ESKOM HOLDINGS SOC LTD

ESKOM DISTRIBUTION NORTHERN CAPE OPERATING UNIT

APPLICATION FOR AMENDMENT OF ENVIRONMENTAL AUTHORISATION

ESKOM BOICHOKO SUBSTATION AND ASSOCIATED 132 KV OVERHEAD POWER LINE

POSTMASBURG, NORTHERN CAPE

DRAFT

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DEA REF NUMBER: 14/12/16/3/3/1/1504/AM2

SUBMITTED FOR AUTHORISATION IN TERMS OF:

PART 2 OF CHAPTER 5 (REGULATION 31) OF THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014

PREPARED BY: EXM Advisory Services (Pty) Ltd

DATE: 3 May 2019

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Company Reg: 2014/189068/07

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ACRONYMS AND ABBREVIATIONS

	Definition
DEA	Department of Environmental Affairs
DMR	Department of Mineral Resources
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
Eskom	Eskom Holdings SOC Ltd
EXM	EXM Advisory Services Pty (Ltd)
GN	Government Notice
IAP	Interested and Affected Party
NEMA	National Environmental Management Act
SACNASP	South African Council for Natural & Scientific Professionals
SIOC	Sishen Iron Ore Company (Pty) Ltd

1. BACKGROUND AND INTRODUCTION

Eskom Holdings SOC Ltd (hereafter referred to as Eskom) was issued with an environmental authorisation (EA) on 23 May 2016 (authorisation registration number: 14/12/16/3/3/1/1504) to construct the Boichoko substation and the associated 132 kV distribution power line, which will span between the proposed Boichoko substation and the existing Kolomela (Kumba) and Vaalbos substations, near Postmasburg, Northern Cape Province. The site falls within the Tsantsabane Local Municipality.

The objective of the power line and substation is to strengthen the electricity supply to Kolomela Mine and the Tsantsabane Local Municipality. The development includes the construction of a 132 kV double circuit distribution power line, approximately 35 km in length and the Boichoko Substation covering an area of 100 x 100 m. Power line route A1 and Substation Alternative A were authorised by the Department of Environmental Affairs (DEA) (see Figure 1-1) in May 2016.

An amendment to the EA (14/12/16/3/3/1/1504/AM2) was issued to Eskom on 24 October 2018. The amendment served to make corrections to the original authorisation in terms of the affected properties as well as the co-ordinates of the starting point of the power line. Note that as part of the same amendment application, an application was made to amend a section of the power line route within Kolomela Mine, this was however not authorised by DEA due to the absence of a specialist Palaeontological Impact Assessment in line with the requirements of the South African Resources Agency (SAHRA).

The Sishen Iron Ore Company (Pty) Ltd (SIOC) currently undertakes mining operations at Kolomela Mine. A portion of the authorised power line includes the construction of a 132 kV power line to the existing Kolomela Substation, for the purpose of augmenting power supply to the mine. The authorised power line route crosses farms Strydfontein 614, Leeuwfontein 488 RE and Ploegfontein 487 which form part of Kolomela Mine. It has now become apparent that the route as authorised crosses an area of known ore bodies and is destined for future prospecting and possible mining activities at Kolomela Mine. Eskom thus wishes to amend a section (~21.3 km) of the power line on the SIOC owned farms Strydfontein 614, Leeuwfontein 488 RE and Pleogfontein 487, within Kolomela Mine.

Eskom has thus submitted a new application for the amendment of the route within Kolomela Mine, supported by a Phase 1 Paleontological Impact Assessment in line with the requirements of the National Heritage Resources Act as requested by SAHRA. The revised application however also includes the amendment to the route (as has been agreed with the affected landowners) where the authorised route crosses the Farm Kalkfontein 474, this to avoid impacts of the approved route on the activities in the farm. The revised route will run along the boundary of the Farm Soetfontein 606 and the Farm Kalkfontein 474 instead of transecting Kalkfontein.

The proposed revised route (Power line Route Alternative D1) is shown in Figure 1-2.

This report has been compiled in support of an application for amendment of the EA submitted in accordance with Section 31 (Part 2) of the Environmental Impact Assessment Regulations (GNR. 982 of 4 December 2014, as amended) for the proposed change in the alignment of the power line route Kolomela Mine and the Farm Kalkfontein 474.

