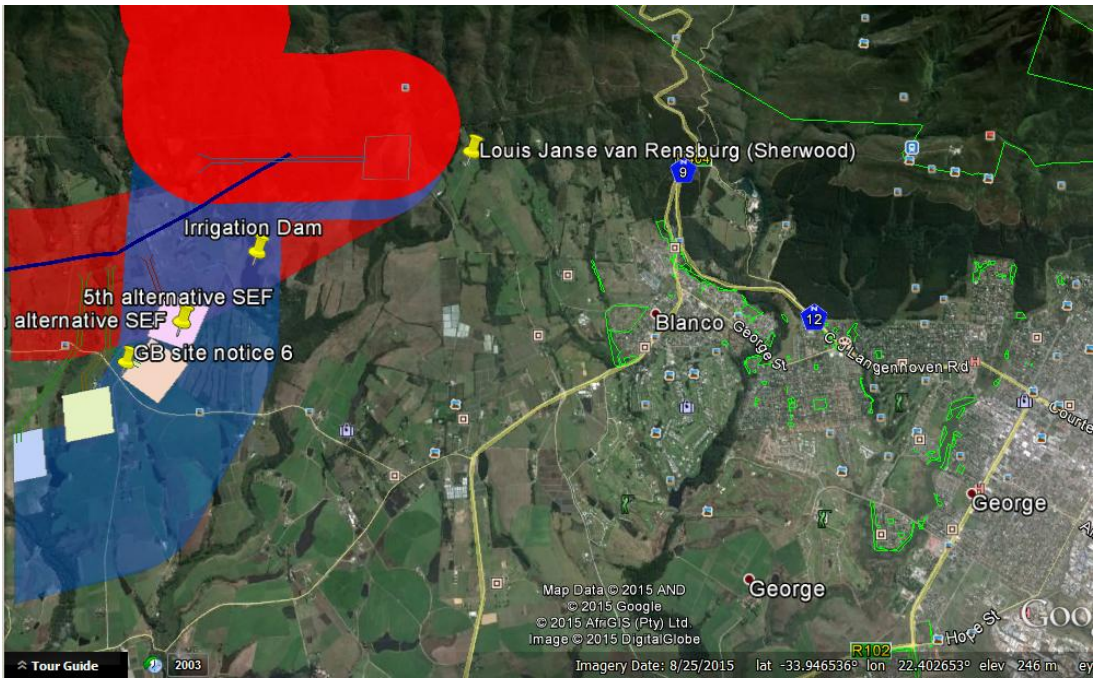


Figure 8. George and surrounding land use, all alternatives at Blanco

George Local Municipality is one of 7 municipalities in the Eden District Municipality. It has an estimated population of over 193 500 and a population density of 37.3 people per km^2. George is the major city within the area and has an estimated population of 157 394 according to the 2011 Census. Other towns include Wilderness (population 6 164), Uniondale (population 4 525), Haarlem (population 2 376) and Harolds Bay (population 704). The municipality covers an area of 5 191 km^2 in the Garden Route and Little Karoo. It extends northeast over the Outeniqua Mountains to include the eastern end of the Little Karoo as far as the Swartberg mountains. George is a popular holiday and conference centre and the administrative and commercial hub of the Garden Route.

[1] http://www.mosselbay.co.za/george-history_content_op_view_id_71

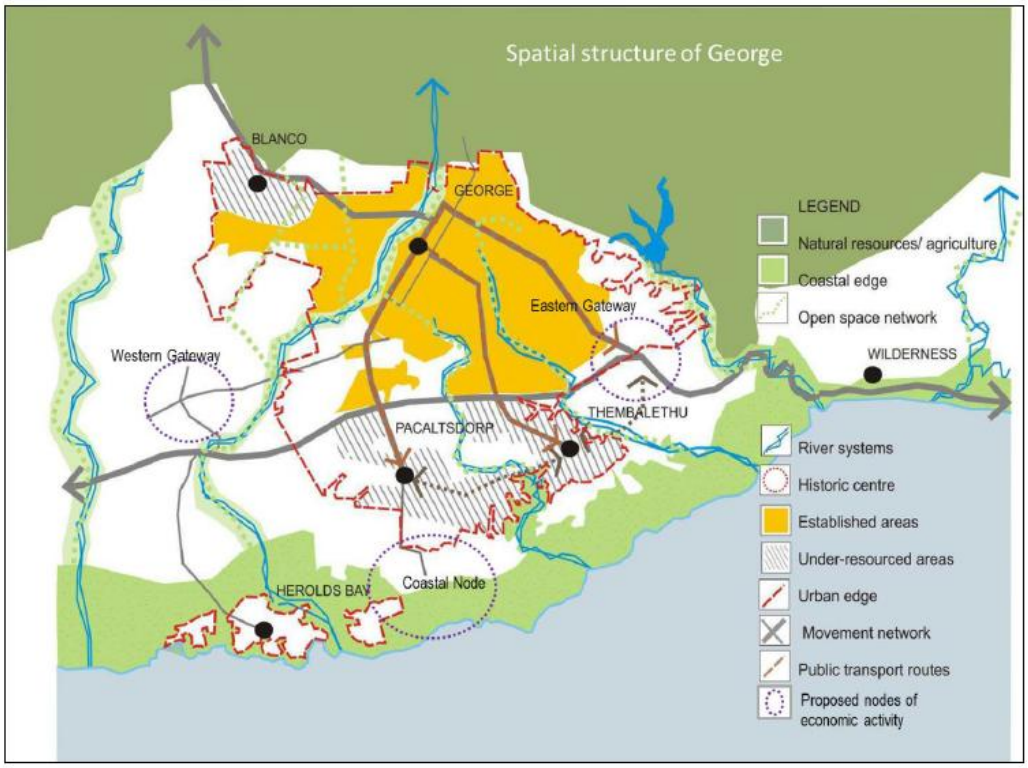


Figure 9: Spatial Structure of George (Source: George IDP, 2014/15)

The GDP of the George Local Municipality is estimated at R3.38 billion with general government (R891 million), wholesale and retail (R489 million) and business services (R399 million) contributing the most. The municipal area straddles the Southern Cape and Little Karoo regions of the Western Cape Province, and is situated almost halfway between Cape Town and Port Elizabeth. It was stated in the Integrated Development Plan (IDP) for George (2014/15) that the George Municipality now administers a vast and diverse geographic area that extends from the dry and climatically extreme Little Karoo in the north, to the wetter more temperate Garden Route in the south.

The area is rich in natural beauty that includes mountains, forests, lakes and the sea. The utilisation of forest trees led to the establishment of a timber industry in 1776 by the Dutch East India Company.

Three important national roads – N2, N9 and N12 – traverse the area, and George regional airport serves the Southern Cape and Little Karoo, including the neighbouring towns of Mossel Bay, Oudtshoorn, Knysna and Plettenberg Bay. Prior to the incorporation of Wards 24 and 25 the municipal area was 1 068 km² in extent, but the DMA has added an additional 4 170 km². Stats SA report that 148 021 people lived in the area in 2007 (including the previous DMA), of which approximately 80% resided in the regional service centre of George, 12% in the towns, villages and coastal enclaves of Wilderness, Herolds Bay, Uniondale, Touwsranten, Haarlem, Hoekwil, and Victoria Bay, and 8% in rural hamlets and on farms. According to the George Economic Development Profile, 2012, the total population for 2011 is estimated at 188188 with a 2.1% growth rate per annum since 2008. The map below depicts the spatial structure of the town of George and hinterland.

The municipal area also includes fertile farmlands and timber plantations along the coastal plain, fruit orchards in the Langkloof and arid grazing areas in the Little Karoo. The George area has an active, high-value **agricultural sector** including produce such as hops, vegetables, flowers and dairy products, and aquaculture. Although these activities may not create many jobs, they contribute significantly to local employment and earnings with steady land-reform efforts helping to reduce inequalities[2].

Given the rapid population growth and the role of the Southern Cape as retirement haven for many South Africans, the **construction sector** foresees steady growth and at least stable employment. Although George is not a coastal resort, these trends should also apply to the town. In addition, the local climate and a strong forestry sector helps to create a much wider range of building structures than found in other parts of South Africa. Notwithstanding certain limiting factors (like the rising fuel price) the **tourism sector** of the Southern Cape remains one of the strongest pillars of future LED[3]. This also applies to George, even though it is not located at the coast. Through its central location within the "tourism region" George is able to attract many tourism, accommodation and catering-related specialist services and facilities, which help to stimulate LED. Natural assets include parts of the Garden Route National Park and the Baviaanskloof Wilderness Area.

Due to its location, George attracts much of the region's more specialised retail and wholesale trade establishments. This further boosts this sector and is not likely to change in the foreseeable future. It is, however, key that the municipal and district managements satisfy the accommodation and other requirements of these enterprises. Although the relatively small population of the area has prevented the Southern Cape from becoming a major **industrial growth** point, the area has over the years succeeded in attracting some innovative industries (in bio-tech, ICT software and agro-processing). The closure of some factories in the recession years has illustrated the negative impact of sector problems and has stressed the need for proactive municipal policies.

George currently has the widest spectrum of school and tertiary education facilities in the Southern Cape[4]. These include quality private schools as well as university and other tertiary-level facilities. It seems likely that these facilities will enlarge in line with expanding local needs and national trends in educational-supply facilities. Once again, such expansion depends quite crucially on the municipality's policies of facilitation. George has a wide range of health facilities and services, and it would seem natural for this position to continue in future if facilitated by local, district and provincial authorities.

vii. De Rust:

The town of De Rust is located south of Meiringspoort on the N12 before the split with the R341. The town is known for its rural character and is visited by tourists and travellers between inland areas and the coast. The Stompdrift Dam Water Resort (6km from De Rust) provides the only public access to the Stompdrift Dam. The resort offers accommodation and

[2] *Second Review of the George IDP 2014-15*

[3] *Second Review of the George IDP 2014-15*

[4] *Second Review of the George IDP 2014-15*

a houseboat, Aqua Bush Restaurant, Interpretation Botanical Trail (utility plants used by Bushmen), safari ship for sunset-cruises, kayaking, angling, swimming and other water sport.

Alternative 1 of the line between Blanco and Droerivier leaves the N12 approximately 16 km to the east of De Rust and will thus not impact directly on the town or the Stompdrift Dam.

Figure 10. De Rust and surrounding land use, Alternative 1

viii. Beaufort West:

Beaufort West located on the N1 and is seen as a gateway to the Western Cape. The town functions as the main service and development centre for the Karoo area. Beaufort West has a broad range of lower-order shops and social facilities and is the biggest retail and service sector in the District. There are a number of schools of all levels, a hospital, police station and municipal offices. Farms in the area are mostly used for sheep, ostrich and game farming.

Figure 11. Beaufort West, north east of the Droerivier substation

Alternative 1 and 2 of the line between Blanco and Droerivier end at the substation approximately 6km to the south of the suburb Sidesayiwa (8km by N1 and N12 road) and

thus will not impact upon the town and suburbs themselves but Alternative 1 and 2 may impact on wards 2 and 7 of Beaufort West. Farming activities in the area of the Droerivier substation should be kept in mind when the proposed power lines are erected, as some farms on the outskirts of Beaufort West will be impacted upon by the line.

ix. Dysselsdorp

Dysselsdorp is located 1km east of the Alternative 1 line between Blanco and Droerivier. An intensive farming area Hazenjacht, is located north of the town, and farm owners have indicated serious concern regarding the impact of Alternative 1 line on their irrigation systems.

Figure 12. Dysselsdorp in relation to Alternative 1 (B-D)

Although the town will not be directly impacted upon some of the farms on the outskirts (west of Dysselsdorp town) will be impacted upon by Alternative 1.

x. Klaarstroom

The proposed project (Alternative 1) is located 3km to the north west of the town of Klaarstroom on the N12. Klaarstroom is a small rural village east of Prince Albert close to the northern access to Meiringspoort.

Figure 13. Klaarstroom and surrounding land use, Alternative 1 (B-D)

Local farms have been found to have higher agricultural potential than those in the more northern areas of the Central Karoo. The farming and cultural/heritage (tourism) value of the town should be kept in mind when the proposed power lines are erected. Farms to the north west of the town of Klaarstroom may require negotiations for servitudes.

xi. Willowmore

Willowmore is located on the N9 route where it joins with the R407 and then with the R329, in the Eastern Cape Province. Alternative 2 starts at the proposed Blanco (Narina) Substation near George, and after the first 14km, Alternative 2 follows the N9 for the first part of the route before it turns northeast at Uniondale to pass 16km to the west of Willowmore.

Figure 14. Willowmore and surrounding land use, Alternative 2 (B-D)

xii. Uniondale

Alternative 2 starts at the proposed Blanco (Narina) Substation and follows a route north east along the N9 to Uniondale for a distance of about 110km from where it bends north to pass west of Willowmore and Rietbron and eventually reach the Droerivier Substation south of Beaufort West.

Figure 15. Uniondale and surrounding land use, Alternative 2 (B-D)

xiii. Rietbron

The small town of Rietbron is located 15 km northeast of the Alternative 2 line on the R332 road. The line will not impact diretly on the town, but access roads and farms between Rietbron, Vondeling and Willowmore in the Eastern Cape Region could be negatively affected when construction commences.

Figure 16. Rietbron in relation to Alternative 2 (B-D)

xiv. Prince Albert

Prince Albert is located 44 km west of the Alternative 1 line where the R328 and R353 (Kerkstraat) roads join up. The line could impact on farms located in Ward 4 towards the eastern outskirts of the town.

3 INFRASTRUCTURE

3.1 Substations

3.1.1 Droërivier Substation

The existing Droërivier Sub Station is Located on Farm 170, Weltevrede, and approximately 8 km south-west of Beaufort West. The upgrade of the Droërivier site will require that all new infrastructure is in the immediate vicinity of the existing substation. The expansion of the existing substation is constrained by features such as a watercourse on the northern and north-eastern side. A railway line is located on the western side of the substation. The existing power lines and towers are located to east. See Figure 17 below.

