

# BASIC ASSESSMENT REPORT

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## environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

(For official use only)

**File Reference Number:**

**Application Number:**

**Date Received:**


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

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### Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **1 September 2012**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.

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14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included on the electronic copy of the report submitted to the competent authority.

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## DEFINITION

High terrace	relict floodplains which have been raised above the level regularly inundated by flooding due to lowering of the river channel (rarely inundated).
Catchment	the area contributing to runoff at a particular point in a river system
Buffer	a strip of land surrounding a wetland or riparian area in which activities are controlled or restricted, in order to reduce the impact of adjacent land uses on the wetland or riparian area.
River channel	a length of river bounded by the banks and the bed
Biodiversity	the number and variety of living organisms on earth, the millions of plants, animals, and micro-organisms, the genes they contain, the evolutionary history and potential they encompass, and the ecosystems, ecological processes, and landscapes of which they are integral parts
Floodplain	a relatively level alluvial (sand or gravel) area lying adjacent to the river channel, which has been constructed by the present river in its existing regime.
Groundwater	subsurface water in the saturated zone below the water table
Habitat	the natural home of species of plants or animals
Upper terrace/ridge/floodline/edge of riparian	relict floodplains which have been raised above the level regularly inundated by flooding due to lowering of the river channel (rarely inundated)
Perennial	flows all year round
Riparian area delineation	area raised above the level regularly inundated by flooding (infrequently inundated)
Riparian habitat (as defined by the National Water Act)	<p>riparian buffer zones can be defined as green zones along streams, rivers, and lakes. When these areas are wet for a significant part of the year, then they are also considered wetlands</p> <p>includes the physical structure and associated vegetation of the areas associated with a watercourse which are commonly characterised by alluvial soils (deposited by the current river system), and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with a composition and physical structure distinct from those of adjacent land areas</p> <p>Effective riparian zones consist of healthy vegetation cover including ground covering plants and larger trees. When this is combined with good land management, flooding and erosion decreases.</p>
Wetland (as defined by the National Water Act)	<p>land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which under normal circumstances supports or would support vegetation typically adapted to life in saturated soil</p> <p>Wetlands are areas that are saturated with water for part or all of the year. They are usually near water bodies, rivers, streams, or in low lying depressions that collect water</p>
Terrain	Areas of the land surface with homogenous form and slope. Terrain may be seen as being made up of all or some of the following units: crest (1), scarp (2), midslope (3) footslope (4), and valley bottom (5)
Sheet erosion	Is the transport of loosened soil particles by overland flow
Gully erosion	Occurs when runoff water accumulates, and then rapidly flows in narrow channels during or immediately after heavy rains
Environmental Management Plan (EMP)	Developed to ensure that all necessary measures are identified and implemented in order to protect the environment and comply with environmental legislation

**SECTION A: ACTIVITY INFORMATION**

Has a specialist been consulted to assist with the completion of this section? YES ✓ NO

If YES, please complete the form entitled “Details of specialist and declaration of interest” for the specialist appointed and attach in Appendix I.

**1. PROJECT DESCRIPTION**

**a) Describe the project associated with the listed activities applied for**

**IKWEZI MINING 20MVA 88/22kV SUBSTATION AND ASSOCIATED INGAGANE/UTRECHT/IKWEZI 88kV POWERLINE**

**Need and justification**

Ikwezi mining (Pty) Ltd has applied for electricity supply from Eskom to provide the required voltage capacity for its mining operations. Eskom identified the nearest and suitable powerline where the electricity can be sourced from. The electricity will be brought to a new substation along a new powerline. The new substation shall step-up the voltage capacity which will provide the needed supply to the mine. The project therefore involves the construction of a 5km double powerline from existing 1 Ingagane/Utrecht 88kV powerline to connect to the new Ikwezi Mining 20MVA substation. The powerline structures will be made of steel and will suspend conductors, figure 1. A typical substation consists of a control room, high voltage yard (HV) supporting electrical infrastructure such as transformers, radio tower and other steel electrical structures connecting the in-coming and out-going conductors linked to associated powerlines figure 2. The HV yard is surrounded by palisade fence which acts as safety barrier. Adjacent to the HV yard is an area that is stabilised after being disturbed during construction. The standard dimensions of a substation are 100mx100m.