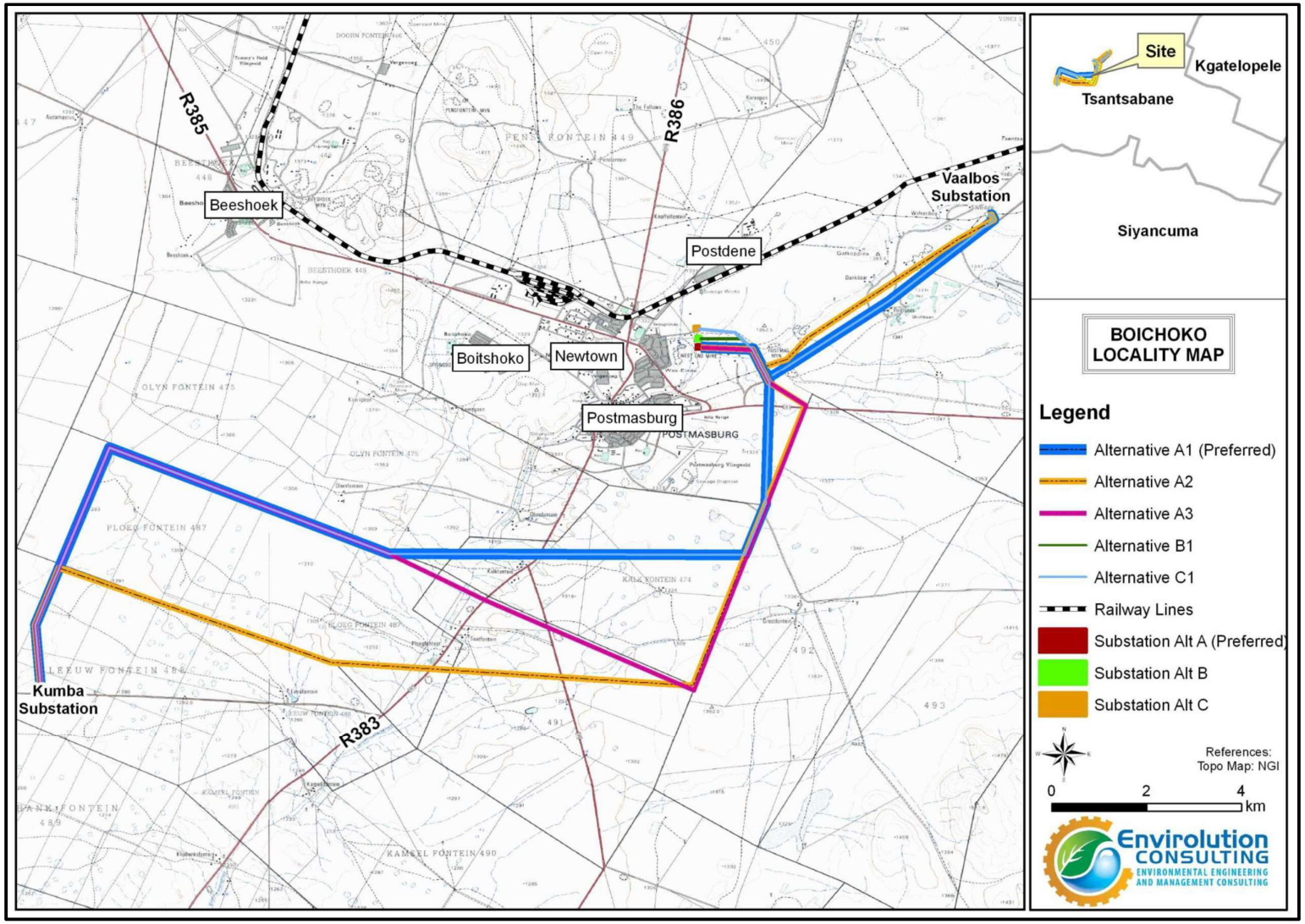

FIGURE 1-1: ORIGINAL APPROVED POWER LINE ROUTE A1 AND SUBSTATION ALTERNATIVE A1

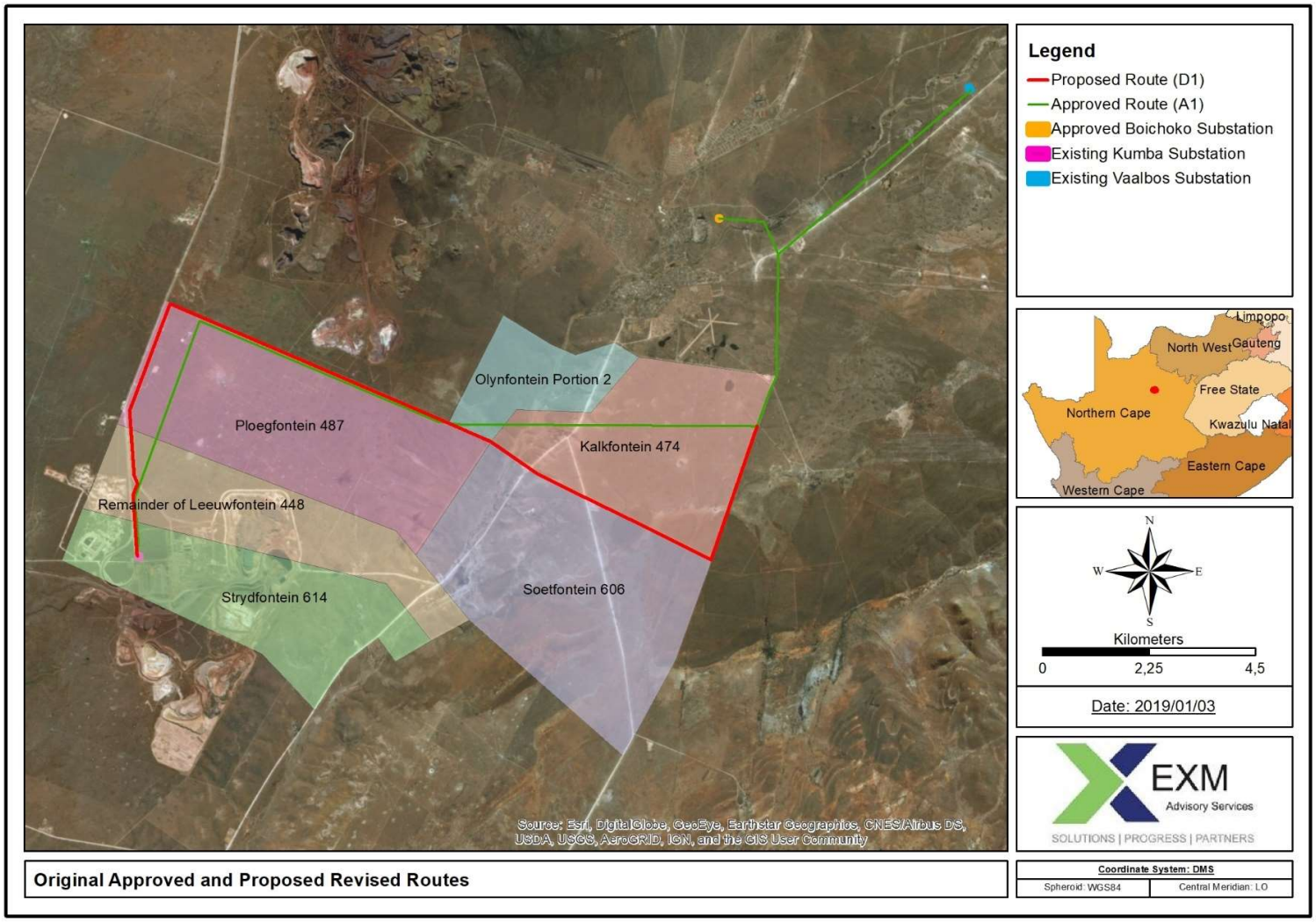

FIGURE 1-2:: PROPOSED AMENDMENT TO THE AUTHORISED POWER LINE ROUTE

2. APPLICATION DETAILS

Name of person to whom the environmental authorisation was issued:	Eskom Holdings SOC Ltd. Eskom Distribution Northern Cape Operating Unit		
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EAP Qualifications:	BSc Botany Honours		
EAP Registrations/Associations:	Registered as Professional Natural Scientist with the South African Council for Natural and Scientific Professionals (SACNASP) Registration Number: 400054/03		
Name of landowner if the person to whom the environmental authorisation has been issued is not the owner:	Leeuwfontein 488 - Sishen Iron Ore Company Ploegfontein 487 Sishen Iron Ore Company Strydfontein 614 - Sishen Iron Ore Company Soetfontein 606 - Albertus Viljoen Kalkfontein 474 - Dries Van Der Walt		
Contact person:	Jaco Lambrechts		
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	Private Bag X3003, Postmasburg, 8420		
	8420		
Telephone:	053 313 9139	Cell:	071 865 4530
E-mail:	jaco.lambrechts@angloamerican.com	Fax:	

3. DESCRIPTION OF THE AMENDED POWER LINE ROUTE

Eskom is authorised to construct the Boichoko substation and associated 132 kV distribution power line which will span between the proposed Boichoko substation and the existing Kolomela (Kumba) and Vaalbos substations, near Postmasburg, Northern Cape Province. Kolomela has identified that there are ore bodies in the area traversed by the authorised power line. In order to facilitate prospecting and future mining activities by SIOC on the Farm Ploegfontein 487 which forms part of Kolomela Mine, as well as to accommodate concerns from affected landowners, it is required that a portion of the authorised power line (Power line Route Alternative A1) be re-routed (Power line Route D1), see Figure 3-1.

The amendment of Section F - G will move the powerline approximately 85 m north of the original approved route. The proposed revised location lies approximately 25 m north of the Kolomela export water pipeline and approximately 12 m south of the mine boundary fence. Section C - F runs parallel to the export water pipeline and the access road to Kolomela Mine. The power line requires a servitude of 31 m in width in this section. This servitude will run adjacent to the Kolomela export water pipeline route.

Section A - C of the route is proposed to allow for the relocation of the line slightly to the west in order to accommodate the servitude for the existing 132 kV power line as well as the new line. A servitude of 52 m is required for the two power lines in Section 'start' - C and the lines need to be at least 21 m apart.

Section G - I will move the approved route south in order to avoid crossing the farm Kalkfontein 474. Points G – I are located on the farm Soetfontein 606. From point I – 4, the power line runs on the farm Kalkfontein 474, parallel to the farm fence line. At Point 4 the new proposed route (D1) meets with the original approved route (A1). After this point, the route follows the same path as originally approved (A1).

Note that the original authorisation (14/12/16/3/3/1/1504) did not allow for the power line to connect to the substation. Therefore, the 'start' point was changed (and is now correct) in the amended authorisation (14/12/16/3/3/1/1504/AM2) to allow for the proposed power line and existing substation to connect.

The co-ordinates of the authorised route (Route Alternative A1) and the proposed amended route (Route Alternative D1) are given in Table 3-1 and 3-2, respectively. Note: bending Points indicated in the tables correspond to the letters and numbers as shown on Figures 3-1 and 3-2.

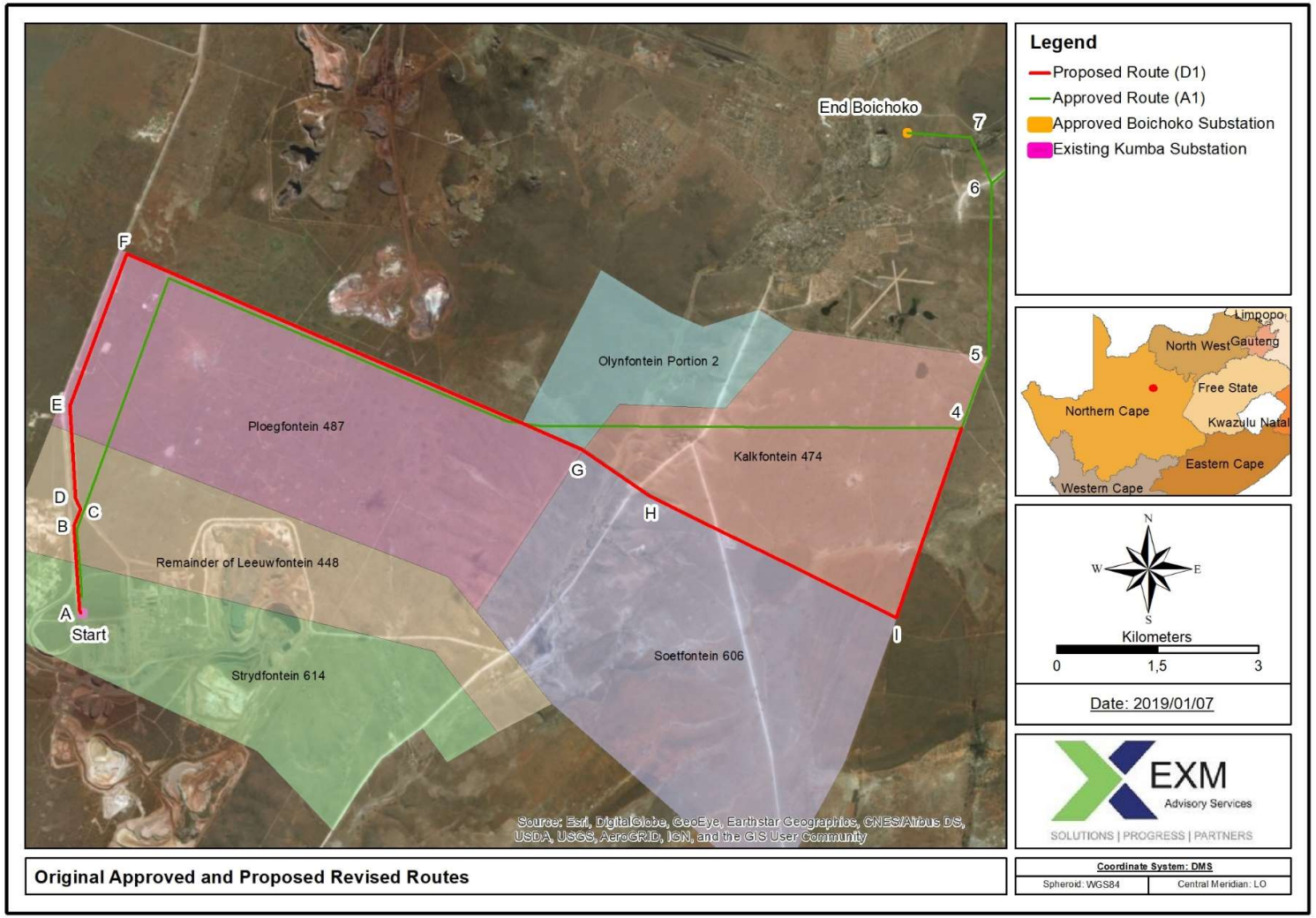


FIGURE 3-1: DETAILS OF AMENDED ROUTING OF THE 132 KV POWER LINE AT KOLOMELA

TABLE 3-1: CO-ORDINATES OF THE PROPOSED ROUTE ALTERNATIVE D1 (CHANGES INDICATED IN BOLD)

Point	Latitude	Longitude
Start Point (Existing Kumba Substation)	28°22'59.83"S	22°57'20.57"E
Bending Point A	**28°22'58.65"S**	**22°57'20.03"E**
Bending Point B	**28°22'17.68"S**	**22°57'16.99"E**
Bending Point C	**28°22'9.06"S**	**22°57'20.63"E**
Bending Point D	**28°22'4.48"S**	**22°57'18.08"E**
Bending Point E	**28°21'19.65"S**	**22°57'14.72"E**
Bending Point F	**28°20'5.99"S**	**22°57'46.09"E**
Bending Point G	**28°21'40.79"S**	**23° 1'55.35"E**
Bending Point H	**28°22'1.35"S**	**23° 2'33.80"E**
Bending Point I	**28°23'0.80"S**	**23° 4'47.30"E**
Bending Point 4	28°21'29.57"S	23° 1'32.12"E
Bending Point 5	28°21'30.30"S	23° 5'21.85"E
Bending Point 6	28°20'56.11"S	23° 5'38.04"E
Bending Point 7	28°19'31.90"S	23° 5'39.24"E
Bending Point 8	28°19'9.82"S	23° 5'27.87"E
End Point (New Boichoko Substation)	28°19'8.18"S	23° 5'1.27"E
End Point (Existing Vaalbos Substation)	28°17'38.56"S	23° 8'9.17"E

4. DETAILS OF THE PUBLIC PARTICIPATION PROCESS FOLLOWED

Public participation has been conducted in terms of Chapter 6 of the EIA Regulations, as amended (2014).