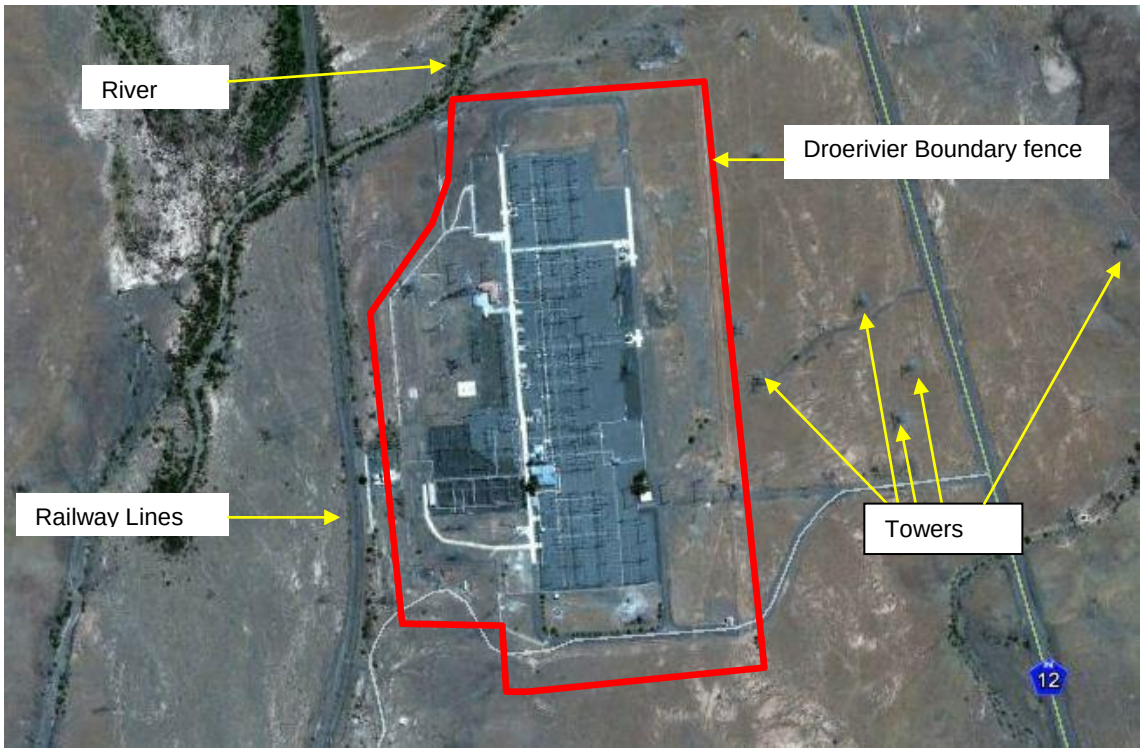


Figure 17. Droërivier Substation

The Karoo National Park (KNP) is located approximately 6km to the north and the Steenbokkie Private Nature Reserve, approx. 9km to the north-east of the Droerivier Substation. Two existing overhead transmission lines linking to the Droërivier Substation is located along the N12 from south to north. The smaller of the two existing lines (a 22kV line built to 132kV specifications) is located directly adjacent to the N12 where the larger 400kV 'Proteus' line is also located.

A range of koppies is located to the south of the study site (spot-height on hill beside N12 overlooking site), while the Gamka River is located approximately south of the substation.

3.1.2 Gourikwa Substation

Gourikwa Substation is located on farm Mossel Bay Rd 399/0 and it is located to the West of Gourikwa power-station. The substation is located approximately 15km West of Mossel Bay Town north of the N2 road. The substation is in the Western Cape Province. The 400kV yard is located on the Northern side of the substation. The expansion of the Gourikwa substation (to accommodate the proposed new 400kv Transmission line to Blanco) will require new infrastructure is in the immediate vicinity of the existing substation. This is an existing facility, thus no site alternative to this option is feasible.

3.1.3 Blanco (Narina) Substation

Blanco (Narina) Substation is not yet built. It is currently proposed to be situated 60km North-East of Gourikwa substation. The EIA for this substation is still in process and is anticipated to be concluded in the middle of 2015. The application for the Substation does not form part of this EIA for the 400kV line between the proposed Blanco Substation and Gourikwa Power Station.

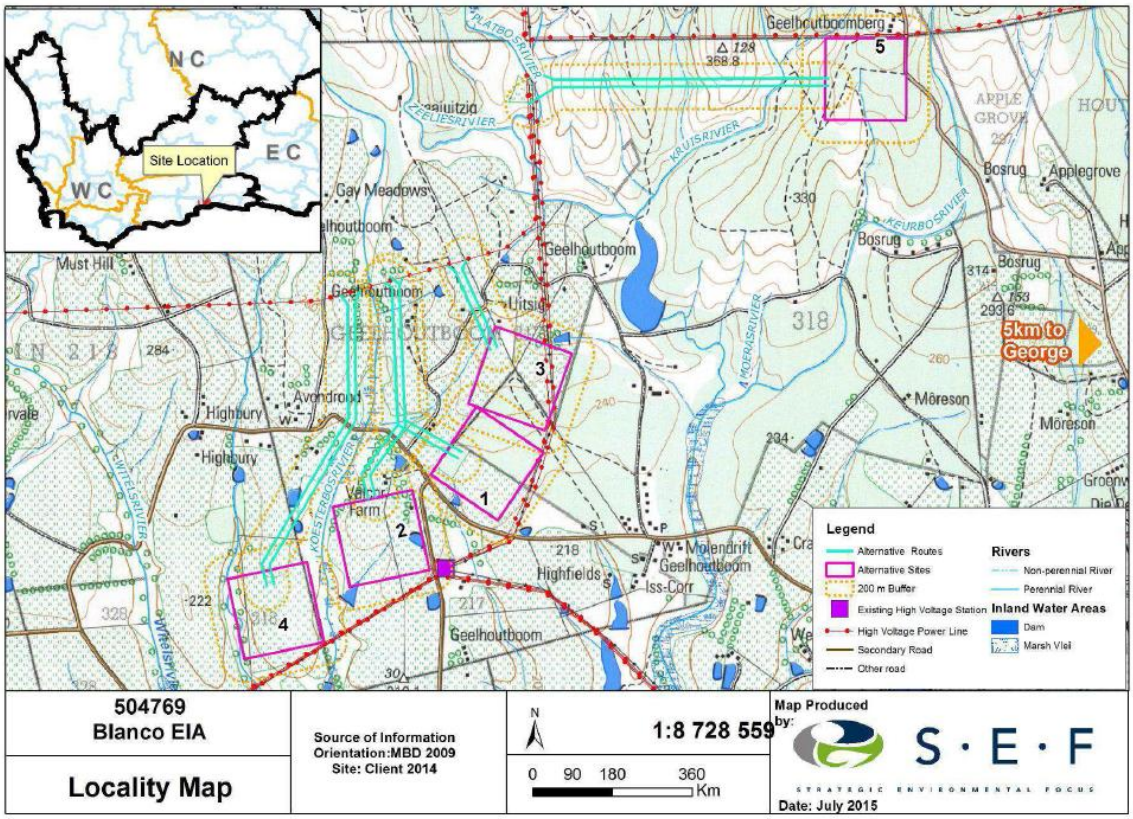


Figure 18. Blanco (Narina) Transmission Substation proposed sites

The project will require connection to the proposed Blanco (Narina) substation. Five alternative sites are under investigation. The Blanco Narina Transmission SS forms part of a separate project for which the EIA is handled by SEF in terms of the 2010 EIA regulations (DEA REF NO: 14/12/16/3/3/2/424 - NEAS REF NO: DEA/EIA/0001519/ 2012).

The construction of the Blanco Narina Transmission Substation falls outside the scope of this project, and have been applied for in a separate EIA, in which SEFSA investigated the following alternatives:

- Alternative substation site 1 on the north eastern side of the existing 132kV Blanco substation, across the existing gravel road – Geelhoutboom road. The site is located on agricultural land and is the preferred option for the construction of the new substation in terms of the site's proximity to the existing Blanco substation and the grid network (easy integration into the existing network).
- Alternative substation site 2 is located immediately North West of the existing 132kV Blanco substation, and South West of Alternative 1.
- Alternative substation site 3 is located north of alternative 1 and Geelhoutboom Road, and approximately 1.5km north east of the existing Blanco Distribution Substation.
- Alternative substation site 4 is located approximately 1.2km south west of the existing Blanco substation.
- Alternative substation site 5 is located in the foothills of the Outeniqua Mountains, approximately 4.5km north east of the existing Blanco Distribution Substation.

3.2 Transmission lines Gourikwa to Blanco

3.2.1 Alternative 1, Pink/Red Corridor (Eskom Preferred Option)

The proposed alternative 1 route alignment is approximately 57km in length and is mostly a straight line between the two Substations with 5 bend points and a bend point at the Gourikwa SS to transverse to the south (where it links up to the proposed Deviation). This preferred alternative will not cross the National Road (N2) but does cross the Regional Road (R327).

3.2.2 Alternative 2, Blue Corridor

The proposed alternative 2 route alignment is approximately 58km long and is located to the south of the Alternative 1. This preferred alternative will not cross the National Road (N2) but does cross the Regional Road (R327)

The following Land Use features could be impacted upon:

Maandagskop Mine
The Maandagskop Mine is located on the Farm 217, Hartenbos, Mossel Bay and expansion of mining activities is planned on Portion 12 (DEA&DP:16/3/1/1/D6/18/0002/14).

Figure 19. Maandagkop Mine is located between Alt 2 and Alt3 (GB)

3.2.3 Alternative 3, Green Corridor

The Alternative 3 is located south of the other two alternatives, and follows the railwayline up to Klein Brakrivier, where it joins the Alternative 2 route up to Blanco (Narina) Substation. This preferred alternative will not cross the National Road (N2) but does cross the Regional Road (R327).

According to the Mossel Bay Municipality Spatial Development Framework SDF (2008) this alternative will be located within the urban edge for Mossel Bay. The south-eastern area (near Hartenbos) is characterised mostly by residential, holiday resorts and second home developments. High-income retirement and second home developments such as the Hartenbos Landgoed (a new development of single residential homes) are located in the south of this proposed alternative. Dibiki Holiday Resort is includes chalets and camping facilities. Hartenbos River Resort is to the south-east of the line, and several resort developments exist in the areas south of the area where Alternative 3 is proposed.

A holiday resort development (expansion) is planned on Portion 70 of the Farm Hartenbosch No 217, Division Mossel Bay . The N2 Highway runs to the north and west of the property. The property is accessed via optional road 6804 off the N2. The application area is situated in a cluster of resort and second home developments. The property is within the Urban Edge for Hartenbos, although the main part of the town is to the south of the Hartenbos River. The entrance to the property is located in the western corner and the coordinates to the centre of the property are 34° 6'46.90"S and 22° 6'50.37"E.

3.3 Transmission lines Blanco to Droerivier

3.3.1 Alternative 1, Red Corridor (Eskom Preferred Option)

The proposed Alternative 1 route alignment is approximately 200km in length and is mostly a straight south-north line between the two Substations, following the west of the **N12** at the

section north of Meiringspoort. This preferred alternative will not cross the National Road (N2) but does cross the Regional Road (R327).

The wards that will be impacted upon by Alternative 1 are the following:

Beaufort West 7, 2

Prince Albert 4

Oudsthoorn 11, 9

George 25 , 22

3.3.2 Alternative 2, Blue Corridor

The proposed alternative 2 route alignment is approximately 250km long and follows a route along the **N9** to Uniondale from where it is aligned towards the west of Willowmore, from where it bends to pass Rietbron and link up to the Rustdene area south of Beaufort West. Depending on the most ideal location, this Alternative 2 could cross the National Road (N9).

The wards that will be impacted upon by Alternative 1 are the following:

George 22, 25, 24

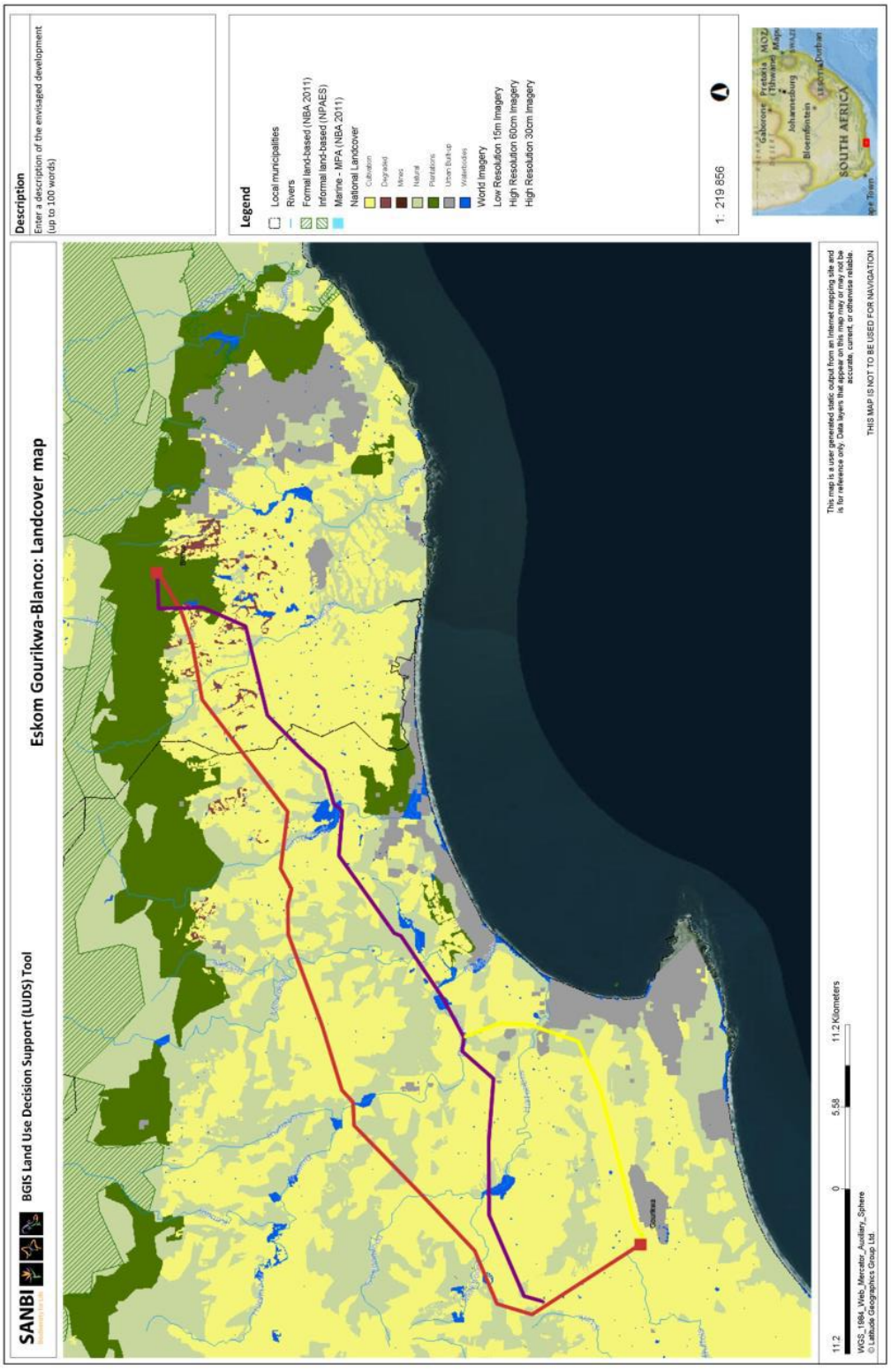
Baviaans 1, 4

Beaufort West 2, 7

4 INFRASTRUCTURE

4.1 Gourikwa to Blanco Project Land use features

The proposed transmission lines pass through the Eden District Municipality (DC4) within the Western Cape Province.



Land use within the study area consists largely of cultivated land with some natural areas along river valleys and on higher lying areas. Mossel Bay and George are larger towns in the immediate area, with the smaller residential areas of Hartenbos, Klein Brak and Groot Brak along the coastline. A number of storage dams occur along the rivers, particularly in the Klein Brak River System. Forestry occurs along the foot of the Outeniqua Mountains.