The substation will also provide electricity to the neighbouring communities. The local network is unable to meet current and forecasted power demands in the area and is thus not able to provide power for new connections. The proposed substation will enable electrification of surrounding communities. The nature of the proposed development triggered the requirement for environmental authorisation in terms of sections 24(5) and 24M of the National Environmental Management Act, 1998. The EIA regulations as promulgated in terms of Regulations 543, is the regulation that applies in the event of a development triggering the need for a basic assessment.



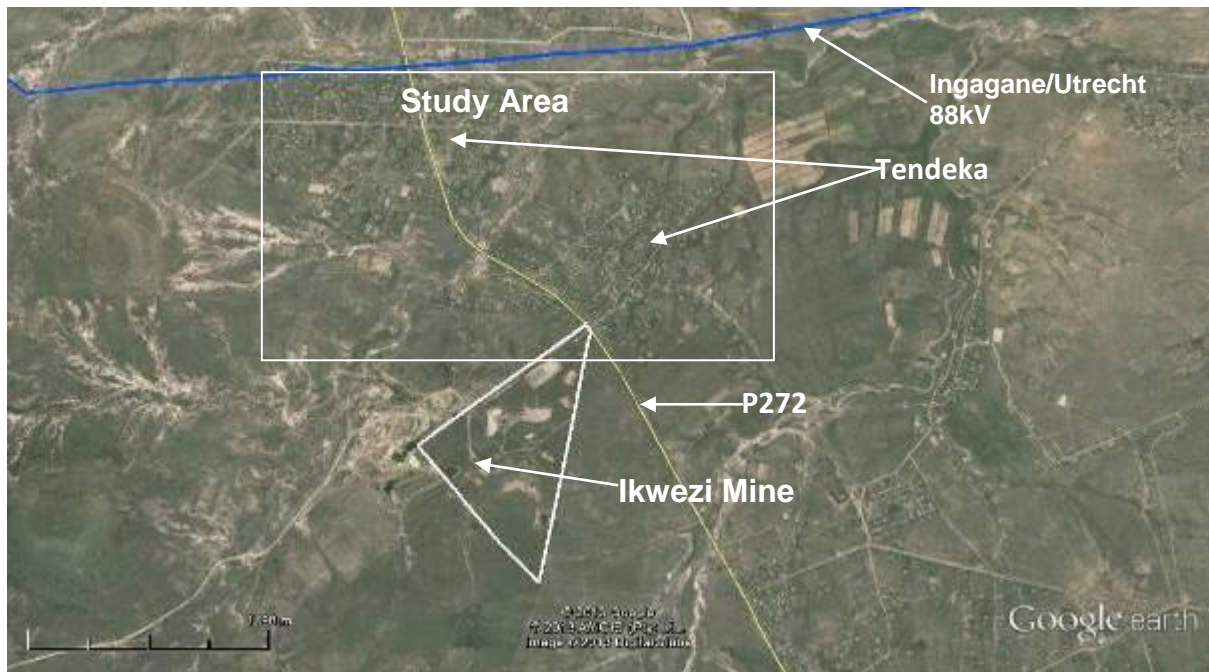
**Fig. 1 88kV powerline**



**Fig. 2 88kV substation**

## Locality

Baseline surveys based on ortho-photo maps of the area enabled the demarcation of the study area, figure 3. The study area is located within the rural community of Tendeka and adjacent area which are part of Dannhauser local municipality within Amajuba district municipality, northern KwaZulu-Natal. Properties within the study area are owned by private individuals, Ingonyama trust and Regional and Land Affairs. A couple of visits to the study area were undertaken to assess the area and record findings. The main landuse within the study area is dense housing settlement, subsistence farming, small-scale livestock along open grasslands, and mining located outside and south of the study area. District road P272 cuts through the housing settlement and the study area. The road links Tendeka with the town of Dundee in the south and Osizweni Township in the north. Terrain within the study area is steep along the west of the study area and undulating from the base of the hill rolling over an extended area east of the study area. Tendeka River meanders through the study area with its riparian area prevailed by erosion in some area. In some area erosion has formed extensive riparian channelled wetlands and floodplains along the riparian area.