4.1 Identification of Interested and Affected Parties

The existing database used for the original application for EA (Envirolution Consulting, January 2016) was used for the purposes of identifying Interested and Affected Parties (IAPs). The databases were updated and expanded based on the existing data available for Kolomela Mine. New IAPs which registered as part of the first amendment process have also been added to the database.

In terms of the EIA Regulations the following were also identified as IAPs for the project:

- Landowners or tenants adjacent to or within 100 m from the proposed study area.
- Representatives of the local municipality/ward councillor with jurisdiction in the area.

  The office of the mayor of the Tsantsabane Local Municipality and the ZF Mgcawu District Municipality as well as the respective municipal managers have been included.
- Representatives of the local rate payers association.
- Authority or organ of state having jurisdiction in respect of any aspect of the activity.

  The following organs of state have been notified:

  - Department of Mineral Resources – Northern Cape
  - Department of Water and Sanitation – Northern Cape
  - Catchment Management Agency – Vaal Proto
  - Northern Cape Department of Environment and Nature Conservation
  - Office of the Premier – Northern Cape Provincial Government
  - Northern Cape Department of Land Reform and Rural Development
  - Northern Cape Department of Economic Development and Tourism
  - Northern Cape Department of Roads and Public Works
  - Northern Cape Department of Social Development
  - South African Heritage Resources Agency
- Persons who responded to posters or press advertisements (none to date).

A list of all parties that have been identified thus far is included as Appendix A1.

4.2 Notifications and Review of Draft Amendment Application Report

In accordance with Section 41(2)(b) of Chapter 6 of the EIA Regulations (GN. 982 of 4

December 2014, as amended), written notification (by email or facsimile) has been given to:

- IAPs
- Surrounding landowners;
- Representatives of local government and the local municipalities;
- Ratepayer's association; and
- Organs of state.

Note that written notification of the project was circulated together with the draft Amendment Application report. Proof of notification and the availability of the report for public and authority review is given in Appendix A2.

4.3 Media advertisements and Site Notices

A press advertisement was placed in the Kalahari Bulletin (Local Newspaper) in English on 11 April 2019 and in the Volksblad (Regional Newspaper) in Afrikaans on 10 April 2019. Site notices (A2 size) were placed (one in English and on in Afrikaans) at the entrance to Soetfontein Guesthouse on 18 April 2019 and at Kolomela Mine on 26 April 2019.

Notices (A4) were also placed at the Tsantsabane Municipal Offices, Post Office, Spar and Shoprite in Postmasburg on 18 April 2018.

Proof of placement of advertisements and site notices is included in Appendix A3.

4.4 Results of Public Consultation

DATE	NAME	CORRESPONDENCE RECEIVED	EAPs RESPONSE TO ISSUES AS MANDATED BY THE APPLICANT	CONSULTATION STATUS (consensus, dispute, not finalised, etc.)
AFFECTED PARTIES				
Landowners/Lawful Occupiers of Adjacent Properties No comments received yet.				
Local Authorities No comments received to date.				
Organs of state (Responsible for infrastructure that may be affected i.e. Roads Department, Eskom, Telkom, DWA etc.) No comments received yet.				
Traditional Leaders No comments received yet.				
Competent Authorities affected No comments received yet.				
INTERESTED PARTIES No comments received to date				

5. DESCRIPTION OF THE ENVIRONMENT AFFECTED BY THE AMENDMENT

5.1 Land Tenure and Land Use

Part of the amendment will take place within Kolomela Mine, within the mining right area (Mining Right No. MPT 50/2009 MR, NC 069 MR). Kolomela Mine is owned by The Sishen Iron Ore Company (Pty) Ltd, the holder of the mining right, and is also the owner of the land. Part of the amendment will take place on the farms Kalkfontein 474 and Soetfontein 606, which are privately owned. See Table 5-1 for property details.

TABLE 5-1: DESCRIPTION OF LAND TENURE AND USES ON AFFECTED PROPERTIES

Property	Owner	Current Land Use	Planned Additional Future Use
Ploegfontein 487	SIOC	Kolomela Mining Right area. Livestock grazing by SIOC. Linear infrastructure including access road, dewatering pipeline, railway, existing 132 kV power line.	Prospecting Authorised new Ploegfontein Mine Pits and associated infrastructure Potential expansion of pits and mining infrastructure
Leeuwfontein 488 RE	SIOC	Kolomela Mining Right area Leeuwfontein Mine Pit Leeuwfontein North Waste Rock Dump Linear infrastructure including access road, dewatering pipeline, railway, existing 132 kV power line. Kolomela substation Administration Offices, Ancillary Infrastructure, Processing Plant	Authorised new Tierbult Pit and associated infrastructure. Expansion of Leeuwfontein North Waste Rock Dump Potential expansion of pits and mining infrastructure
Strydfontein 614	SIOC	Kolomela Mining Right area Leeuwfontein Mine Pit Leeuwfontein North Waste Rock Dump Processing Plant, Stockpiles and Associated infrastructure.	No change in activities
Kalkfontein 474	Dries Van Der Walt	Livestock farming including game.	No change in activities
Soetfontein 606	Albertus Viljoen	Livestock farming Guesthouse	No change in activities

5.2 Natural Ecology

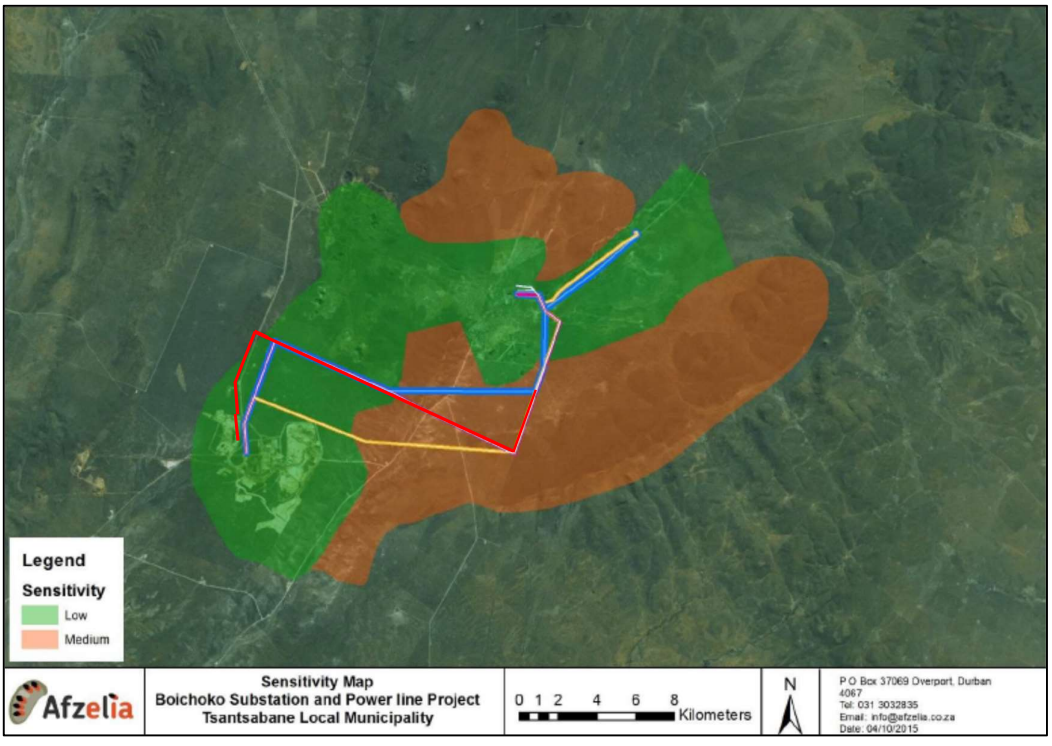
The entire section of the power line to be re-routed falls within the Postmasburg Thornveld Vegetation Type (Mucina & Rutherford, 2006).

5.2.1 Kolomela Mine

The section of the route within Kolomela Mine (i.e. the part that crosses the farms Leeuwfontein 488, Strydfontein 614, and Ploegfontein 487) falls within Camphor Bush

Bushveld (Anderson, 2004). This vegetation unit is characterised by large *Tarchonanthus camphoratus* shrubs and has a fairly well-developed grass layer. Key species of conservation importance that occur in the area include *Boscia albitrunca* and *Vachellia haematoxylon* which are protected under the National Forests Act (No. 84 of 1998). This section also falls within the shrubland habitat areas which support mammal species such as Yellow Mongoose, Ground Squirrel and Steenbok, which were all confirmed during a site visit undertaken on 10 April 2018. According to Harrison (October 2015), this habitat provides important corridors of natural vegetation, cover and foraging opportunities for many faunal species within a largely anthropogenically disturbed landscape.