A number of formally protected areas in terms of the National Environmental Management Protected Areas Act occur within the Outeniqua Mountains such as Ruitersbos and Witfontein Nature Reserves and the Doringrivier Wilderness Area. The rivers in the area, in particular the Groot and Klein Brak Rivers and their estuaries are also considered to be of a very high ecological importance and sensitivity.

Areas of the landscape have been transformed into pasture and croplands with some areas fragmented by croplands.

Prominent Land use features include:

- Gondwanda Game Reserve
- Equestrian estate outside of Mossel Bay town
- an eco-estate in George that has an eco-wilderness camp
- Monte Christo eco estate in Mossel Bay, holiday homes and caravan parks.
- Klipheuwel 143/3 and Rheeboksfontein 140/2 used for recreational and game purposes.
- Farming activities will be disturbed.
- Irrigation farmers are specifically worried about areas under centre pivot irrigation, with many channels, roads and irrigation lines that may be disrupted and cease to function.
- Little Brak estuary
- PetroSA Gas to Liquid (GTL) refinery.
- MossDustria
- Proposed wind farm

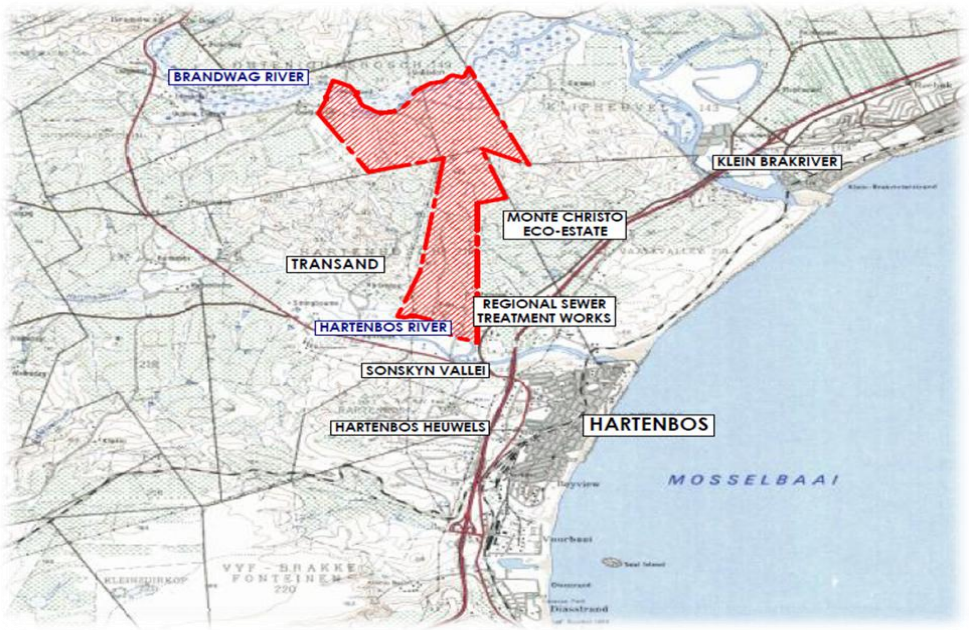


Figure 20. Development on Farms Outeniquasbosch 149 & Hartenbosch 217, Monte Christo Eco-Estate

4.1.1 Road and Rail

The national N2 road from Mossel Bay crosses the regional road R404 to George and Blanco. The R404 also crosses the R102, and links to the N12 between George and Beaufort West. There is no known road planning that will directly affect the development. The majority of tourists visiting the study area are expected to enter the area from the N2 or the N12, with a limited number using the R327 and R328.

According to Mr Ludwig Kohrs (Property Technician, Geo-Spatial: Western Region, Transnet 2015) the area in which the proposed Gourikwa-Blanco power line is to be erected is located within Transnet's Eastern Region which is under the jurisdiction of the Transnet Port Elizabeth office. The latter office should be contacted should any "wayleaves" be required for the route where the crossing of the railway line of Transnet is involved.

Figure 21. Main roads between Gourikwa and Blanco Substations

4.1.2 Farming

Prominent land use in the area surrounding the Gourikwa substation is agriculture, with a combination of game, cattle (dairy), sheep and ostriches as well as crop cultivation (wheat, vegetables, fruit) Farms surrounding the Gourikwa site include Kleinberg, Arum Valley, B&H Boerdery, Patrysfontein, Bartelsfontein and Hartelus.

High potential farm land is privately owned and has been impacted upon when McCain Foods closed down in George almost 2 years ago. Local people lost their only source of income as the farmers didn't have a market for their products and most of them are now dairy farmers (source: JW Meyer). According to an article in the George Herald newspaper, production at the McCain Foods factory in Sandkraal Road came to a standstill at the end of October 2013. The factory was opened in 1965 as Table Top Frozen Foods, George - a division of Deep Freezing and Preserving Company, a UK company owned by the Vestey family. The shortage in the market was filled by importing lower quality products from Western Europe and China.

During the Public Participation Process, mixed farming activities were identified on the Farm Oude Uitkyk 225 (Remainder of 342.6128 ha) which belongs to the Ruben Barnard Trust and portions of the farm Voorbrug 255 (Portions 11,26,38,39,40,53,54 of 255 ha) that belongs to Langhoek Trust. Portion 3 (of Portion 1) of the farm De Oude Uitkyk 225 (64,2399 ha) belongs to R & Ja Barnard (Pty) Ltd and will be impacted upon by the proposed power lines. Other portions of these farms and others in the area between Mossel Bay and George may be impacted upon by Alternative 2 and Alternative 2, where existing and planned pivot irrigation systems are used.

Property values may be impacted upon along all three alternatives, but in particular where power lines already cross the properties. Some of these properties were identified during the Public Participation Process. Farmers have also expressed their concerns about the practical use of their properties when portions of their land are “lost” for use as servitudes. Due to the denser residential areas (such as holiday estates) close to Alternative 3 the impact could be slightly more for this alternative, but this would depend on the characteristics of the specific property and the surrounding land uses. The actual distance of the line from houses and the backdrop against which the line will impact upon, would play a role in determining the actual effect on property values. Distances between servitudes (where other lines occur on the same property) also plays a role.

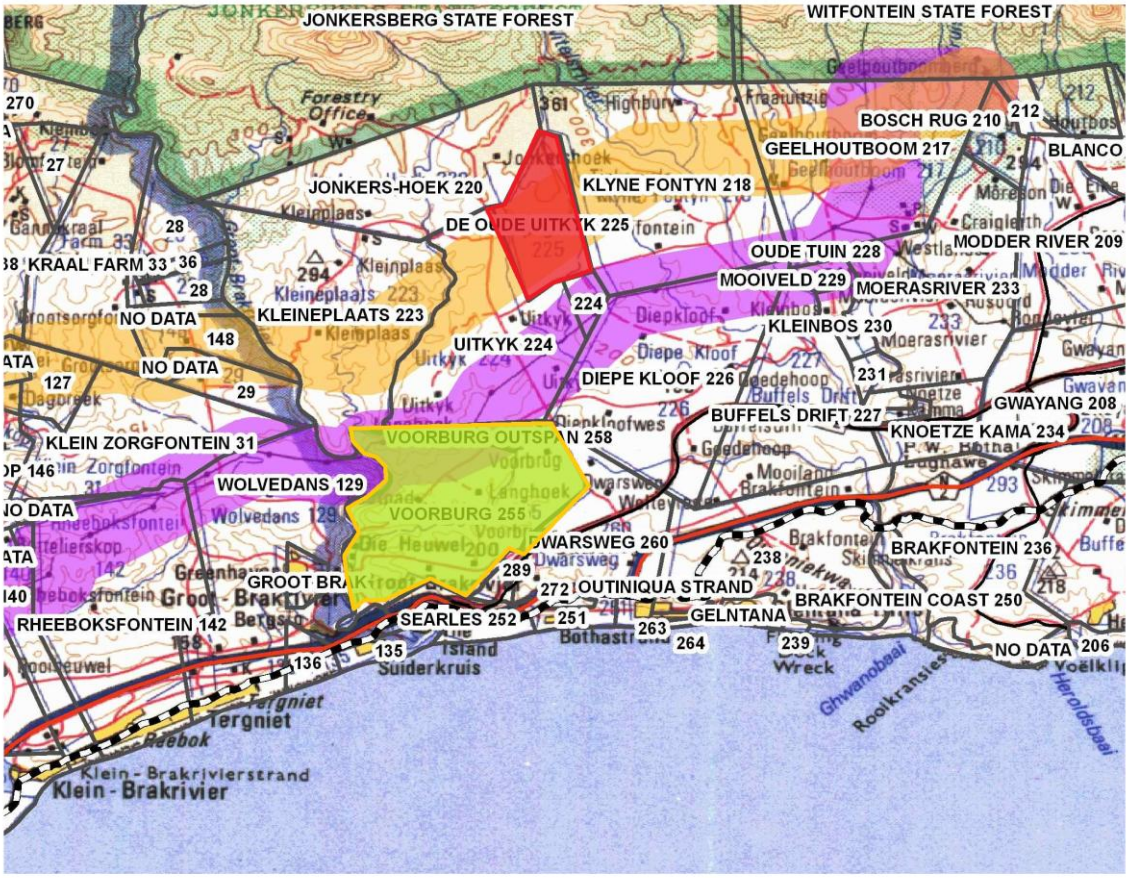


Figure 22. Mixed farming areas (marked in yellow and red) between Gourikwa and Blanco Substations

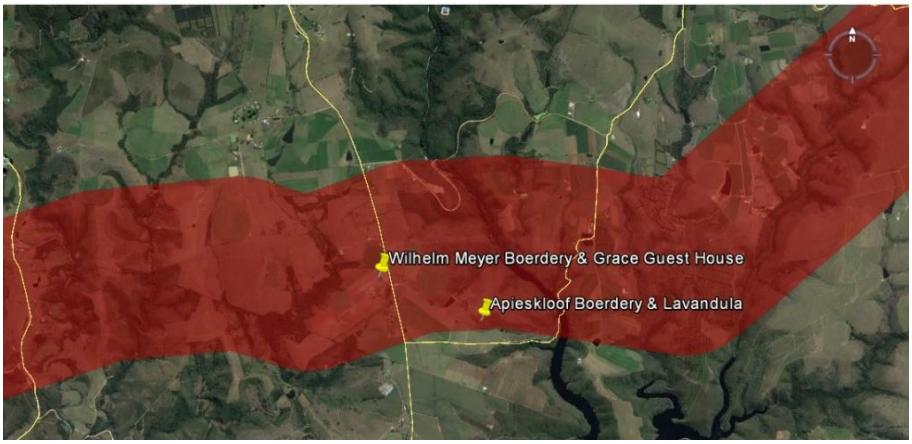


Figure 23. Farming and Guest houses on the Alternative 1 line

Alternative 1 may impact negatively on the Remainder of the Farm Oude Uitkyk Nr.225 and Alternative 2 on Portion 54 of the farm Diepe Kloof Nr. 226 as well as Portion 3 of the farm De Oude Uitkyk Nr. 225 (see image below). These properties are used for intensive farming with vegetables and features pivot point irrigation, workers houses and sheds. Only Alternative 3 would be acceptable to the owner of these farms.

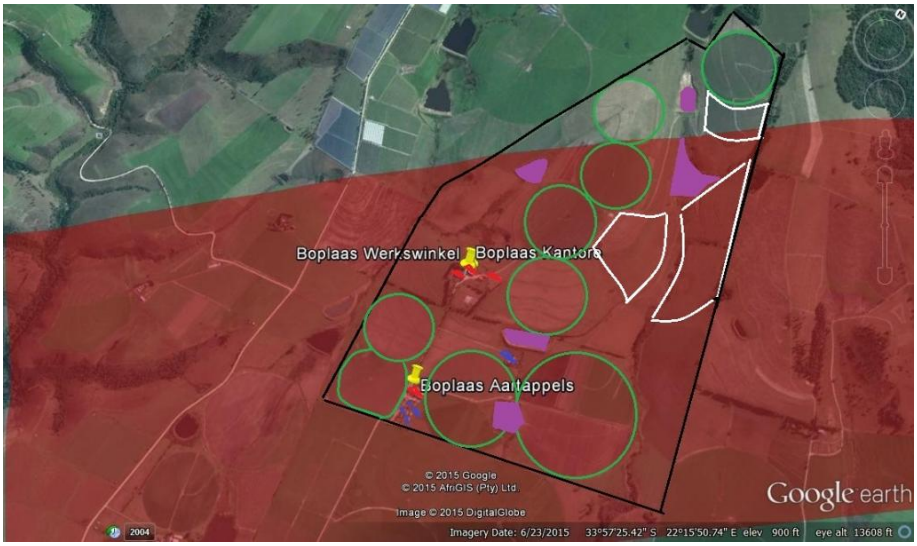


Figure 24. Farming on Oude Uitkyk to be affected by the Alternative 1 line

Figure 25. Farming on Diepe kloof and Oude Uitkyk to be affected by the Alternative 2 line

4.1.3 Tourism

Visual impacts are arguably one of the most significant impacts that are associated with transmission lines. Therefore, the visual qualities of these attractions need to be preserved as far as is practically possible. This can be done through the careful placement of towers and power lines against the landscape, avoiding mountain tops, using valley bottoms, choosing the option with the shortest distance or placing it in areas that already have visual interference of manmade objects.

From the point of view of receptors, including local residents and tourists, the presence of a transmission line may negatively affect the sense of place of natural areas, potentially negatively affecting eco-tourism attractions such scenic hiking trails, eco-adventures, and the like. This could have negative social and economic consequences, such as loss of revenue for business enterprises, loss of employment and reduced economic contributions to local GDP.

According to Domestic Tourism Survey of 2013 from Statistics South Africa, the Western Cape had 2.7 million domestic overnight trips or 9.2% of the total overnight trips (expressed per province as the main destination of overnight trips). More than half (58%) of the overnight trips to the Western Cape were for leisure/vacation/holiday and according to the mode of transport, 77% of all overnight trips to the Western Cape were undertaken by road (private motor vehicle). **More than half (58%) of the overnight trips to the Western Cape was for leisure/vacation/holiday**. A total of 1.97 million of the overnight trips to Western Cape originated from within the Western Cape while 413 000 came from Gauteng. A total of 112 000 came from the Eastern Cape and 80 000 from Northern Cape.