**Fig. 3 The study area**

### **Characteristics of the study area**

The study area, figure 3, starts from the existing 1 Ingagane/Utrecht 88kV powerline and extends south towards the substation site bordering Ikwezi mine Pty (Ltd) site and stretches west of road P272. The informal residential area stretches across the middle of the study area populating east of the study area. The west of the study area is characterised by open grasslands stretching from the western ridge and rolling east across undulating terrain tapering at the beginning of the housing area. Portions of the sandstone are scattered along the western ridge. Soil outside eroding areas is stable. In these areas there is ground cover. Clay soils overlay the underground sandstone. Rocky outcrops appear along the grasslands west of the study area. Sheet erosion is evident along the same ridge. Drainage lines, annual streams incise the study area channelling run-off into the low lying Tendeka River, a tributary to Buffalo River, which cuts through the south of the study area turning in a north-east direction east of the study area. Exposed riverbed sandstone bedrock shows active erosion of the river channel. Erosion along the riparian area extends from the river banks which peel chunks of vertical soil layers depositing them into the river. This progressive vertical deposition of soil is observed to be caused by constant movement/trampling of cattle along narrow cattle paths adjacent to gullies. The movement of cattle exerts weight on the underlying weak soils causing the soil to crumble.

### **Study approach**

Site visits were undertaken for ground assessment and to liaise with local authority to discuss the area. The aim of the visit was to collect data in order to determine a suitable powerline corridor. Data collected during site visits was based on general overview of the area. After Ikwezi Mining (Pty) Ltd applied to Eskom for provision of electricity for their mining operation Eskom planning then determined a suitable and nearby connecting point for the best location or the proposed substation. The proposed project will consist of a connecting powerline and a substation that will step-up the electricity and link connecting high and medium voltage lines.

The general assessment of the study area gave specific consideration to the erosion, drainage and wetlands in the area as these land features will have significant impact on the location of the powerline. Specialist studies for fauna, flora, wetlands and heritage assessment were undertaken. Erosion in the area is reported in the specialist study to be driven by erodible nature of the soils caused by their expansion and contraction. Floods that occur in the area also exacerbate the effects of erosion. Erosion occurs mainly along drainage lines, wetlands and riparian areas. The erosion has eroded the ecological functionality of the wetlands, drainage and riparian areas.