The area in which the re-routed power line will be developed has been described by Harrison (October 2015) as having low sensitivity (see Figure 5-1). This is because of current and historic anthropogenic activities. Further to this, a series of gates and fences are located within the area, restricting the movement of various faunal species. According to Harrison (October 2015), the homogenous nature of the onsite vegetation and lack of significant ecological features within the study area indicates that the development could proceed with little risk of significant post-mitigation residual impact on protected faunal and floral species, provided that the proposed mitigation is enforced (Harrison, October 2015).



Source: Afzelia (October, 2015)

FIGURE 5-1: ECOLOGICAL SENSITIVITY MAP (AMENDED ROUTE SHOWN IN RED)

The avifauna of the region for the power line development was characterised by C. Widdows of Afzelia Environmental Consultants (November 2015) as part of the Basic Assessment for the original application for environmental authorisation. Widdows (November 2015) identified three bird species of conservation importance occurring in the area, namely Kori Bustard, Martial Eagle and Lanner Falcon as having been recorded in the greater area.

A total of 54 bird species have been recorded in the pentad (according to SABAP2) area which includes the power line within Kolomela Mine. Of importance are records of Ludwig's Bustard and Secretary Bird, which are species of conservation importance. Ludwig's Bustard (Endangered) and Kori Bustard (Near Threatened) are both susceptible to collisions with power lines as they are large low flying birds.

The original and the proposed new route, occur within the same vegetation and habitat type. However, a large section of the area proposed for the re-routing of the power line will occur in an area which has already been significantly disturbed due to the development of linear infrastructure including a pipeline, access road, railway link and boundary fire breaks at Kolomela Mine. The vegetation within this area is subjected to bush-clearing undertaken by Kolomela Mine for: control of invasive species (*Senegallia mellifera*), maintaining safety along the access road and to promote access to allow for the maintenance of the infrastructure. The servitude area required for the power line will thus not result in additional bush clearance in this area except for that required to place the support poles. The proposed new alternative route is expected to thus result in lower impacts on habitats than the original route.

	
Typical vegetation cover where line will run parallal to northern boundary fence at Kolomela Mine	**View of the proposed area for development of power line where it crosses the northern section of the farm Ploegfontein 487 at Kolomela Mine**
	
View of proposed area of development where the power line crosses the southern sections of the farm Ploegfontein 487	**View of proposed area for development of power line where amendment joins original route on the farm Leeuwfontein 488.**

PLATE 5-1: VIEWS OF AMENDED POWER LINE ROUTE D1 WHERE IT CROSSES KOLOMELA MINE

5.2.2 Kalkfontein Amendment

The vegetation does not differ substantially from that observed in the Kolomela section and fits the description of Camphor Bush Bushveld described by Anderson (2004) and Shrublands described by Harrison (2015), although there is a greater abundance of *Senegallia mellifera* (Black Thorn), particularly on rocky outcrops. The protected tree *Boscia albitrunca* (Shepherd's Tree) is also prevalent in the area. The Kalkfontein section of the line crosses the Groenwaterspruit, which is an extensive ephemeral drainage line, characterised by a wide flood plain with no distinct banks. This drainage area is the most significant in the region and provides an important corridor and habitat for fauna and flora and is considered by Harrison (October 2015) to be of moderate sensitivity (see Figure 5-1).

A rocky outcrop with an incised drainage channel flowing from west to east towards the Groenwaterspruit occurs near the proposed power line route on the farm Soetfontein. As indicated by Harrison (October 2015), such areas are considered to have moderate sensitivity due to their importance in providing microhabitats for plants, reptiles and mammals.

A total of 139 bird species have been recorded (SABAP2) within the pentad area which includes the Kalkfontein route. The high number can be attributed to permanent water bodies located on Soetfontein where there is a natural spring and an artificially water fed pan on Kalkfontein which support many species including water birds as well as several ephemeral drainage lines within the area. A total of 72 bird species were recorded during the site visit in November 2018.

Of importance are records of Kori Bustard (Near Threatened) and White-backed Vulture (Endangered) during SABAP2. Both these species of conservation importance are under threat from electrocutions and collisions with overhead power lines.

The proposed amended route (D1) through Kalkfontein is considered to have a lower potential impact on natural ecology than the approved route A1, as it will follow existing linear infrastructure in the form of farm fence lines and service roads, thus resulting in less additional barriers to animal movement than the existing approved line.

View of the Groenwaterspruit where the line along the fence line of the farm Kalkfontein on the left and Soetfontein on the right.

Typical vegetation along rocky ridge areas along the fence line of the the farm Klakfontein (right) and Soetfontein (left)

Drainage line crossing on the farm Kalfontein

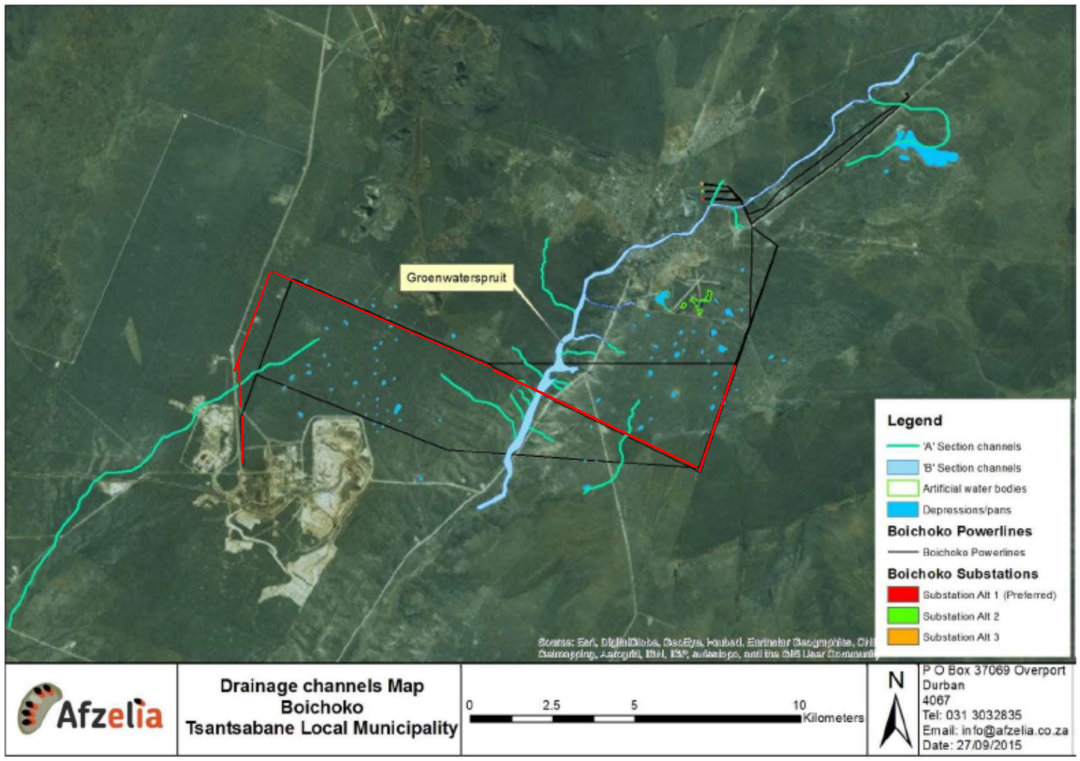
Typical vegetation on the planes areas of Klakfontien

PLATE 5-2: VIEWS OF AMENDED POWER LINE ROUTE D1 ALONG THE BOUNDARY OF KALKFONTEIN

5.3 Surface Water Resources

The drainage lines and wetlands identified by Harrison (October 2015) are shown in Figure 5-2. Harrison concluded that all depression/pan systems in the area were not categorised as wetland systems due to the lack of hydric soils and hydrophytic vegetation.

According to DWAF, 2005 (after Harrison, October 2015), A-section channels are those that do not have base flow regularly. At the site, these channels only flow briefly after a storm event and surface flow percolates through the apedal soils, quickly drying the channel (see Figure 5-2).



Source: Afzelia (October, 2015)

FIGURE 5-2: CHANNEL CLASSIFICATION IN THE PROJECT AREA (AMENDED ROUTE SHOWN IN RED)

'B' Section channels are in contact with the zone of saturation often enough to have vegetation associated with saturated conditions. They can be described as ephemeral in nature as flowing water only occurs during and for a short duration, after precipitation events in a typical year. Generally, ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for these channels and permanent pools do not occur. Run-off from rainfall is the primary source of water for stream flow. 'B' Section channels like the Groenwaterspruit are considered hydrologically sensitive as they are associated with riparian habitats.

5.3.1 Kolomela Mine

A wetland assessment has been undertaken for Kolomela Mine (Scientific Aquatic Services, January 2015). The study revealed that both wetland and terrestrial pans are prevalent on the farm Ploegfontein 487. Terrestrial pans are depressions, but do not fall into the definition of a wetland as they do not retain water long enough for the formation of hydromorphic soil that can support facultative floral species. Based on the findings of Scientific Aquatic Services (January 2015), wetland pans are in fact located along both the authorised and the proposed amended route (see Figure 5-3)

It is thus apparent that the original assessment failed to characterise some of the pans in the area of impact as wetland pans. Both the original and the revised routes will traverse wetland pans and one drainage line on the farm Ploegfontein 487.

The realignment however does not change the nature of this impact. The beds of the wetland pans should not be disturbed by the placement of supporting poles where possible. It will however not be possible to prevent the disturbance to these pans as the catchments of the pans cannot be avoided (see Figure 5-3).

The disturbance to wetland pans presents a water use in terms Section 21 of the National Water Act (No. 36 of 1998). As indicated by Harrison (October 2015) the Department of Water & Sanitation is to be consulted as to the authorisation of crossing of wetlands and watercourses.