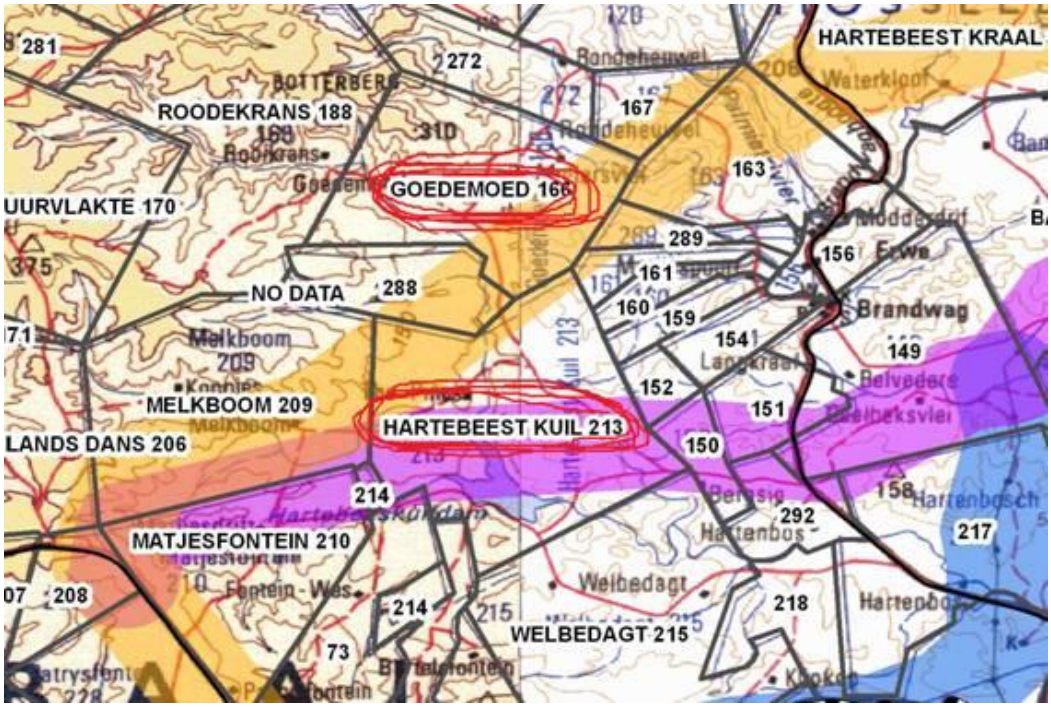


Figure 26. The farms Goedemoed and Hartebeestkuil (Alternative 1 and 2)

There are a number of tourism attractions, including the George museum, Outeniqua Mountains, Montagu Pass (that was declared a National Monument in 1972), Fancourt (National Monument and well-known hotel) and Lake system (Wilderness, Swartvlei, Sedgefield and Groenvlei). The area is host to the George Old Car Show, which was first held in 1997, the George Cheese Festival (since 2002) and the George NAM Sevens Premier League. The George airport was built in 1977 and served 560 432 passengers in 2013, up from 154 000 in 2003 (Socio-Economic Specialist Report 2015).

The Hartenbos Private Game Lodge is located on the farms Goedemoed166 and Hartbeestkuil 213 ($34^0$02' 51.03" S 22^0 00' 11.40" E and $34^0$03' 49.50" S $22^0$00' 29.97" E). Both these farms are relevant to the project, as Alternative 1 of the Gourikwa to Blanko power line will transverse the farm Goedemoed 166 and the Alternative 2 transverses Hartebeest Kuil 213.

In the 2014/15 IDP, the George Local Municipality highlights the need to promote the municipality as a sports, tourism and business destination. This includes the re-establishment of a Tourism Bureau, and projects like the Apple Express and the Outeniqua Choo-Choo train project are essential for tourism development in the rural areas. Further tourism opportunities include business tourism, agri-tourism, eco-tourism (hiking, birding, etc) and adventure-tourism potential like paragliding, canoeing, absailing, diving and mountain biking. Strengths also include the natural beauty of the area, the national parks, moderate climate, long sandy beaches and good hotels, guesthouses and restaurants.

The Mossel Bay draft IDP (2015) mentions tourism as their first strategic priority 'Grow the economy and create jobs through Tourism'. This is set out in objectives that include: to create an enable environment for economic growth in the tourism industry and uplifting communities, to facilitate development and an investor friendly environment for job creation and an attractive CBD area with a well-developed port/waterfront area.

Specific tourism projects include the development, maintenance and marketing of hiking trails, establishing a flea market alongside the N2 on an open area on the eastern side of De Dekke Restaurant and the establishment of worm farming (and composting) projects in the community. Other projects include the upgrading of Klein Brak River allusion facilities to blue flag standard, presenting annual festivals unique to Great Brak River and upgrade and maintain holiday resorts and caravan parks to increase tourism.

South Africa's hospitality industry is prepared to grow further in the next five years, with most growth in the sector expected to be generated in Cape Town, according to a report released by PricewaterhouseCoopers (PwC) on 15 May 2015[5]. The overall occupancy rate across all sectors in South Africa will continue to increase, rising to an estimated 58.3% in 2015 (from 54.4% in 2014). "The hotel occupancy rate reached its highest level in 2014 of 59% since 2008. The hotel occupancy rate is expected to increase to 62% by 2019 but still remain lower than the 68.4% achieved in 2008," adds Forster. Five star hotels are expected to achieve a high of 80% occupancy in 2019.

The construction of infrastructure near hotels and other facilities may have a negative impact on the tourism industry along the routes, mainly due to the visual impacts thereof. This region has a Social Responsibility Implementation (SRI) programme, with the main office in George and two satellite tourism offices in Pacaltsdorp and Thembalethu.

Alternative 2 crosses the Wolwedans Dam that is considered a valuable natural feature. Alternative 1 passes more to the north of the dam, crossing the inlet from the Groot Brak River. Tourism and recreational activities are believed to be practiced on and around the dam. Alternative 2 & 3 are in very close proximity to Klipheuwel Dam, passing just north of it.

The Great Brak River area is an area rich in history and heritage buildings that add to the attraction as tourist destination.

[5] *(Source: http://www.rummage.co.za/growth-spurt-predicted-for-south-africas-hospitality-sector_article_op_view_id_9244?searchtxt=farms*

Figure 27. Groot Brak River and surroundings (Alternative 2)

The Hartenbos River feeds the Hartebeeskuil Dam, which will be affected by Alternative 2. Alternative 2&3 will pass close to the smaller Klipheuwel Dam. Some of the other larger rivers in the study area that will be traversed by the corridors are the Brandwag and Moordkuil Rivers. **Main Rivers** in the study area:

- Gouritz River: Named after the Gouriqua KhoeKhoe people who lived in the area. This river supports a rich birdlife and presents very good fishing spots for commercial and sports fishermen near its mouth.
- Hartenbos River: Since the Hartebeeskuil Dam was built in 1970, the mouth has usually been closed. This has led to increased salinities and eutrophication and degradation of the estuary.
- Little Brak River: This river provides an important estuary for bait organisms and bird species.
- Great Brak River: The greater of the two 'brak' ('brackish') rivers, the Great Brak reaches the sea between George and Mossel Bay. The Great Brak has a lagoon at its mouth and some industrial activities along the banks. The estuary is important for bait organisms and birds.
- Maalgate River: The Maalgate River reaches the ocean west of Herolds Bay.
- Gwaing River: The Gwaing River mouth is located east of Herolds Bay.
- Kaaimans River: This river reaches the ocean to the west of Wilderness. The main tributaries

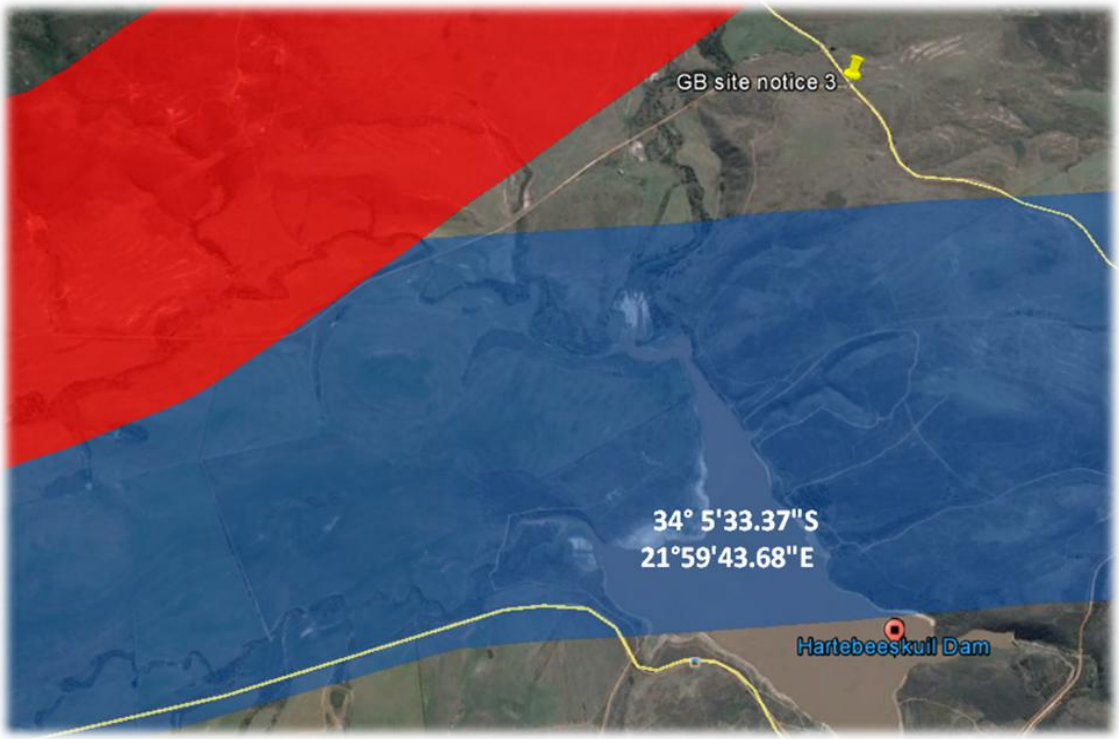


Figure 28. Location of Hartbeeskuil Dam

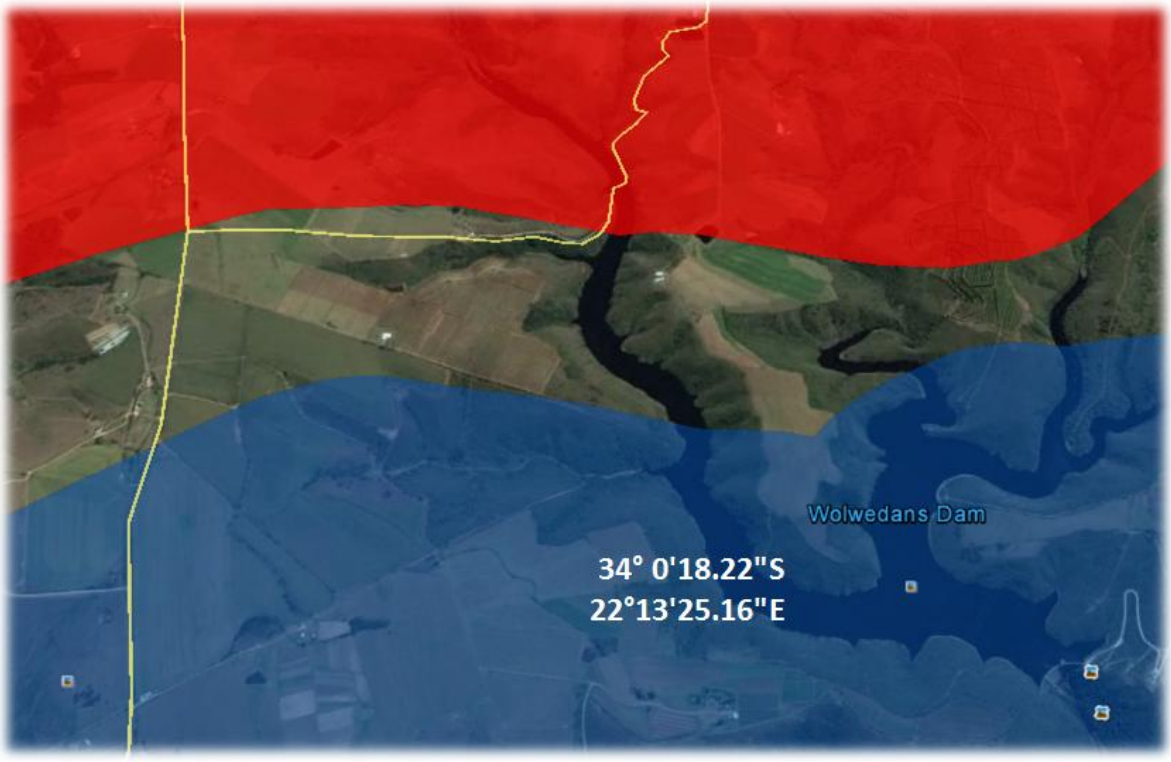


Figure 29. Location of Klipheuwel DamFigure 30. Location of Wolwedans Dam

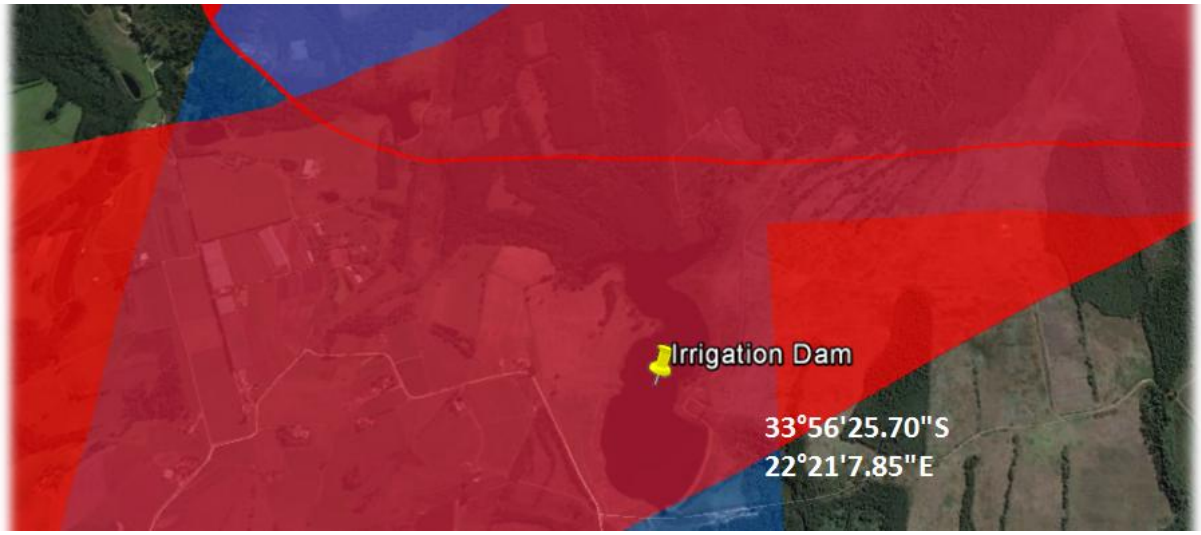


Figure 31. Location of Irrigation Dam

Alternative 1 between Gourikwa and Blanco crosses many rivers, wetlands, and wetlands clusters. These areas provide habitats suitable for a variety of amphibian species and are vital to maintain ecosystem functioning. Of the three Gourikwa-Blanco alternatives, this one crosses the most perennial rivers due to its proximity to the escarpment. However, these rivers are likely to be fast flowing and less habitable for amphibian species than the lower reaches of the rivers, which would be crossed by the other alternative routes. Alternative 1 will also cross the most natural/pristine wetlands of the alternative routes. Alternative 2 will transect more areas identified as wetland clusters than alternative 1. This route will also cross many perennial rivers. Generally, the wetlands classified outside of wetland clusters are in a less natural condition than the other 2 alternatives. However, this alternative has many habitats suitable for a variety of amphibian species. Alternative 3 crosses one wetland cluster and one perennial river. Many of the wetlands in this area are considered degraded. It is more likely that this alternative can avoid pristine wetlands and perennial rivers than the other two alternatives.