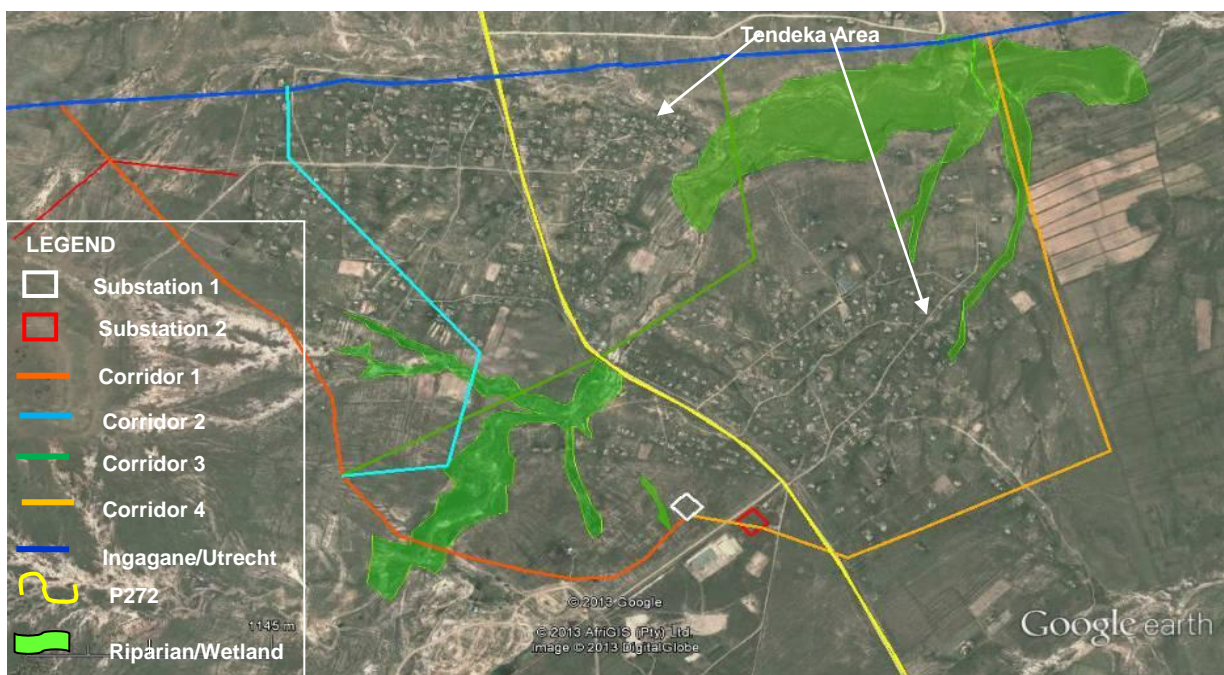


## Selection of alternative corridors and substation sites

After demarcating the study area four alternative corridors, 600m wide, were investigated figure 4. Corridors are initial linear dimensions that are investigated for location of powerline routes. The standard width of a corridor by rule is 600m and the length of the corridor covers the area from the connecting point and the linking point. The width of the corridor allows for the location of a suitable route. The route will be surveyed and the correct tower positions will be fixed on the ground. The four corridors investigated are located from the west to the east of the study area. Corridor 1 runs along the west of the study area. Corridor 2 and 3 run in the middle of the study area while corridor 4 run on the east of the study area, see figure 2. The suitable connection point is based on its proximity to the need for power/consumer and its ability to provide the needed capacity. 1 Ingagane/Utrecht 88kV powerline is located nearer the mine about 5km and has the capacity to deliver the required voltage to the mine. The nearer the substation is to the need for electricity the better quality it will provide. The preferred substation site is located on Ingonyama Trust land adjacent to a gravel road opposite the mine. Alternative substation is located along mine land and is much nearest of the two to the mine. Section 2a provides detailed description of the alternative corridors and substation sites.

## Suitability of a corridor and substation site was based on:

- Availability of open space and creating less turns along the length of the powerline
- No relocation of houses unless it is inevitable to do so
- Minimal sensitivity on the receiving environment
- Minimal impact the location of the powerline will have on the receiving environment
- Approval of use of land from interested and affected parties



**Figure 4 Alternative corridors and delineated wetlands**

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### **Powerline construction activities:**

- Establishing tower positions
- Demarcation of tower work areas
- Removal of ground cover
- Stockpiling of topsoil and sub-soil
- Stabilising of tower holes if necessary
- Removal of waste inside the holes
- Pouring of cement and establishing pile foundations
- Curing of the foundations
- Erection of towers
- Stringing of the conductor
- Determining the extent of ground disturbance and any compensations
- Rehabilitation of areas around the tower base
- Removal of waste along the route

### **Substation construction activities:**

- Site demarcation and erection of perimeter fence
- Location of site office and vehicle parking area
- Soil excavation and levelling
- Storage of soil
- Construction of banks
- Stabilisation of banks and other deep-cut areas
- Compaction of high voltage (HV) yard
- Erection of substation
- Construction of substation drains (cut-off; vee and outlet drains)
- Construction of access road
- Application of yard stones and approved herbicides on the HV yard
- Stabilisation and rehabilitation of banks
- Removal of construction waste
- Grassing of bare areas around the substation area





**Fig 5 Eroding gully**

### **Causes of erosion and gullies**

Figure 5 shows cattle footpaths along the edge of the actively eroding gullies. The extended riparian zone is demarcated by upper terraces separating wetland system from dry land. The lowered river bed shows the lowered floodplain. In some areas erosion may be caused by underground seepage that weakens the soil structure causing sheet erosion. In general the soils are wet in summer from rain, floods, underground water recharge and high water retention capacity. In winter the soils dry up and crack making them susceptible to erosion. Along the flat areas, mostly east of study area, pans holding surface water become evident after rains and floods. Landuse is characterised by dry-land cultivation and small-scale livestock that graze predominantly along the open grasslands on the west of the study area.