5.3.2 Kalkfontein Amendment

Both the originally authorised route and the amendment will cross the Groenwaterspruit which is regarded as ecologically sensitive as it provides a biodiversity corridor within the area. Both the originally authorised route as well as the proposed amendment will also cross tributaries of the Groenwaterspruit which are regarded to have moderate ecological sensitivity. Drainage and wetland pans within the area is shown in Figure 5-4.

Of importance is an extensive drainage area flowing through the south eastern corner of Kalkfontein towards the Greoenwaterspruit at Soetfontein which would have biodiversity support function. The amended route requires the crossing of this drainage area at two points. Although the original route does not impact on this drainage system, it does dissect the panveld on Kalkfontein which too has an ecological support function. The function is enhanced by the existence of permanent water at the artificially fed pan on the farm which attracts a great diversity of bird species.

The fact that the revised route follows the existing barriers and disturbance created by the fence line and associated maintenance roads means that the power line will follow existing disturbances rather than create new disturbance to water resource areas that would be created by the original route.

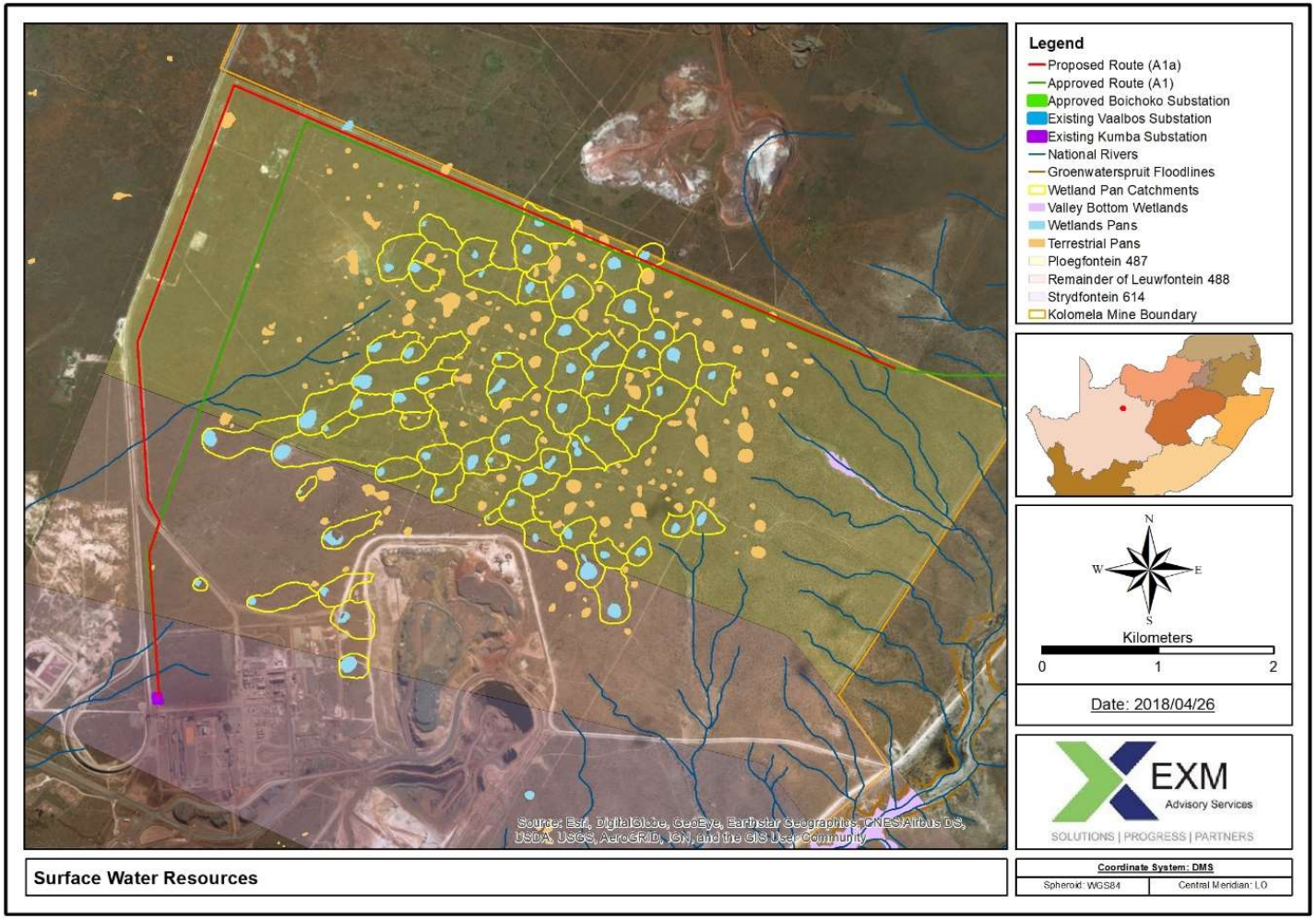


FIGURE 5-3: DRAINAGE LINES, TERRESTRIAL & WETLAND PANS LOCATED ALONG THE AUTHORISED AND AMENDED POWER LINE ROUTES WITHIN KOLOMELA MINE

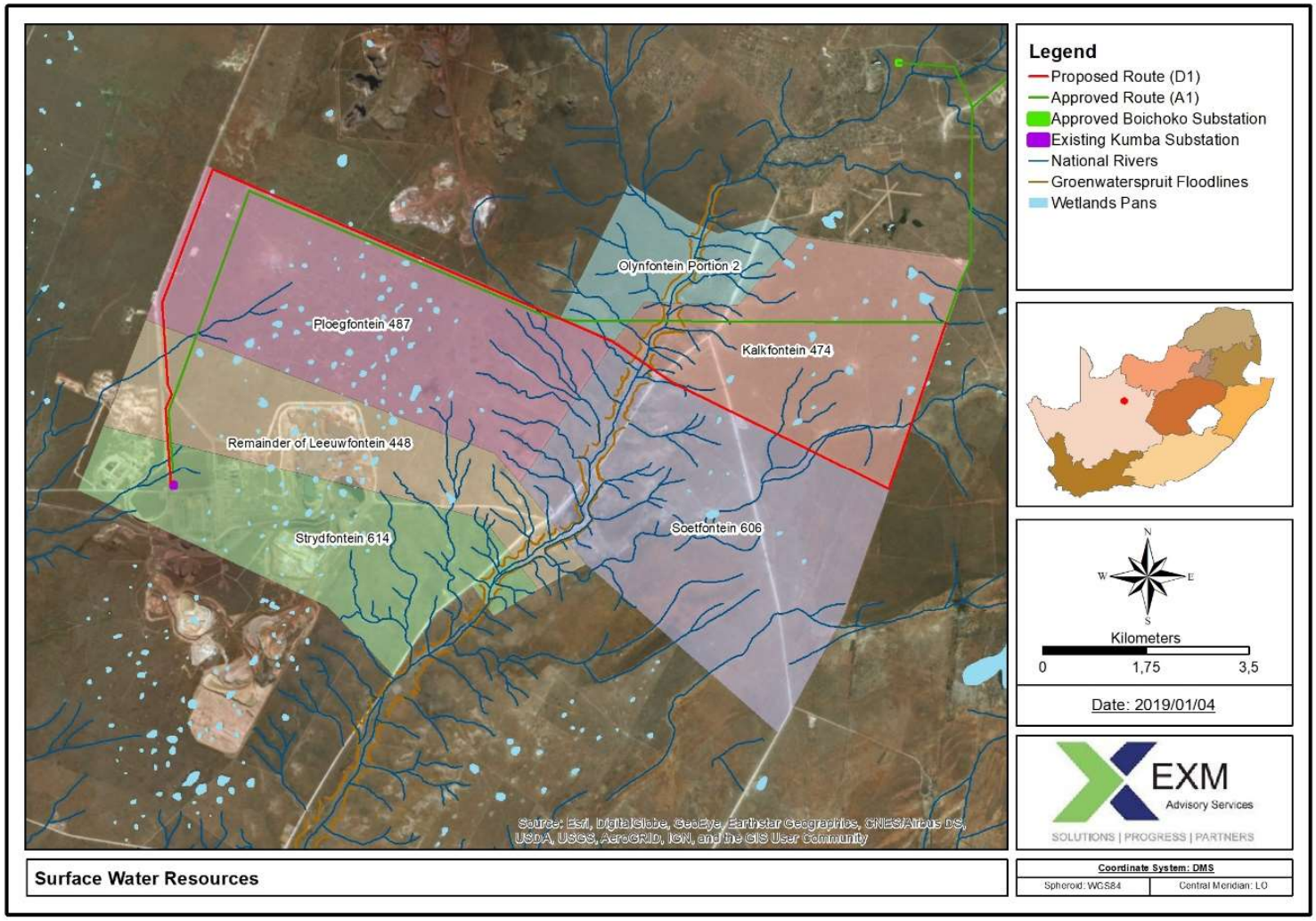


FIGURE 5-4: DRAINAGE LINES AND WETLAND PANS WITHIN THE AREA

5.4 Heritage Resources

A heritage impact assessment was undertaken by J A van Schalkwyk in October 2015 (see Appendix B2) as part of the specialist work undertaken in support of the original application for EA.

According to van Schalkwyk (October 2015), the area to be impacted on by the power line consists of a sparsely populated rural area in which human occupation is made up of limited (known) pre-colonial element (Stone Age) as well as a much later colonial (farmer) component. It has been determined that very low densities of Stone Age material occur sporadically over the region. In addition, there are a few sites of cultural significance dating to the historic period which occur sporadically all over the region.

A study undertaken by PGS Heritage (March 2015) identified Early and Middle Stone Age sites within small shallow pans along the eastern sections of the farm Ploegfontein 487 and Leeuwfontein 488 RE. These sites will not be affected by either the original proposed route or the proposed rerouting (originally assessed based on route A1a). No artefacts have been identified in the affected area.