4.1.4 Nature Reserves

A number of formally protected areas in terms of the National Environmental Management Protected Areas Act occur within the Outeniqua Mountains such as Ruitersbos and Witfontein Nature Reserves and the Doringrivier Wilderness Area. None of the proposed alternatives' corridors crosses any of these nature reserves. There are also a number of tourism beaches in the study area, but none of them will be affected by the transmission lines.

The rivers in the area, in particular the Groot and Klein Brak Rivers and their estuaries are also considered to be of a very high ecological importance and sensitivity.

- The Gamka Nature Reserve covers most of the Gamka Mountain range. The reserve was established in 1974 with the objective to conserve a population of endangered Cape Mountain Zebra and their natural habitat.
- The Goukamma Nature and Marine Reserve is situated in the vicinity of Sedgefield between George and Knysna. The 2 500 ha nature reserve, with a coastline of 14 km, and the adjacent marine reserve extend seawards for 1.8 km. It includes a long beach,

an extensive dune field with some of the highest vegetated dunes in South Africa, the Goukamma River and its estuary, and the Groenvlei Lake.

- The Outeniqua Nature Reserve is located near George and is accessible from Mossel Bay, Knysna and Oudtshoorn. The primary function of this nature reserve is the conservation of water resources.

Conservation Areas	Size	Managed by
Gamka Mountain Nature Reserve	10 428 ha	WCNCB
Goukamma Nature and Marine Reserve	2 900 ha	WCNCB
Grootvadersbosch Nature Reserve	250 ha	WCNCB
Boosmansbos Wilderness Area	15 202 ha	WCNCB
Keurbooms River Nature Reserve	740 ha	WCNCB
Outeniqua Nature Reserve	38 000 ha	WCNCB

The Gondwana (private) Game Reserve

The Gondwana game reserve is a 11,000-hectare private game reserve and offers luxurious accommodation and safaris. The Reserve has free roaming Big 5 Game and herds of wildlife including eland, giraffe, hippo, gemsbok, cheetah and zebra. The facility is marketed as a natural area with views of the Langeberg and Outeniqua Mountains (see photograph below). When developing the private reserve, it was strived to reduce potential impact on the environment. Areas of indigenous vegetation were protected and left untouched. Gondwana's water supply is self-sufficient utilising its own streams. Strict water usage controls and restrictions are applied to all buildings to preserve this natural resource. The impact of the proposed power line (Alternative 1) on such an area would be negative mostly in the sense of the "visual pollution" that would distract from the natural characteristics of the Game Reserve. The concern of the owners is that such infrastructure would lead to unsightly areas and spoil the experience of nature to their guests, thus leading to a loss of bookings.

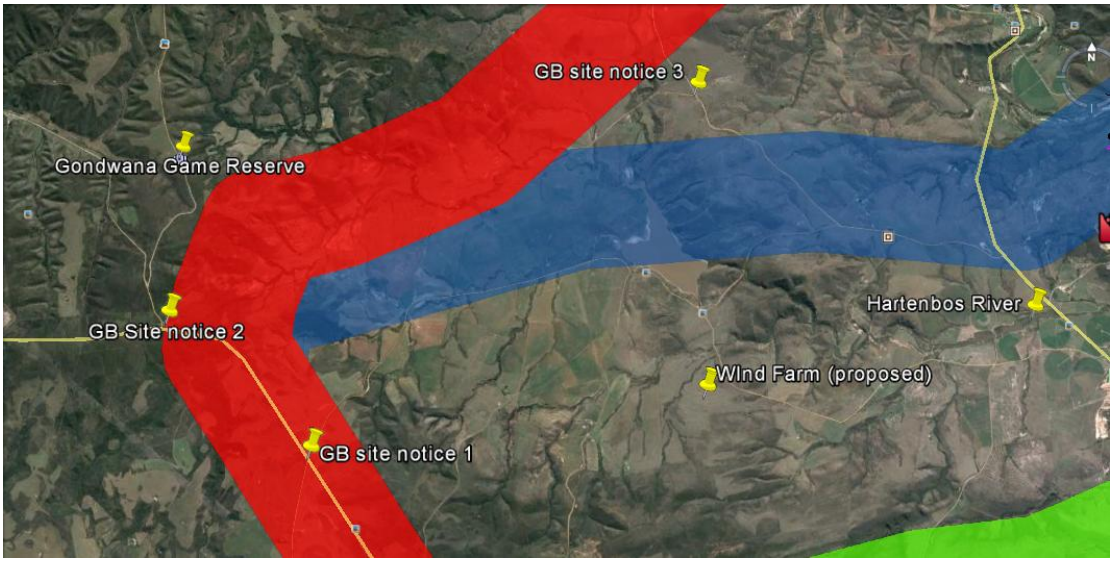


Figure 32. Location of Gondwana Game Reserve from Alternative 1

Photo: Gondwana Game Reserve Website http://www.gondwanagr.co.za/reserve/

Figure 33. View of Gondwana Game Reserve landscape

Nyaru game Lodge

The Nyaru game Lodge is located in the Mossel Bay area, and the management of this institution (Mr Pierre Fourie) has expressed concern about their rare and critically endangered plant species (e.g.: *Haworthia kingiana* and *Haworthia chloracantha var. subglauca*) that grow on the slopes where the pylons will be constructed. The population of *Haworthia kingiana*, is one of only a few populations left in the wild of this critically endangered plant species. Also, the infrastructure may have a negative impact on the bird life at Nyaru Game Lodge, which include the endangered Secretary bird (*Sagittarius serpentarius*) Denham's Bustard (Neotis denhami), the Martial Eagle (Polemaetus bellicosus) and the Black Harrier (Circus maurus). The endangered Agulhas Long-billed Lark (Certhilauda brevirostris), also occurs in the Mossel Bay Shale Renosterveld (which is the most prominent vegetation type on the reserve of Nyaru Game Lodge). Nyaru Game Lodge's main income is derived from tourism and the proposed infrastructure could have an impact on tourism at the reserve. Aesthetic views could be degraded and this would influence tourist experience at the lodge and thus the value of the safaris on the reserve.

4.1.5 New developments

New Wind Farm (Mossel Bay)

Coordinates $34^0$08' 04.9" S 22^0 00' 48.8" E

In June 2013, Mossel Bay IPP (Pty) Ltd has received approval (DEA 12/12/20/2536) for the construction of a wind farm of approximately 1 370ha that is located on six property portions on the farm Welbedacht 215 and Bergsig Game Farm (Bergsig Game Farm 356/0, 215/13, 353/0, 365/0 and Welbedacht 215/3, 215/15), approximately 10km west of Mossel Bay and 5km north-east of the PetroSA gas-to-liquid refinery, situated just north of the N2 Highway.

The wind farm will consist of 30 turbines each generating between 1.6-3 MW of power with a total capacity of ~80MW. The wind farm at Mossel Bay provides the added advantage of increasing the stability on the national electricity grid. The wind farm will connect to the existing Duinzicht substation (substation at 34° 6' 56.58" S 22° 0' 11.19" E) at Mossel Bay by means of a 66kV overhead line

4.2 Blanco to Droerivier Project Land Use Features

The main impact for this area that has been identified during the Public Paticipation Process, was the impact on farming activities that will be disturbed. Irrigation farmers are specifically worried about areas under centre pivot irrigation, with many channels, roads and irrigation lines that may be disrupted and cease to function. Main areas of concern are Klaarstroom and Willowmore (Lucerne farming on the farm Schilpadbeen).

4.2.1 Natural areas

Swartberg Nature Reserve

The Swartberg Nature Reserve is situated in the vicinity of Oudtshoorn in the Swartberg Mountains between the Great and Little Karoo. Alternative 1 will potentially impact upon this Reserve, and is the main reason for proposing Alternative 2, even though the latter is about 7km longer.

Groot Sleutelfontein Private Game Reserve

The Groot Sleutelfontein Private Game Reserve is situated near the Prince Albert in the Great Karoo, 160 km from George. The reserve is located against the northern slopes of the Swartberg Mountains, and covers more than 10,400-hectares. Animals such as buffalo, giraffe, eland, kudu, gemsbuck, springbuck, sable and other species can be found here.

Zandibela Private Game Lodge

Zandibela is a 4500 acre, 5 star private game lodge close to Baviaanskloof. The project will not impact directly on the facility.

Kamanassie Nature Reserve

The Kammanassie Nature Reserve is situated between Uniondale and De Rust. The total extent of the area managed as a conservation area is 49 430 ha of which 21 532 ha is privately owned declared Mountain Catchment Area. The project will not impact directly on the Kamanassie Nature Reserve.

Bakers Dam

The dam was build by the South African Railways to supply its steam locomotives with water. When steam was replaced with diesel the dam was taken over by the Willowmore Municipality as the town's primary source of water at the time. Problems with algae in the water resulted in the establishment of an alternative system of interconnected boreholes and springs on the

farm Wanhoop. The dam is utilised as bird watching destination. The project will not impact directly on Bakers Dam.

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Aasvoëlberg

"Vulture Mountain", overlooking Willowmore, is one of the few places in the Karoo where coastal fynbos grows. A number of trails offer the hiker the chance to explore the flora, fauna and birdlife of the mountain. The rugged terrain provides mountain bikers with challenging trails and the mountain lends itself to activities such as para-gliding, abseiling and 4x4 outing. The project will not impact directly on Aasvoelberg.

Baviaanskloof

The Baviaanskloof was declared a World Heritage Site in 2004 and is one of the richest plant regions in the world - less that 0.5% of the surface area of Africa but home to nearly 20% of the continent's fauna and flora. Almost 70% of the fynbos species are endemic and the Baviaaanskloof's endemism level of 31.9% is known as a “biodiversity hotspot”, with three of the world’s 34 hotspots located in the Kloof. The Baviaanskloof has a diversity of natural ecosystems. Seven of South Africa's eight biomes (major natural regions) are represented here including fynbos, forest, grassland, succulent Karoo, nama-karoo, sub-tropical thicket and savanna. On the northern slopes are the Spekboomveld and Valley Bushveld. On the southern slopes flourishes the Cape Fynbos. In the long side valleys is concentrated the Knysna Forest vegetation. On the mountain plateaus are the Rhinoceros Veldt and Grassland.The widespread succulent Karoo bush in the valley is probably why the Baviaanskloof is classified as a part of the Little Karoo. Because of this diversity of plant species, an impressive variety of birds can be found in the valley. The Baviaanskloof is part of the Cape Floral Region World Heritage Site - eight protected areas covering an area of 553 000ha. The project will not impact directly on the Baviaanskloof. The project will not impact directly on the Baviaanskloof.

Kouga Mountain area (Uniondale)

The Kouga Mountain has areas of fauna and fynbos with a variety of self catering accommodation. Tourism accommodation (amongst others) are located at the Kouga Mountain Retreat, Bon Accord Guesthouse, The Townhouse Guesthouse, The Cottages B&B (originally built in the 1800's), 7 at Grey B&B, Blue Hill Escape Nature Reserve and the Mountain Pastures Game Lodge (in the De Hoop valley between the Kouga and Honniball mountains) with access from the R62 route. The Blue Hill Escape Nature Reserve is located on a 2300 hectare nature reserve, in the Kouga Mountains to the west of the Baviaanskloof Wilderness area. The project will not impact directly on these facilities or the Kouga Mountain Area.

Caroluspoort Private Game Reserve

Carouspoort Private Game Reserve is situated 35 km east of Prince Albert. The reserve comprises 11 000 hectares of Karooplains, valleys and acacia lined riverbeds. It is home to a wide variety of antelope including Gemsbok, Eland, Zebra, Black Wildebees, Red Hartebees, Springbok and Klipspringer; other smaller mammals; reptiles and birds. The project will not impact directly on the Kamanassie Nature Reserve.

4.2.2 Road and Rail

Alternative 1 and 2 starts at the proposed Blanco (Narina) Substation near George, but Alternative 1 follows the N12 for the latter part of the route, while Alternative 2 follows the N9

for the first part of the route before it turns northeast close to Willowmore. The N9 links the N12 to the R62, and eventually reaches Aberdeen, Graaff Reinett and Middelburg, where it joins up with the R398 and R56. The N9 ends at Colesberg where it joins the N1. The N12 links to the N1 to the south of Beaufort West and connects to Oudtshoorn, George, the Southern Cape and the N2. This is a national route but is currently not a national road, and as such not maintained by SANRAL, but owned and maintained by the Province. There is no known road planning that will directly affect the development.

An existing main railway line is located along the N12 and could be utilised to transport equipment to the site. Although the railway line is active, it must be accepted that all equipment might not be transported via rail, with the result that one or more of the other routes mentioned, will also be utilised. From a roads and traffic point of view, utilisation of the railway line should be considered.