According to literature stream bank erosion is a natural process that over time has resulted in the formation of the productive floodplains and alluvial terraces. Even stable river systems have some eroding banks. However, the rate at which erosion is occurring in stable systems is generally much slower and of a smaller scale than that which occurs in unstable systems. Events like flooding can trigger dramatic and sudden changes in rivers and streams. However, land use can also trigger erosion responses. The responses can be complex, often resulting in accelerated rates of erosion and sometimes affecting stability for decades. In the earliest stage of stream erosion, the erosive activity is dominantly vertical. When the base level is reached, the erosive activity switches to lateral erosion, which widens the valley floor and creates a narrow floodplain. The stream gradient becomes nearly flat, and lateral deposition of sediments becomes important as the stream meanders across the valley floor. In all stages of stream erosion, by far the most erosion occurs during times of flood, when more and faster-moving water is available to carry a larger sediment load.

**b) Provide a detailed description of the listed activities associated with the project as applied for**

Listed activity as described in GN R.544, 545 and 546	Description of project activity
<b>Example:</b> <b>GN R.544 Item 11(3): The construction of a bridge where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</b>	<b>A bridge measuring 5 m in height and 10m in length, no wider than 8 meters will be built over the Orange river</b>
Listed activity in GNR 544 activity 10 (i): Construction of a powerline and associated substation along an open area adjacent to a rural settlement	The construction of a 5km 88kV powerline along open area adjacent to a rural settlement and associated 100mx100m 20MVA substation

**2. FEASIBLE AND REASONABLE ALTERNATIVES**

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

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

Describe alternatives that are considered in this application as required by Regulation 22(2)(h) of GN R.543. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

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

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. The co-ordinates should

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be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

### a) Site alternatives

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

#### In the case of linear activities:

##### Alternative:

##### Latitude (S):

##### Longitude (E):

##### Alternative S1 (preferred – **Bronze**)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

27°49'28.98"S	30° 4'37.26"E
27°50'20.45"S	30° 5'26.56"E
27°50'38.44"S	30° 6'25.90"E

##### Alternative S2 (**light blue line**)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

27°49'26.47"S	30° 5'16.66"E
27°50'10.97"S	30° 5'50.06"E
27°50'30.26"S	30° 5'44.29"E

##### Alternative S3 (**green line**)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

27°49'20.83"S	30° 6'32.46"E
27°49'54.60"S	30° 6'38.32"E
27°50'31.18"S	30° 5'26.00"E

##### Alternative S4 (**orange line**)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

27°49'16.89"S	30° 6'54.77"E
27°50'45.37"S	30° 6'54.77"E
27°50'37.98"S	30° 6'27.54"E

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

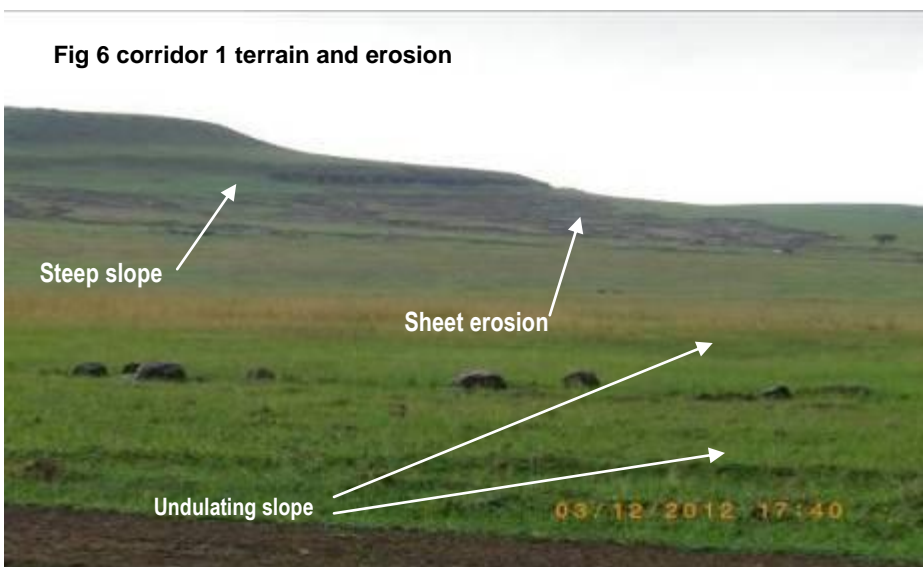
In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A.