An updated opinion was given by J A van Schalkwyk in November 2018 to access the impact of the proposed route D1. His review states that the region has a low presence of heritage sites and features and that the new alignment (route D1) would not lead to any impact on sites, features or objects of cultural heritage significance. The specialists' Heritage opinion is included as Appendix B2.

5.5 Palaeontological Resources

A Phase 1 Palaeontological impact assessment was undertaken by Lloyd Rossouw of Palaeo Field Services in February 2019 (see Appendix B3). Two routes were assessed, namely the proposed and approved route (see Figure 3-2).

The proposed power line route is located on low topography terrain on the farms Strydfontein, Leewfontein and Ploegfontein, while traversing more undulating landscape on the farms Soetfontein and Kalkfontein. According to the 1 : 250 000 scale geological map 2822 Postmasburg (Appendix B3), the proposed development footprint is possibly underlain by palaeontologically significant Vaalian rocks of the ~2.5 Ga old Cambellrand Subgroup (Ghaap Group, Transvaal Supergroup) (capped by thick deposits of Tertiary to Quaternary surface limestone (Ql) (Partridge & Maud, 2000), windblown Kalahari sand (Qs) occasionally included within a pebbly rubble matrix with reddish-brown sandy soils and alluvium. Isolated outcrops of the ~ 2.4 Ga old, iron-rich Asbestos Hills Subgroup (Kuruman Formation) containing banded

ironstone, haematites and manganiferous iron ores and "blinkklip breccias" are exposed to the east (Beukes 1980, 1983; Erikson et al. 2006).

The carbonate rocks of the Cambellrand Subgroup (Ghaap Group, Transvaal Supergroup) consist of stromatolite- and microfossil-bearing dolomite, dolomitic limestone and chert members that were formed by the precipitation of carbonate rocks when colonies of stromatolites thrived in shallow, tropical marine environments towards the end of the Archaean Eon, 2.6 billion years ago (Truswell & Eriksson 1973; Beukes 1983; Altermann & Schopf 1995). The shallow marine and lacustrine stromatolites and organic-walled microfossils preserved within the dolomites provide a record of early microbial dominated life in shallow seas and lakes during the Early / Mid Precambrian (c. 2.7-2.5 Ga). Stromatolites are layered mounds, columns, and sheet-like sedimentary rocks. They were originally formed by the growth of layer upon layer of cyanobacteria, a single-celled photosynthesizing microbe that lives today in a wide range of environments ranging from the shallow shelf to lakes, rivers, and even soils. Bacteria, including the photosynthetic cyanobacteria, were the only form of life on Earth for the first 2 billion years that life existed on Earth. The banded iron formations (BIF) of the Kuruman Formation reflect significant early Proterozoic environmental conditions following massive iron deposition as a result of the build-up of free oxygen in the oceans by cyanobacterial photosynthesis (Beukes 1980. A major cold episode as a result of the resulting net removal of atmospheric CO2, culminating in a glacial maximum at the Makganyene Formation diamictites (Postmasburg Group), is interpreted as evidence for major early Proterozoic glaciations at low palaeolatitudes around 2.4 Ga (De Villiers and Visser 1977; Moore et. al 2001).

Outcrops observed along the Proposed Route (D1) include the following (see Figure 3-1 and Plates 5-3 to 5-7)

- Surface limestone, Section A - D
- Surface limestone capped by unconsolidated alluvium, Section D
- Surface limestone and Aeolian sand, Section D – E
- Asbestos Hills Subgroup banded ironstone, haematites and pebbly rubble matrix within aeolian sand cover, Section E – G
- Surface limestone, aeolian sand cover, Section G - H

About 19 km of the total length of 22 km of the proposed route is located on surface limestones (Ql) and overlying Kalahari sands (Qs), while the rest of the line traverses Asbestos Hills Subgroup strata (Vak, Vad), capped mostly by Quaternary windblown sand. Surface limestone exposures were scanned for fossil vertebrate remains or exposures, but none were observed, most likely

because of an absence of association with pans, springs or well-developed alluvial terraces.

PLATE 5-3: WELL-DEVELOPED SURFACE LIMESTONE OUTCROP ALONG THE ROUTE AT PLOEGFONTEIN. SCALE 1 =10 CM. (SOURCE: LLOYD ROSSOUW, 2019).

PLATE 5-4: WELL-DEVELOPED SURFACE LIMESTONE BRECCIAS EXPOSED ALONG THE ROUTE AT PLOEGFONTEIN. (SOURCE: LLOYD ROSSOUW, 2019).

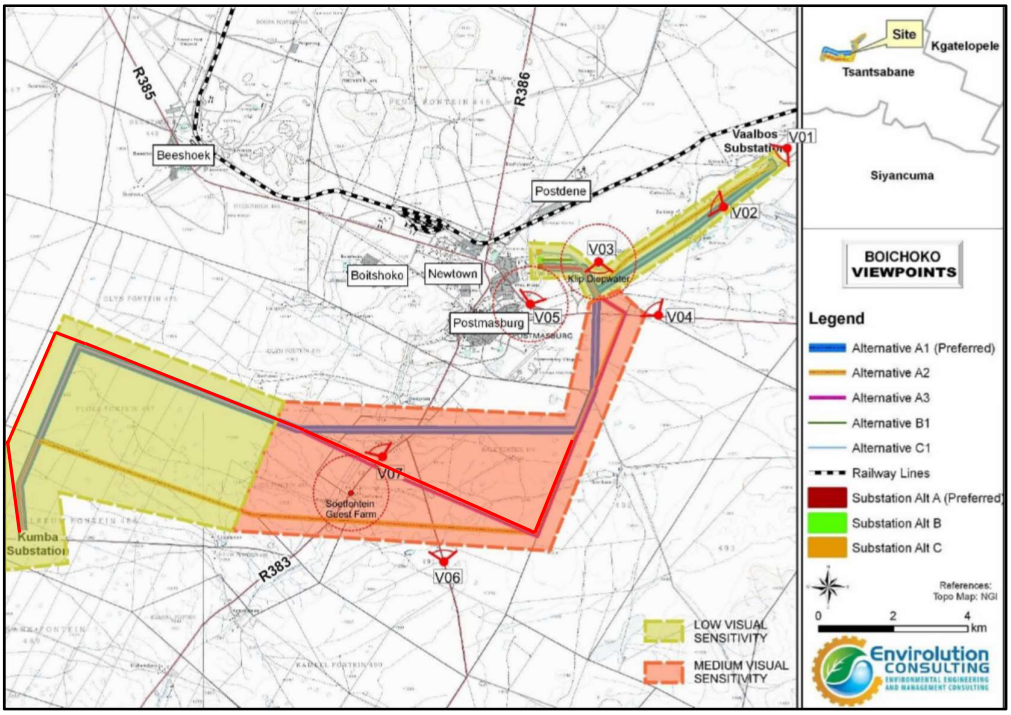
PLATE 5-5: SURFACE LIMESTONE (LEFT) COVERED BY A PEBBLY RUBBLE MATRIX WITH REDDISH-BROWN SANDY SOILS (RIGHT) ALONG THE ROUTE AT SOETFONTEIN. SCALE 1 = 10 CM. (SOURCE: LLOYD ROSSOUW, 2019).

PLATE 5-6: BANDED IRONSTONE, HAEMATITES AND MANGANIFEROUS IRON ORES OF THE ASBESTOS HILLS SUBGROUP (ABOVE) OCCASIONALLY CAPPED BY SURFACE LIMESTONE AND WINDBLOWN SAND ALONG THE ROUTE AT SOETFONTEIN. SCALE 1 = 10 CM. (SOURCE: LLOYD ROSSOUW, 2019).

PLATE 5-7: TYPICAL KALAHARI SAND SUBSTRATE (QS) ALONG THE ROUTE AT KALKFONTEIN. (SOURCE: LLOYD ROSSOUW, 2019).

5.6 Visual Environment

A visual impact assessment was undertaken by M. van der Berg of I-scape Landscape Design and Environmental Consulting (October 2015), now trading as Skets Architects and Planning, as part of the specialist work undertaken in support of the original application for EA. The area where the proposed amendment will take place is regarded as having low to medium visual sensitivity (I-scape, October 2015), see Figure 5-5.



Source: I-scape (October, 2015)

FIGURE 5-5: VIEWER SENSITIVITY MAP (AMENDED ROUTE SHOWN IN RED)

An updated opinion (Appendix B4) was provided by M. van der Berg on 29 January 2019, assessing the visual impacts of the new proposed route D1. The area within the Kolomela Mine is dominated by mining activities, and the farm Ploegfontein 487 and neighbouring farms are not accessible by the public without permission and clearance by the Kolomela Mine. This part of the study area is already blighted by mining activity and is classified as having a low visual sensitivity. Further, this part of the route is not near any urban areas or farming communities and is sandwiched between the Kolomela Mine on the southern side and the Springbok Mine on the northern side. The route falls within an existing servitude between internal roads, which is partially cleared of shrubbery but are still vegetated by a sparse vegetation cover. This part of the study area is therefore considered disturbed and the route is parallel to other existing linear infrastructures such as roads, railway lines and fences.

It was noted that a section of the new proposed route falling outside of the mine boundary is expected to have a medium visual sensitivity due to its exposed nature and relatively low tolerance to change. As no major electrical infrastructure was noticed during the site visit, the new power line is expected to be a weak but noticeable contrasting feature. Near point c on Figure 5-6, the Soetfontein Guest Farm and Soetfontein Dairy farm is overlooking the intermittent Groenwaterspruit. Figure 5-6 indicates a 1 km zone around the location of the guest farm. According to Hull & Bishop (1988), a power line has its maximum impact on the visual resource when viewed from distances =< than 1 km.

Following the opinion given by M. van der Berg on 29 January 2019, Power line Route D1 was moved slightly north to increase the distance from the visual receptors (to decrease the visual sensitivity of the receptors), however the route still lies within the 1 km buffer zone.