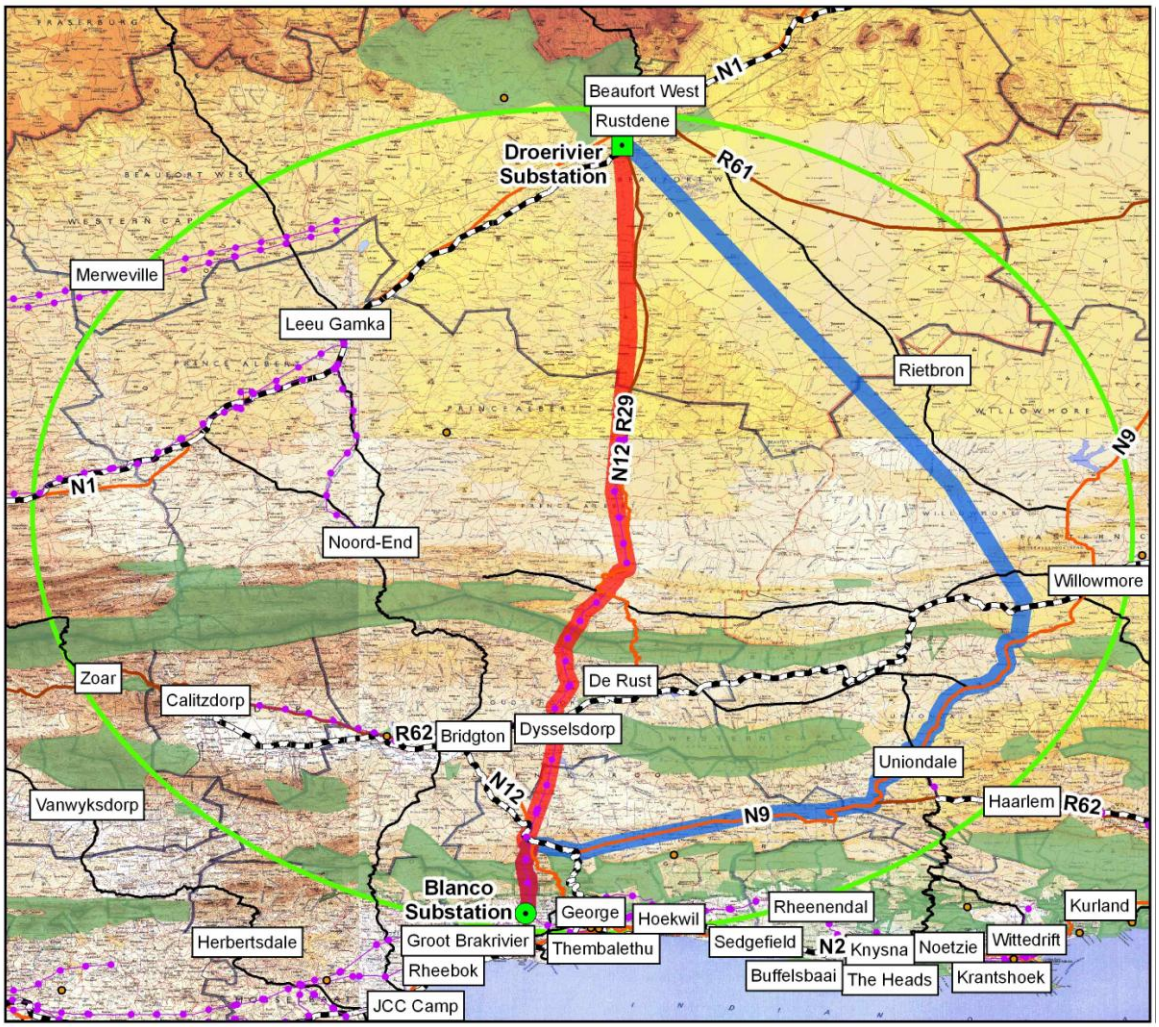

Figure 34. Location of main roads and Railways

4.2.3 Heritage features and Tourism

None of the Alternative of the project is not expected to impact directly on these properties, but may influence access during construction when local roads are used by heavy load vehicles. Heritage features practically also serve as tourist attractions.

South African Tourism has a domestic tourism campign “There’s nothing more fun than a Sho’t Left!” which is targeted to inspire South Africans to travel and explore locally.

The Koukamma Tourism area is characterised by two distinct regions which can be classified as the coastal belt (Tsitsikamma) and inland section (The Langkloof). The Inland section (the western area of the Langkloof in particular) is relevant to the Droerivier to Blanco project and and includes the Route 62 road network. The R62 joins with the N9 and continues on to the Little Karoo and Western Cape winelands. The Langkloof is the home of the fruit industry and seen as the second largest deciduous fruit producing area in South Africa after the Western Cape.

Cedar Tourism is situated on private land entirely surrounded by the Baviaanskloof World Heritage Site Nature Reserve. Access is given to hikes, waterfalls, rock art and other nature based activities. Tourism accommodation facilities include the Baviaanskloof Lodge, Damsedrif, Sederkloof, Baviaanskloof Uitspan (B&B and self catering accommodation as well as campsites with caravan access), Baviaanskloof Guest Cottages Baviaanskloof Accommodation (74 kilometres from Willowmore and 130 km from Patensie). The project will not impact directly on these facilities.

The first wool washery in South Africa was opened in **Klaarstroom** in 1874 by a Canadian, PJ Allport. It was designed and constructed by George Wallis, the architect who designed the Moederkerk in Oudtshoorn and built the Anglican churches in Willowmore, Oudtshoorn, Klaarstroom and Prince Albert. **Klaarstroom Guest House** is located 58km from Prince Albert, situated in the village of Klaarstroom at the northern entrance to Meiringspoort. This tourist facility is a Victorian house. The 2014 movie “Faan se Trein” was filmed in Klaarstroom. At the farm Vrolikheid, between Klaarstroom and Willowmore witblitz is distilled. Klaarstroom **Anglo-Boer War graves** of Corporal Boyd and Trooper Hirschford in the Anglican graveyard at The Church of the Good Shepherd. Houses of the town have Victorian architecture and the police station dates from 1880. The most prominent heritage features are located in the town of **Klaarstroom**, close to the Alternative 1 alignment. The project (Alternative 1) will not impact directly on the town but might provide temporary employment to residents of the area.

Figure 35. Old World character of the town Klaarstroom (Alternative 1)

Prince Albert's Dutch Reformed Church was completed in 1865 with the bell and clock, both imported from London, installed in 1878. During the Boer War the British forces used the church tower as a look-out. The corners of the wall surrounding the church and the spikes on the fence have been designed to match the church building.

The **Fransie Pienaar Museum at Prince Albert** was originally the home of the owner of the Swartberg Hotel in 1906 and then a hospital from 1954 to 1978 before it became a museum. To help raise funds, the museum distills their own witblitz. Gold was discovered in Prince Albert in 1870. A second find in 1891 started a gold rush that saw approximately 500 people rushing to stake their claim when the clock struck midnight on the 4th of August 1891. The Swartberg Hotel has a vine in the garden at the back that is said to be over 100 years old.

Heritage features of the town of **Prince Albert** include the lei water system, and many of the buildings in Prince Albert have the town's unique gable, known as the **Prince Albert Gable**. These gables date from 1840 to 1860 and were mostly built by Carel Lotz who came from Tulbagh. There used to be five watermills in the district, but only one remains in working order. It was built in 1850 and operated until 1972.

Photo http://www.princealbert.org.za/

Figure 36. Lei water system still in use at Prince Albert

The coloured communities of **Rooikamp, Nuwerus, Die Bos and Albertsplaas** that once existed in Prince Albert were removed in terms of the Group Areas Act and residents of these communities had to move to North-End township in 1962. In many cases, the houses were demolished along with possessions of inhabitants. Livestock were also removed. This has been

depicted by artist Christine Thomas, whose paintings in her “Die Verlede en Hede” collection can be seen at the Fransie Pienaar Museum. Guided tours of the remnants of the Rooikamp and Nuwerus neighbourhoods can also be arranged at the museum.

The **Jans Rautenbach Schouwburg** was originally the outhouse for the home belonging to the parents of artist Gawie Beukes in the late 1800s. The first movies in Prince Albert were shown here and, being silent movies, Gawie used to provide the piano accompaniment. The Showroom Theatre, a beautiful art-deco building, was originally a car showroom. It now shows art movies and hosts performing artists.

The **graveyard in Bank Street** is the oldest one in Prince Albert. Although the church has a record of who is buried there, there are no headstones on most of the graves – they were crafted from wood and have perished over time

At **Rietbron, B&B facilities** include the Blydefontein Tent Camp (25km from Rietbron towards Willowmore, Prutkraal (on the Prince Albert Road), Soetendalspoort Jaghuis (55km from Rietbron and 46 km from Willowmore, 10km from Vondeling), Vleikuil B&B, and the Camdeboo Angora Boerdery, a working farm (22km from Rietbron towards Willowmore).

Die Letterhuis is located 35km from Prince Albert on the R407 to Meiringspoort. This is a much painted and photographed historic cottage featuring a collection of calligraphy, letters and words. The house is located on the Old Bloemendal Farm, also known as Aswater, which is a working farm and which also offers B&B.

Photo: http://letterhuis.wix.com/letterhuis#!gallery/zoom/c6gm/i6kxa

Figure 37. On the property of Die Letterhuis

Keurfontein Country House is situated on the N9 between Willowmore and Uniondale. The house is a historic building with Victorian furniture. . The project will not impact directly on this property but the N9 may be impated upon during construction when heavy load vehicles transport materials.

The **Willow Historical Guest House** is a historic building with Victorian furniture at Willowmore, featuring antique furniture and local artifacts. In 1856, Frederick Lehmkuhl visited the area and the town of Willowmore was built in 1864.The town provided a stopover between the Great Karoo and the coast and the Dutch Reformed Church built a rectory in Wehmeyer Street. This building later served as a girls' hostel.

The **Baviaanskloof** was declared a World Heritage Site in 2004. The kloof is located between Willowmore and Patensie. The narrow valley of the Baviaanskloof is approximately 200 kilometers in length and bounded by two mountain ranges: the Baviaanskloof Mountains on the north and the Kouga mountains on the south side. . The project will not impact directly on this Heritage site.

Willowmore's former jail, the **Old Gaol** has been lrestored and renovated and is now used as B&B and art gallery. Registered by the Government in 1895, the building is built of stone, the walls being half a metre thick with plaster "quions" (corners) on the windows, doors and wall corners. The Old Gaol, as it was then called, comprised a hospital cell, hard labour cells, awaiting trial cells, a female cell and kitchen cell. It ceased to operate as a prison and police station around 1960 and was sold to private owners. It remained uninhabited for almost 12 years until its present owners took possession and began transforming it into a boutique guest establishment. The cells and exercise areas have been converted into rooms with modern amenities. The "Hospital Suite" Originally housed sick inmates, And The Woman's Room was once used exclusively for female inmates. The Remand Room was the cell used for prisoners awaiting trial. The project will not impact directly on this property.

Figure 38. The Old Goal (Alternative 2) *Photo: www.thegreatkaroo.com*

Kredouw Farm (Coratina Guest Cottage & Manzanilla Mountain Cottages) is located at the foot of the Kredouw Pass in the exquisite Prince Albert Valley on the R407, between Klaarstroom and Prince Albert (25km from Prince Albert). on Kredouw Farm

Scheepersrus Farm House is located 38km from Prince Albert, 15km from Klaarstroom and 38km from De Rust. It offers accommodation, fishing, hiking, 4x4 and bird watching.

Bergwater Guest House is a 200 year-old restored farmhouse and is located 20 km outside Prince Albert on the R407 in the direction of Bergwater Cellars, Meiringspoort, De Rust and Oudtshoorn.

Angeliersbosch Guesthouse is a self-catering guesthouse situated in the Prince Albert Valley. The farm offers jogging, cycling and walking, vineyards and mountains

.

Carouspoort Private Game Reserve is situated 35 km east of Prince Albert. The reserve offers serviced, self-catering accommodation.

Tortoiseback Organic Farm is situated 40km from Prince Albert and offers accommodation in a historic Karoo farmhouse.

"Oppieplaas" self-catering cottage is located 10km from Prince Albert on the road to Klaarstroom, at the start of the Prince Albert Valley. "Oppieplaas" had its origin as a labourer-house that has been restored, and offers hiking and bird watching.

Weltevrede Fig and Guest is a working farm growing Adam's figs and citrus fruit and is located 25 km from Prince Albert in the Weltevrede Valley. The original farmhouses date from early 1800's and features Bushmen paintings within 200m from the house.

Grootwaterval Farm near Prince Albert offers accommodation, hiking & horse trails, star-gazing and features a natural spring water dam.

Meiringspoort was built between 1856 and 1858 it was regularly closed due to flash floods and after the floods of 1998 the road was reconstructed at a cost of R70 million. An info centre is located at the waterfall. A path was constructed into the kranz which in the 1920's so that the Prince of Wales, later the Duke of Windsor, could walk up to see "the bottomless pool where the mermaid dwells".

Figure 39. Fountain and pool in Meiringspoort (east of Alternative 1)

Abrahamskraal Farm Lodge is a historic farmhouse located 10km from Leeu Gamka and 34km from Prince Albert. Abrahamskraal is a working farm and offers hiking trails, bird watching and mountain biking, hot air balloon flights and night drives.

Wolvekraal Guesthouse is situated 7km from Prince Albert on the R407 towards Prince Albert Road and offers accommodation in a cottage situated on a commercial sheep farm. Wolvekraal Guest Farm has been selected as one of the Top 100 Establishments in the TravelGround Awards 2015. Wolvekraal Guest Farm has been selected as the Top Establishment in Prince Albert.

Oude Kloof Estate and Guesthouse is located 7.4km east from Prince Albert. The Oudekloof Guesthouse is situated In Prince Albert Game Park, 6 km east of Prince Albert, The area is known as location for the critically endangered Riverine Rabbit) and the rare insect Ant Lions. The homestead (1889) has an original working Bolinder Wood Stove and the facility offers mountain biking (in Prince Albert Game Park), canoeing, game drives and bird watching.

Figure 40. Oude Kloof Historic Homestead (Alternative 1)

Uniondale is situated at the start of the **Route 62** and adjacent to the Langkloof that is known for it's fruit as well as indigenous flora farms. Uniondale is linked to the coast (85 km away) by the **Prince Alfred's Pass.**

Uniondale came about by the joining of two towns Hopedale and Lyon in 1856. During the Anglo Boer War, Uniondale was protected by six **British forts**, of which one has been restored to its original state. A memorial has also been erected and opened during December 2003 at the scene of one of the battles.

Uniondale's watermill, with the largest wheel in South Africa, was built in 1854 and has recently been restored. It now houses an art gallery and the "Watermeul" restaurant.

Witteberghoek self-catering guesthouse, is situated in the Langkloof on a working farm overlooking the Witteberge. The farm is owned by the Strydom family and has a rich history that stretches back over 100 years. Witteberghoek offers accommodation, walking trails, bird watching, horse riding, mountain biking,a cave, fishing and swimming. When in season, produce can be purchased directly from the farm, this may include apples, apricots, nectarines, prunes, pomegranates and pears. The farm also produces a range of bottled water, energy drinks, flavoured water and honey bush tea.

4.2.4 New developments

Solar Power Plant (Droërivier Solar Power Plant (Pty) Ltd.