## Description of alternative corridors

### Alternative corridor 1 (Bronze line Appendix A)

Corridor 1, figure 4, indicated by orange and dark blue line in Appendix A2 below runs west of the study area along an open area west of Tendeka settlement. The corridor occupies a width of 600m and is located below the hill away from the eroding area. The west side of the study area has elevated slopes that descend into undulating terrain which rolls into the Tendeka River. Corridor 1 starts from the existing 1 Ingagane/Utrecht 88kV powerline on the outskirts of the settlement and it follows the open grasslands then crosses the Tendeka River towards the substation site. The area traversed by corridor 1 has sheet erosion and eroding gullies along riparian area. A number of factors influence erosion such as effects of livestock, water seepage, loss of ground cover, sand extraction, erodible soils and high velocity floods. Floods, cattle movement and sand extraction are the main causes of erosion along the riparian area and then river bank. This has increased the river channel, lowering the river basin and expanding the floodplain. Cattle movement exerts pressure along edge of gullies and the weakened underlying soils peeling off the soil structure and falls into the gully eventually be washed into the river. Rock-outcrops appear along corridor 1 stretching from west to east but ending before the settlement. The vertically eroding gullies as well as the incision of the river channel shows a relatively short topsoil profile and the underlying eroding rock shale. Annual streams, pans, drainage lines and wetland systems exist on the west and east of the study area. However the wetland systems are more extensive in the east of the study area than along the west. Sheet erosion occur upslope and vertically eroding gullies occur along the riparian area along corridor 1. The erodible nature of the soils leads to the formation of eroding channels that end up draining into Tendeka River. Some wetland systems along the riparian area are incised with eroding gullies. The eroding soil is washed downstream. The active and progressive erosion along the river banks has lowered the river channel to below its original floodplain. The vertical erosion has extended the upper terraces of the riparian edge. The western side of the river has narrow channels which enables spanning across the river up to its riparian edge. The ecological report recommends the western corridor, corridor 1 primarily because of its ability to stretch up to or just beyond the riparian edge/buffer zone. The specialist ecologist has recommended the orange corridor 1 in Appendix A3. The report recommends the location of towers along the edge of the riparian area. Corridor 1, the blue line, crosses over wetlands and along the extended riparian terrace. Towers along this corridor will fall outside the wetland and riparian area. Location of the powerline along corridor 1 will not impact on the aquatic systems.

Fig 6 corridor 1 terrain and erosion



The eroding soil is washed down the gullies into Tendeka River. Figure 5 shows the extent of vertical and expanding erosion along the river banks and river channel. Involvement of regional Department of Agriculture soil conservation office is important to discuss ways of curbing the local erosion.