The visual specialist concluded that overall, the study area is considered to have a low aesthetic value, however the proposed power line amendment will have adverse visual impacts on individual viewers. Although, overall, the viewer incidence is expected to be very low due to the small population in the area, for some observers, the visual change is expected to be severe. In particular, these viewers include those on the farms Kalkfontein 474 and Soetfonten 606. Extensive consultation has been carried out with these farm owners, and they have indicated that they have no objection to the proposed power line route D1, despite the visual impacts.

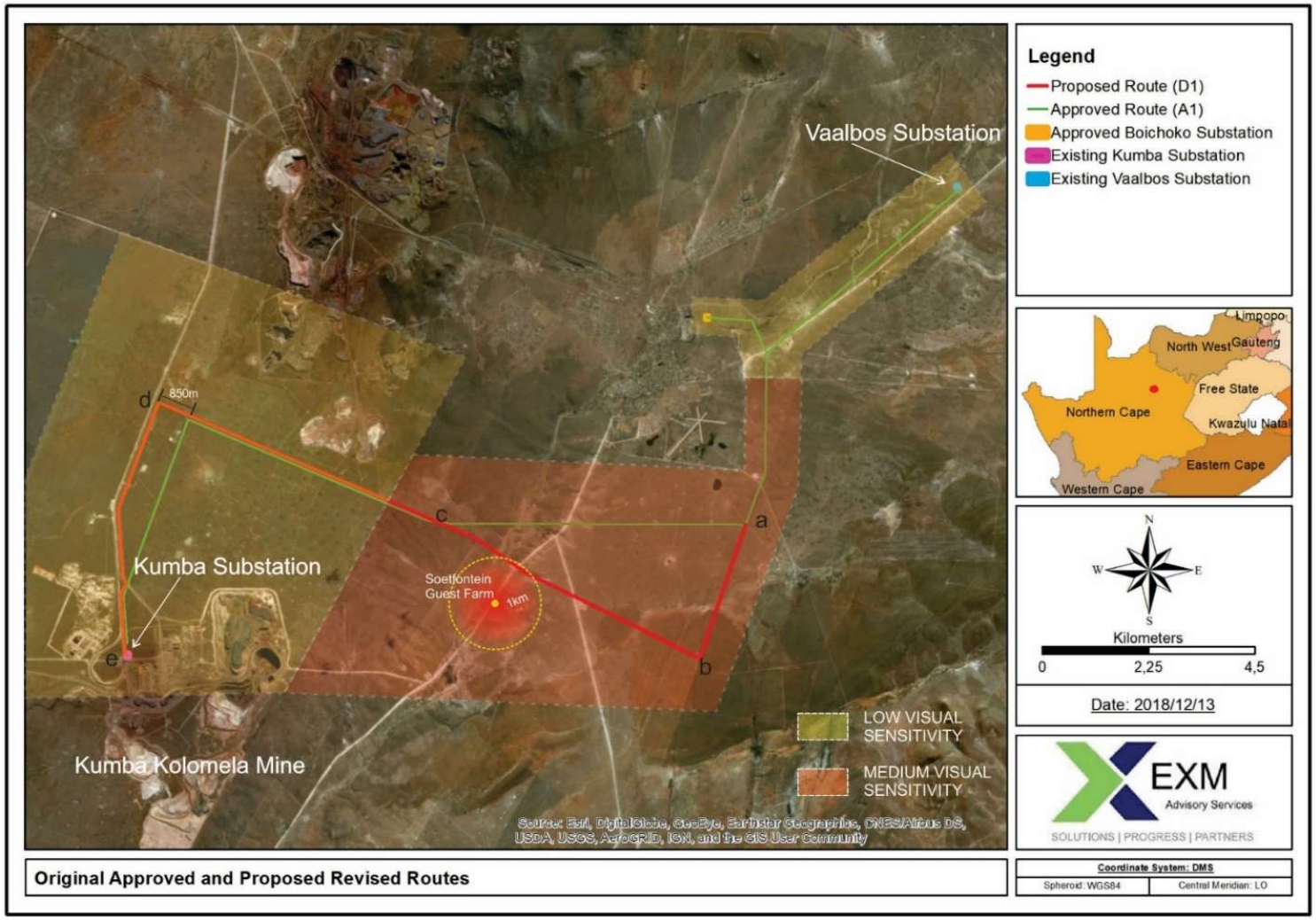


FIGURE 5-6: VIEWER SENSITIVITY MAP (AMENDED ROUTE SHOWN IN RED)

6. ASSESSMENT OF IMPACTS ASSOCIATED WITH THE PROPOSED AMENDMENT

Where possible, specialists that conducted the original studies undertaken in support of the application for EA have provided an opinion as to additional impacts associated with the proposed amendment of the power line route.

6.1 Land Tenure and Land Use

The proposed re-routing of the power line will take place on property owned by SIOC at Kolomela Mine as well as on property of surrounding land owners on the farm Kalkfontein 474 and Soetfontein 606. The authorised route would have resulted in the crossing of the export watering pipeline at Kolomela Mine, at both points C and F (Figure 3-1). The new route however, only requires the power line to cross the export watering pipeline approximately halfway between points F and G. The pipeline is sufficiently earthed but should be regularly inspected to ensure that the power line does not make contact with the pipeline.

Both route options also require that the access road to Kolomela Mine is crossed at the same point where the existing 132 kV line crosses the road (see Point C on Figure 3-1). However, the revised route has the additional impact on existing infrastructure in that it will need to cross the existing 132 kV power line at this point. However, it should be noted that SIOC will request Eskom to apply for the relocation of the existing power line to a position adjacent to the new power line in the near future. The motivation for this is also to facilitate future prospecting and mining activities on the farm Ploegfontein 487. If the existing route is relocated, there will be no need for the power lines to cross.

The amendment of the power line route will not result in any significant change in impacts on infrastructure. The amendment will facilitate future prospecting and mining on the farm Ploegfontein 487 by SIOC.

6.2 Natural Ecology

The ecological impact assessment undertaken in support of the application for the original EA was undertaken by R. Harrison of Afzelia Environmental Consultants (October 2015). Unfortunately, Ms Harrison no longer works for Afzelia and no other persons were familiar with the ecology of the area. An opinion as to the ecological impacts of the proposed amendment of the power line route was thus undertaken by K. Fairley of EXM Advisory Services, see Appendix B1.

The area proposed for the rerouting of the power line has been largely disturbed by the construction of linear infrastructure including laydown areas required to support Kolomela Mine. The servitude area required for the power line will thus not result in additional bush clearance in

this area except for that required to place the support poles. The proposed new route D1 is thus expected to result in lower impacts on habitats when compared to the impacts caused by the original route.

The avifauna of the region for the power line development was characterised by C. Widdows of Afzelia Environmental Consultants (November 2015). Unfortunately, Mr Widdows no longer works for Afzelia and no other person in the company is familiar with the area or the study. An opinion on the change of impacts has thus been given by EXM Advisory Services based on existing knowledge of the area.

Ludwig's Bustard, a red data listed (Endangered) species occurs within the area and has been recorded on the site. Although not recorded on the site to date, it is possible that Kori Bustard (Near Threatened) may occur in the area (as there are records from the region). These large flying birds are susceptible to collisions with power lines. Other birds, such as vultures (also recorded in the region) are subject to electrocutions due to roosting on power line support structures. Measures to prevent collisions and electrocution are included in the Environmental Management Programme (EMPr) and must be implemented at Kolomela Mine.

It is our opinion that the development of the power line closer to existing linear infrastructure and also the Kolomela Mine main infrastructure area will have a lower potential for impacts on these bird species. The new area proposed for the development shows a greater level of disturbance and less habitat availability for bird species and thus the alternative power line route is expected to result in lower impacts on avifaunal species.

6.3 Surface Water Resources

The surface water resources in the project area were also characterised by R. Harrison of Afzelia Environmental Consultants (October 2015) in support of the original application. As indicated above, Ms Harrison no longer works for Afzelia. Extensive work has been undertaken on wetlands and in particular wetland pans at Kolomela Mine. This information has been used to reassess the impacts on resources related to the proposed amendment. This was done by K. Fairley of EXM Advisory Services, see Appendix B1.

It should be noted that the original assessment failed to characterise some of the pans in the area of impact as wetland pans. Both the original and the revised routes will traverse wetland pans and one drainage line on the farm Ploegfontein 487. The realignment of the power line does not change the nature of this impact. The beds of the wetland pans should not be disturbed by the placement of supporting poles where possible. It will however not be possible to prevent the disturbance of these pans as the catchments of the pans cannot be avoided (see Figure 5-3).

The disturbance to wetland pans presents a water use in terms Section 21 of the National Water Act (No. 36 of 1998). As indicated by Harrison (October 2015) the Department of Water & Sanitation is to be consulted as to the authorisation of crossing of wetlands and watercourses.

6.4 Heritage

The information on the change in the cultural heritage impacts has been extracted from J A van Schalkwyk (November 2018), Appendix B2.

The cultural heritage specialist was able to conclude that the region in which the proposed amended power line will be located has a low presence of heritage sites and features. This includes a low density of surface scatters of mostly Middle Stone Age tools, with Later Stone Age Material found to an even lesser extent. With a high degree of confidence, Mr van Schalkwyk (the specialist) was able to confirm that the new alignment of the power line would not lead to any additional impacts on site.

6.5 Palaeontological Resources

The information on the impacts on palaeontological resources has been extracted from Lloyd Rossouw (February 2019), Appendix B3.