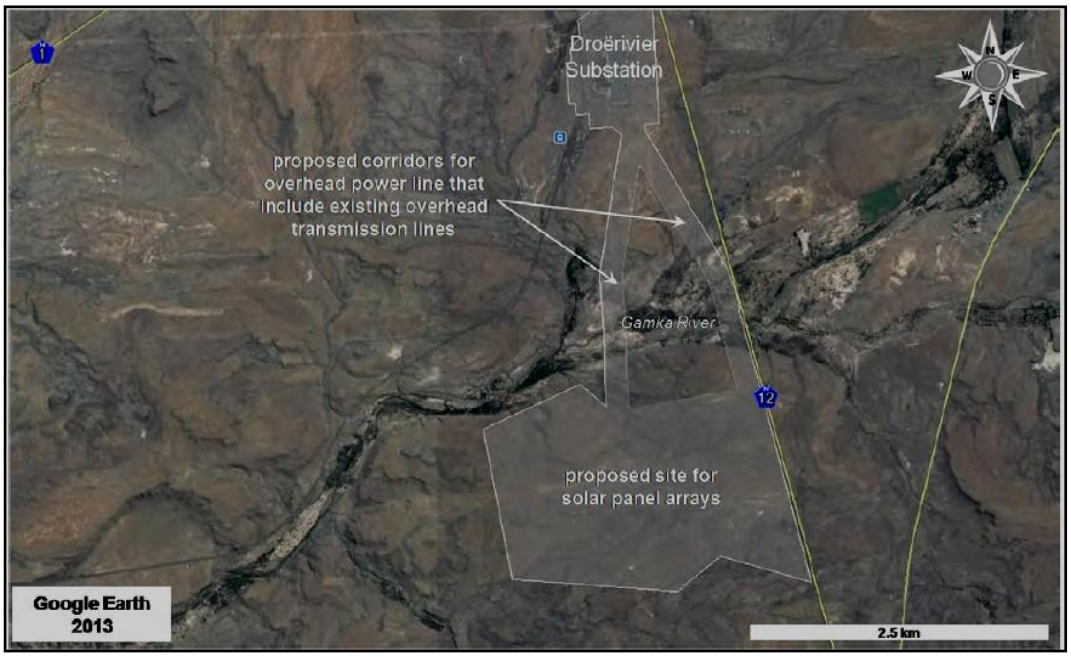

Figure 41. Proposed Solar Farm to the south of Droerivier Substation

Portion 10 of Farm 170 Weltevreden and Portion 55 of Farm 168 Steenrotsfoutain, 1295ha is extent located approximately 7km south-west of the town of Beaufort West, directly west and adjacent to the N12 provincial highway. The proposed solar development site is situated direct adjacent to and west of the N12 Provincial Road, approximately 3km south of the existing Eskom Droërivier Substation. DEA Reference: 14/12/16/3/3/2/715

Wind Farm (Mainstream RP)

Alternative 1 will encroach on Mainstream RP's existing Wind Farm development in the Beaufort West area, and will result in approximately 42 of their turbines being affected.

Environmental Authorisation has been given for this project (DEA reference No. 12/12/20/1784/AM1) Discussions were held during the PPP, followed up with e-mail correspondence and a meeting with representatives from Mainstream and Eskom on 29 May 2015 at Megawatt Park.

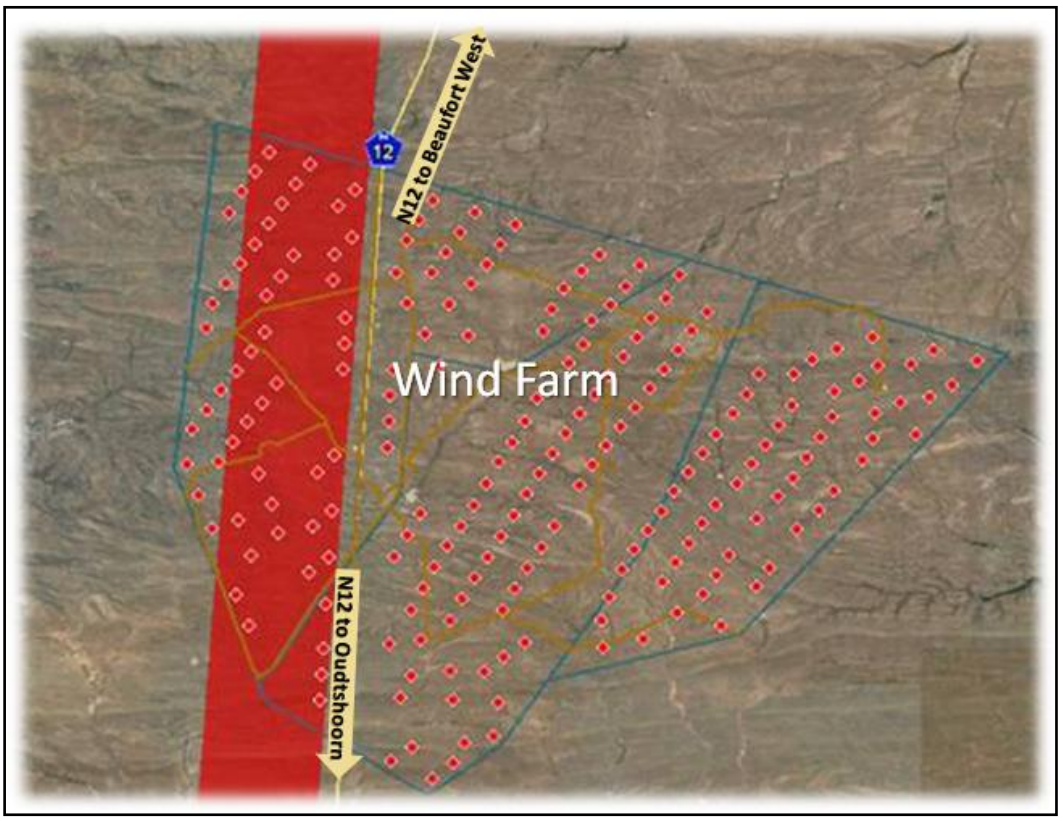

Figure 42. Wind farm Layout

4.2.5 Farming

The majority of farms of Alternative 1 and 2 of the proposed line between Blanco and Droerivier area are located within a sheep farming agricultural region of the Central Karoo. Cultivation is limited because of the severe climate and soil conditions, and viable agricultural land use is limited to grazing of small stock or game. The project area Alternative 1 and 2 also includes fertile farmlands and timber plantations along the coastal plain, fruit orchards in the Langkloof and arid grazing areas in the Little Karoo.

The George area has an active, high-value **agricultural sector** including produce such as hops, vegetables, flowers and dairy products, and aquaculture. Although these activities may not create many jobs, they contribute significantly to local employment and earnings with steady land-reform efforts helping to reduce inequalities[6].

[6] *Second Review of the George IDP 2014-15*

Figure 43. Entrance of Game Farm Along the N12 (Alternative 1)

Figure 44. Dysselsdorp - Ostrich farm of Saag Jonker Group (Alternative 1)

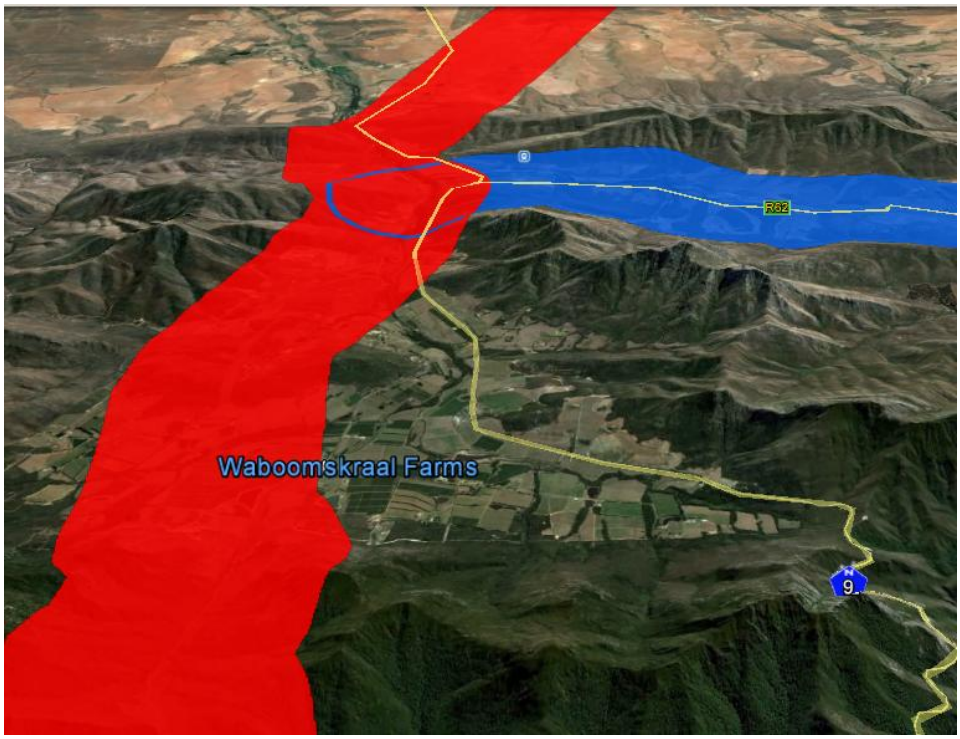

Figure 45. Farms along Alternative 1

Figure 46. Existing Power lines at the Waboomskraal Farm dam (Alternative 1)

Figure 47. Waboomskraal Farming Activities (Alternative 1)

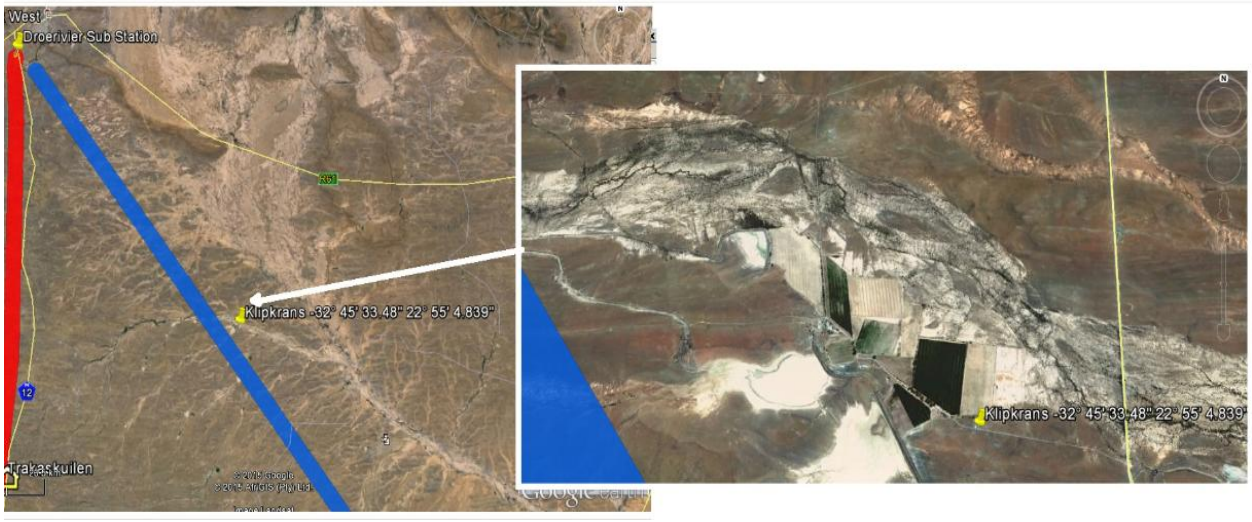

Figure 48. Klipkrans Farming Activities (Alternative 2)

5 DISCUSSION OF POSSIBLE IMPACTS

This summary is presented for typical land use impacts that are associated with electricity infrastructure projects, as applied to the study area.

The construction process of a transmission line is split between various teams along the proposed alignment. There will thus be different teams working at different points along the line undertaking different activities at each point. Each of these activities are of a relatively short duration and the negative intrusion impacts on the daily living and movement patterns of property owners are thus deemed to be of a low to moderate significance. More severe impacts can be expected where the alignment would be in close proximity to the dwellings and/or homesteads of the affected farms. Due to the vastness of the study area and size of the farms, it is however possible that the negative impacts in this regard can be mitigated.

Where limited public and farm access routes exist, additional access roads would thus have to be constructed. Internal farm roads have been created at great costs for the farmers and were not designed to accommodate heavy construction vehicles. The main negative impact associated with the movement of the construction vehicles is the temporary access roads that would have to be created to enable the vehicles to access the actual construction areas. Heavy vehicles transporting the pylons could thus result in increased risk of accidents, dust creation, degradation of local roads and possible erosion. As this would result in severe negative intrusions on the private properties and possible environmental degradation (e.g. damage to veld and erosion), an intensive consultation process with property owners during the negotiation phase and prior to the construction of these roads would be critical. Property owners could provide valuable information with regards to the sensitivities of their land and the best routes for the access roads.

Existing Eskom access roads (for the distribution lines) are said to already create erosion (e.g. animals walking along these tracks creating permanent unwanted paths). With the limited roads and road infrastructure currently present in the study area, and the existing experience with Eskom's access roads, such heavy construction vehicle movement and new access roads, whether temporary or permanent could result in severe negative impacts on previously unspoilt areas and could create further erosion problems.

At this stage a limited impact on existing infrastructure and services are anticipated during the construction phase. Existing road crossings are limited and are expected to successfully respond to project management and mitigation measures. Care should further be taken to avoid placing towers within the water furrows made by property owners.

The property owners of the some of the farms have indicated that new centre pivot irrigation systems would be initiated. The line alignment should thus take this in consideration and should avoid having any impact on such possible farming activities and infrastructure

Maintenance activities would be undertaken only when required for the life of the line. It is not anticipated that this would have severe negative intrusions on the landowners, mainly due to the size of the affected properties (lines could be situated far away from homesteads and other dwellings) and the fact that stock farming activities such as grazing could continue underneath

the proposed line and within the servitude. However, some typical complaints regarding the maintenance of power lines include the following:

- The need for additional access routes which could result in erosion, intrusion, loss of land and so forth;
- Maintenance personnel leaving gates open;
- Maintenance personnel driving on private roads;
- Maintenance personnel driving through the veld;
- Littering;
- Maintenance personnel accessing properties without prior notification (disruptive in terms of daily living and movement patterns as property owners would not be able to anticipate the movement through their farms); and
- Illegal capturing or poaching of game and other livestock and theft of plants.

The effects of misconduct such as those mentioned above could result in long-term secondary negative impacts with possible negative financial implications for farmers and damage to the environment. For the maintenance activities of the line, proper conduct and mitigation measures could address the possible negative impacts.

Operations at the substation are anticipated to be of a low input and are thus not expected to negatively impact on the daily living and movement patterns of the affected residents. It is anticipated that the existing status quo at the substation would continue.

The rural landscape is predominantly agriculturally orientated and consists of large grazing areas as well as cultivated fields. Typical agricultural activities undertaken in the study area refer to sheep (Merino, Dorper and Van Rooy) and Angora goat farming, cattle farming, hunting, lucern production and limited crop production (vegetables).

During the construction phase, the possibility of stock losses due to theft and/or poaching, increase in noise and the actual construction activities placing stress on the animals, would remain of concern. Livestock should thus be moved away from the construction activities and/or be fenced off. This could intrude on the implementation of the rotational grazing system used by farmers.

On various properties in the study area, the farmers created artificial water berms to assist in trapping surface water for short periods of time. This system thus creates small stock watering dams, and assists with reducing the rate of the surface water runoff. The shallow groundwater systems are refilled when the surface waters are pooled. Due to the arable land, the farmers' are dependent on these systems, in addition to the groundwater for their subsistence, livestock and irrigation needs. It is important to avoid negatively impacting on the water berms with the tower footprints and/or servitude alignment. The maximum distance between towers for a 400 kV transmission line varies from 350 metres to 400 metres and it might thus be possible to span these berms.

As sheep farming can be seen as the main agricultural activity in the study area, the impact of the transmission line and towers, once operational, on the land-use would be limited. Farming

of sheep could continue undisturbed as the animals are allowed within the servitude. Should possible negative impacts occur in this regard, the study area lends itself to mitigation through re-routing of the alignments in such areas.