6.5.1 Proposed Route:

Sections A - E

Recent borehole cores indicate that potential stromatolite- and microfossil-bearing dolomite of the Cambellrand Subgroup underlying the study area at Ploegfontein 487 and Remainder of Leewfontein 448 is capped by well-developed and widespread surface limestone varying in thickness between 2 m and 8 m (Isak Gouws, Kolomela Mine Environmental Officer, pers. comm.). As expected, superficial Tertiary - Quaternary sediments (surface limestone and windblown sand) are generally not fossiliferous in the absence of pans, springs or well-developed alluvial terraces. Unconsolidated alluvial deposits observed at the Groenwaterspruit crossing (point D) also revealed no evidence for Quaternary fossil preservation. Given the nature of the proposed development (erection of pylons and creation of superficial track servitudes), direct impact on potential fossil heritage within the section is considered to be low. There are no palaeontological grounds to halt the development of this section along the Proposed Route. The section is assigned a site rating of Generally Protected C (GP.C).

Section E - G

The footprint traverses Asbestos Hills Subgroup strata (Vak, Vad), that is mainly capped by a veneer of Quaternary windblown sand, respectively considered to be of moderate to low palaeontological sensitivity. Given the nature of the proposed development (erection of pylons

and creation of superficial track servitudes), direct impact on potential fossil heritage within the section is considered to be low. There are no major palaeontological grounds to halt the development of this section along the Proposed Route. The section is assigned a site rating of Generally Protected C (GP.C).

Section G - H

The section is capped by well-developed and widespread surface limestone of varying thickness and as expected, superficial Tertiary - Quaternary sediments (surface limestone and windblown sand) are generally not fossiliferous in the absence of pans, springs or well-developed alluvial terraces. Given the nature of the proposed development (erection of pylons and creation of superficial track servitudes), direct impact on potential fossil heritage within the section is considered to be low. There are no palaeontological grounds to halt the development of this section along the Proposed Route. The section is assigned a site rating of Generally Protected C (GP.C).

6.5.2 Approved Route

The whole section is underlain by well-developed and widespread surface limestone of varying thickness. Given the nature of the proposed development (erection of pylons and creation of superficial track servitudes), direct impact on potential fossil heritage within the section is considered to be low. There are no palaeontological grounds to halt the development of this section along the Proposed Route. The route is assigned a site rating of Generally Protected C (GP.C).

Considering the finds above, there is no reason why, from a paleontological view, the power line amendment should not be granted.

6.6 Visual Impact

The information of the change in the visual environment has been extracted from M. van der Berg of Skets Architects and Planning (January 2019), Appendix B4.

The study area is not near any urban areas or farming communities and lies between the Kolomela Mine and the Beeshoek Mine. The route within Kolomela Mine is parallel to other existing infrastructure such as roads, railway lines, pipelines and fences. The route change within the Kolomela Mine falls in an area of low visual sensitivity and is not expected to have any negative visual impacts.

The route change which occurs outside the boundaries of the Kolomela Mine are expected to have a negative visual impact on certain viewers. This is primarily due to the landscapes exposed nature and relatively low tolerance to change. The biggest impact is expected to be

felt by nearby visual receptors including the Soetfontein Guest Farm and Soetfontein Dairy farm, as the power line is located within 1 km from them. This may cause a negative visual change as it will interfere with the undeveloped and rural landscape that lay in front of the visual receptors. A new power line will be uncharacteristic to the view and will cause a visual intrusion to these individual visual receptors. Viewers further than 1 km are still considered impacted, but to a lesser degree according to Hull & Bishop's findings.

It is of the specialists' opinion that no additional observers or landscape features will be impacted on, other than that identified in the 2015 report. The specialist concludes that no additional studies or a review of the original VIA report is required, unless such studies or reviews are requested by Interested and Affected Parties, or authorities. As mentioned in section 5.6, the parties which are expected to be affected have been consulted with and have no objections to the proposed route D1. There is therefore no reason why, from a visual perspective, that the power line amendment should not be granted.

7. ADVANTAGES AND DISADVANTAGES ASSOCIATED WITH THE PROPOSED CHANGE

The proposed change in the alignment of the route from Route A1 to Route D1 has a disadvantage in terms of the need for the power line to cross the existing 132 kV line to Kolomela Substation. However, as indicated in Section 6.1, the intentions are for the existing 132 kV power line also to be moved and this will negate the need for the crossing. Another disadvantage is that there will be a negative visual impact on nearby visual receptors, however, as mentioned in sections 5.6 and 6.5, these visual receptors have been consulted with and have no objection to the proposed route D1.

The change from Route A1 to Route D1 has the following advantages:

- It will facilitate the expansion of mining and associated activities at Kolomela Mine, including additional exploration and the future development of mine pits on the farm Ploegfontein. The socio-economic benefits of mining of additional resources (both increased production and increased in life of mine) can be realised.
- The placement of linear infrastructure adjacent to each other within a corridor will facilitate maintenance of servitude areas and also access to such infrastructure, if required.
- The route will have less impact on natural habitats and species of conservation importance as the majority of the area is already disturbed.

- The route will no longer transect the farm Kalkfontein 474, thus decreases the impact on the farm owner.

8. MEASURES TO ENSURE AVOIDANCE, MANAGEMENT AND MITIGATION OF IMPACTS ASSOCIATED WITH THE CHANGE

The change in the route of the power line will not result in any significant additional environmental, social or cultural impacts.

Additional mitigation measures are recommended, but are not as a consequence of the re-routing:

- The placement of supporting poles within the beds of wetland pans is to be avoided. Authorisation in terms of Section 21(c) & (i) of the National Water Act is to be sought from the Department of Water & Sanitation with respect to any development within 500 m of wetland pans.
- The point where the power lines cross the Kolomela export pipeline are to be regularly inspected to prevent an incident where a damaged power line can come into contact with the dewatering pipeline.

9. REQUIRED CHANGES TO THE ENVIRONMENTAL MANAGEMENT PROGRAMME

The Environmental Management Programme (EMPr) is to be amended to include the correct and revised power line route, should the amendment be authorised. The EMPr is to include a provision for the authorisation of water uses prior to the commencement of construction. During the operational phase the pipeline crossings should be inspected on a daily basis to ensure that the risk of a power line coming into contact with the export pipeline is addressed.

Although not an additional requirement as a result of the amendment, it is recommended that the EMPr be amended to indicate that any activities that take place within the Kolomela Mining Right area is to comply with the requirements of environmental authorisations issued to Kolomela Mine.

10. CONCLUSIONS

It is the opinion of the Environmental Assessment Practitioner, that the amendment of the route as proposed be authorised.

11. UNDERTAKINGS BY THE EAP

I, Kerry Colleen Fairley, the Environmental Assessment Practitioner responsible for compiling this report, undertake that:

- the information provided herein is correct;
- the comments and inputs from stakeholders and I&APs has been correctly recorded;
- information and responses provided to stakeholders and I&APs by the EAP is correct; and
- the level of agreement with I&APs and stakeholders has been correctly recorded and reported.

Kerry Fairley

Pr.Sci.Nat.

Director

12.REFERENCES

Anderson, T.A. 2004. Sishen South Mine. Environmental Impact Assessment. Sishen South Project. Ecological Impact Assessment Report (S0048).

DWAF (Department of Water affairs and Forestry), 2005. A practical field procedure for identification and delineation of wetland and riparian areas. Edition 1, September 2005. DWAF, Pretoria.

Envirolution Consulting, January 2016. Proposed Eskom Boichoko Substation and Associated Overhead 132 kV Power Lines Between Kumba and Vaalbos Substations, near Postmasburg, Northern Cape Province. Final Basic Assessment Report. DEA Reference No. 14/12/16/3/3/1/1504.

Harrison R, October 2015. Ecological Impact Assessment: Proposed construction of the Boichoko substation (132/11kv 2x10mva) and dual 132kv power line project in Postmasburg, Tsantsabane local municipality, Northern Cape Province. (Afzelia Environmental Consulting).

Mucina, L., Rutherford, M.C. & Powrie, L.W. (eds) 2006. Vegetation Map of South Africa, Lesotho and Swaziland, edn 2, 1:1 000 000 scale sheet maps. South African National Biodiversity Institute, Pretoria. ISBN 978-1-919976-42-6.

PGS Heritage, March 2015. Heritage Impact Assessment. KOLOMELA AMENDMENT PROJECT: Amendment of Existing Mining Activities on the Farms Ploegfontein 487; Remainder of Leeuwfontein 485; Strydfontein 614; Remainder of Klipbankfontein 489; Portions 1, 2, 3, and the Remainder of Kapstevel 541; Wolhaarkop 485, Welgevonden 486 and Floradale 230 located South-west of Postmasburg, Northern Cape Province.

Rossouw, L., March 2019. Phase 1 Palaeontological Impact Assessment of a new 132 kV power line route across Kolomela Mine, Postmasburg, NC Province.

SAS, 2015. Wetland assessment as part of the environmental assessment and authorisation process for the Kolomela amendment, Northern Cape Province.

Van den Berg, M. October 2015. Visual Impact assessment report for the Eskom Boichoko substation and associated 132kV overhead power line. (I-scape Landscape Design and Environmental Consulting).

Van den Berg, M. January 2019. Review of the visual impact assessment report for the Eskom Boichoko substation and associated 132kV overhead power line (2015) due to an amendment of environmental authorisation dated 23 May 2016, as requested by the Department of Environmental Affairs (DEA) – Ref 14/12/16/3/3/1/1504/AM1. (Skets Architects, Planning &

Environmental Consulting).

Van Schalkwyk, J.A. 2015. Cultural heritage impact assessment for the proposed development of the Boichoco 132kV power line and substation, Postmasburg, Siyanda District Municipality, Northern Cape Province. Pretoria: Unpublished report 2015JvS072.

Van Schalkwyk, J.A., November 2018. Cultural heritage specialist re-assessment for the proposed amendment of the Environmental Authorisation.

Widdows, Cson, T.A. , November 2015. Avifaunal Impact Assessment: Proposed construction of the Boichoko substation (132/11kv 2x10mva) and dual 132kv power line project in Postmasburg, Tsantsabane local municipality, Northern Cape Province. (Afzelia Environmental Consulting).