With regards to the extension of the footprint of the Droërivier substation site it should be noted that agricultural activities in the area surrounding the substation footprint seized when the original substation was built. The extension of the substation falls within the boundaries of the substation area. No additional negative impacts on the existing land-use in this regard are thus foreseen.

The Karoo National Park, which is situated in the Nuweveld Mountains, west of Beaufort West, provides elevated vantage points and has views to the study area. The privately owned Steenbokkie Nature Reserve is located 7 km east of Beaufort and is in close proximity to various existing transmission lines. The Karoo National Park and the Steenbokkie Private Nature reserve may be visually impacted upon by the Blanco to Droerivier project.

The Gondwana Private Game Reserve and Nyaru Reserve are two of the areas that could be impacted upon negatively, mostly due to the visual intrusion in natural areas. Construction activities in nature reserves would lead to a disturbance of plants and animals, and would have a negative socio-economical impact when tourists have to be inconvenienced. Dust and noise as well as traffic on local roads are additional negative impacts during construction and maintenances.

The impact of the proposed transmission lines on the tourism industry is expected to be limited, other than from the visual impact in the context of the “sense of place. Results from the visual impact study can be used to limit impacts. The proposed power line will add anthropogenic structures to a landscape that is predominantly natural. It will impact on the character of the landscape and influence the value of the visual resource. Within this landscape type, many game farms and private reserves are tourist attractions and cater for luxury outdoor activities and experiences. Tourists will be affected because they’ll enter the study area through the local road network and visit these tourist attractions. Robinson Pass (R328) connects Oudtshoorn to Mossel Bay and is considered as one of the major transport routes. Potential impacts such as visibility from the N1, N9 and N12 Highways are expected. Other observers in this landscape type will be the local farm residents.

6 SUMMARY OF IMPACTS

The most important issues that have been identified can be categorised into the following:

- Visual impact on land use such as Tourism, farms, Eco estates
- Disturbance of the land use of Nature Reserves and natural areas (bird habitat)
- Disturbance of of land use activities during maintenance and rehabilitation
- The occurrence of exiting lines on land used for farming, and the possible future loss of farming infrastructure and land, disturbance of current activities (e.g. pivot points)
- The impact on heritage features such as graves, buildings and artefact (such as stone age tools, fossils, khoi-san paintings, etc) should be avoided.

The Alternatives have been prioritised in terms of the expected impacts on land use in the study area. As the lines for both the Blanco to Droerivier and the Gourikwa to Blanco projects are of considerable length and transverse areas that are not uniform in land use features, the tables below serve only as a guideline and not as a scientific measurement.

Priority Rating of Alternatives for Blanco to Droerivier 400KV line			
Land use	**Alternative 1**	**Alternative 2**	**Alternative 3**
Agriculture	10	30	20
Heritage & Tourism	20	10	33
Natural Areas	20	10	30
Residential	30	20	10
TOTAL (lowest score = best option)	80	70	93

Priority Rating of Alternatives for Blanco to Droerivier 400KV line		
Land use	**Alternative 1**	**Alternative 2**
Agriculture	10	20
Heritage & Tourism	10	20
Natural Areas	20	10
Residential	10	20
TOTAL (lowest score = best option)	50	70

Specialists should investigate these particular issues in more detail during the EIA Phase, and include reference to the issues raised by the public and stakeholders during this Scoping Phase.

APPENDIX A – MAPS OF AFFECTED FARMS (NOT SHOWING PORTIONS)

Figure 49. Blanco to Droërivier Alternative 1 Farms

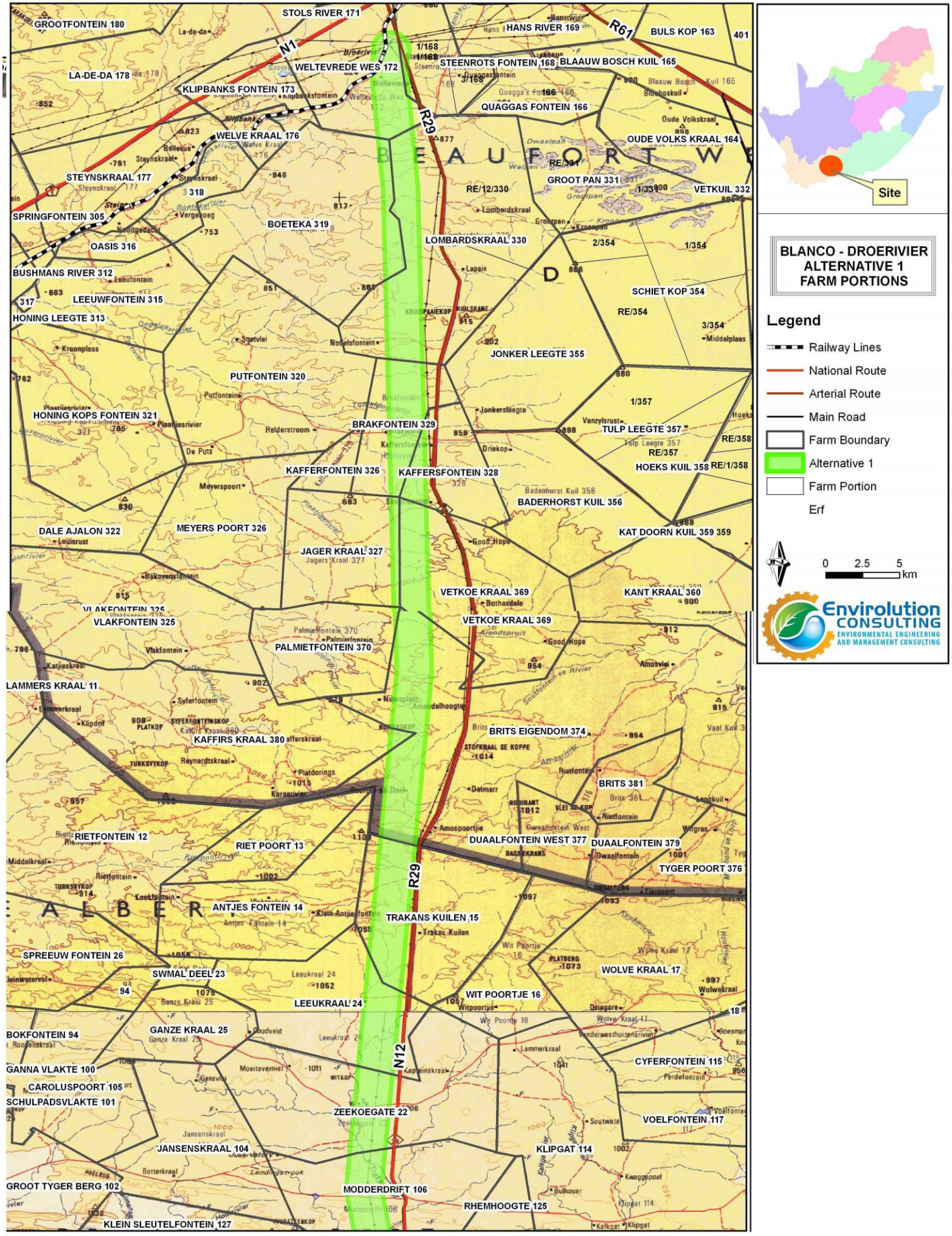

Figure 50. Blanco to Droërivier Alternative 2 Farms

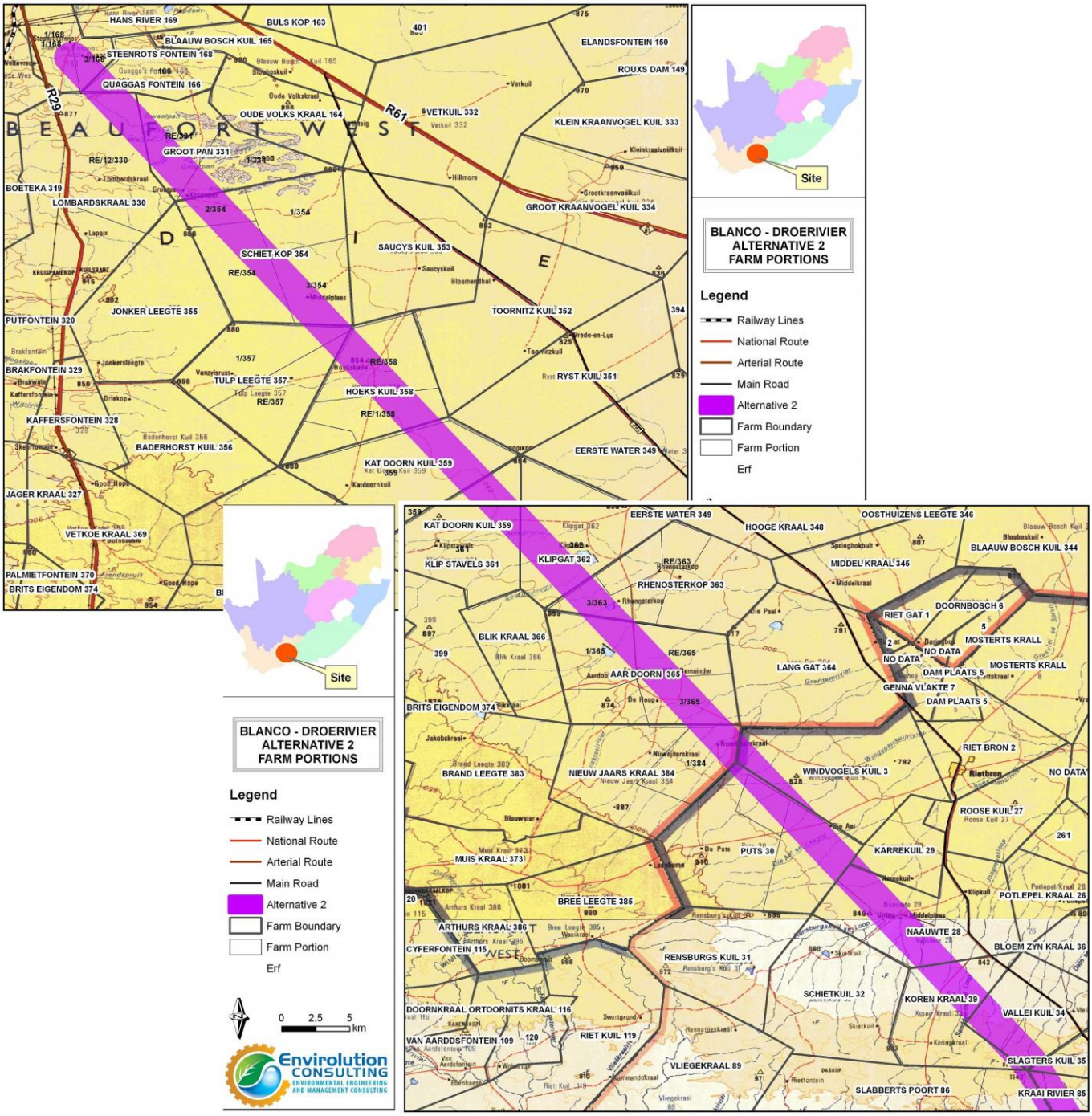

Figure 51. Gourikwa Blanco Alternative 1, 2 and 3 Farms

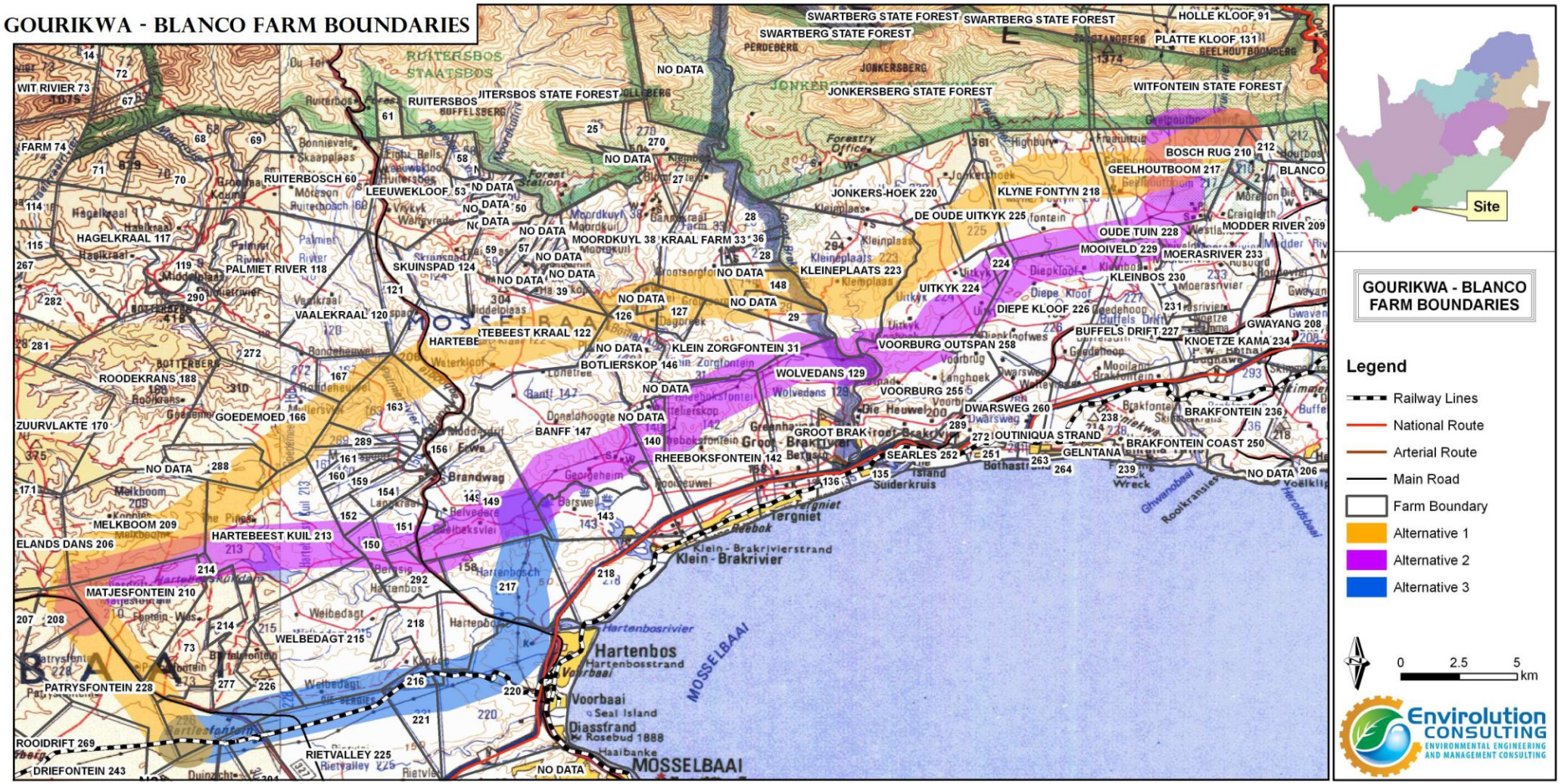

Figure 52. Mountain Passes