**Fig 5 Eroding river banks and riparian area**

### **Effects of powerline and substation on erosion**

- Construction of proposed powerline and substation will not directly trigger erosion
- Indirect triggers will be erosion from un-rehabilitated:
  - Tower bases and bare substation areas
  - Poor or no rehabilitation of disturbed areas around the substation
  - Compacted vehicle tracks
  - Placing towers within riparian areas and wetlands
  - Un-rehabilitated areas will bring in invasive weeds

### **Effects of receiving environment on proposed project**

- Expanding gullies due to lack of preventing expansion of gullies caused by effects of high volume floods and livestock compactions

### **Mitigations**

- Towers are to be placed outside the gullies and steeper slopes
- Towers are to be placed on or above upper terraces of riparian areas
- Exposed tower bases should be stabilised with indigenous grass mixture to prevent surface erosion
- All exposed areas around the substation need to be stabilised by using indigenous grass sods and seeds to prevent surface erosion
- Construction is to be done during dry weather season to prevent potential erosion and damages to ground cover
- Driving will be kept to existing single vehicle tracks.
- Keeping livestock out of riparian and drainage areas
- Placing of structures and/or planting of vegetation to prevent expanding of gullies



### Alternative corridor 2 and 3

Figure 6 shows corridor 2 and 3 cutting through the housing settlement. The corridors run through the middle of the study area. The terrain amongst the houses is flatter. The area is accessible through the network of roads in between the houses. The layout of houses does not follow any formal spatial plan. The housing area has no gullies or eroding lines. Both the corridors attempt to meander through houses following open spaces. The need to have straight corridors may mean removal of some houses. Relocation of houses is often regarded as the last option. These two corridors were then discarded due to proximity of houses and lack of open spaces and the need to relocate houses. The corridors were investigated as alternative options.





### **Corridor 4**

Corridor 4 is located on the east of the study area. Tendeka River meanders from the west of the study area and flow north easterly. The river channel on east of the study area is wider than the channel on the west side. The widened river channel is caused by significant floods that flow through the river system. The riparian area on the east of the study area is extensive, figure 7 due to the expanding floodplain. The increased flow of flood waters results into extension of eroding river banks. Corridor 4 is located east of the study area and adjacent to the edge of the housing settlement, between open area and planted fields. The corridor is long and extends south and then turns westerly towards the substation site. At this section the corridor is constrained by houses and gullies. The powerline design will not be able to span across the extended riparian areas inundated by flood caused gullies



**Fig 7 Extensive erosion along Tendeka River east of the study area – Corridor 4**

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**Table 2 Comparing corridor 1 and 2**

Aspect	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Comments
Access	Accessible	Inaccessible	Inaccessible	Partly accessible	Corridors 2 and 3 are inaccessible due to presence of houses Corridor 4 is not accessible on the north part of the corridor
Relocation of houses	None	Need for relocation	Need for relocation	Possible south of the corridor	A few houses will need to be relocated along corridors 2 and 3
Terrain	Undulating	Flat	Flat	Undulating	Terrain is undulating and flat
Habitat type	Grasslands, river, wetlands and riparian areas	Homesteads	Homesteads	Grasslands, river, wetlands and riparian areas	Most riverine trees are indigenous
Specialised and sensitive habitats	Wetlands, riparian areas and river	Fragmented grasslands	Fragmented grasslands	Wetlands, riparian areas and river	Corridor 1 and 4 have similar habitat types Wetlands and riparian areas are <u>dysfunctional</u> as a result of damage by floods
Landuse	Grazing	Residential	Residential	Subsistence farming & residential	Corridor 2 and 3 are dominated by houses
Potential for erosion	High	Low	Low	Very High	Locating towers away from gullies along corridor 1 will not lead to further expansion of the gullies Locating towers along riparian crests will not further erosion occurring along the riparian area predominantly caused by floods and livestock Locating towers outside the riparian areas along corridor 4 is not possible due to conductor spanning constraints
Possibility of locating a powerline	Possible	Difficult	Difficult	Difficult	Corridor 1 has open grasslands intercepted by gullies and eroded riparian areas It is however possible to located towers outside these areas and minimised chances of causing erosion Locating the powerline along corridors 2 and 3 will need relocation of a few houses, an elaborate process Locating the powerline along corridor 4 is not possible due to difficulty in attaining spans between towers

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### b) Lay-out alternatives

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
The preferred substation site	27°50'34.14"S	30° 6'26.24"E
	27°50'36.17"S	30° 6'23.66"E
	27°50'38.54"S	30° 6'26.40"E
	27°50'36.33"S	30° 6'29.06"E
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
	27°50'38.69"S	30° 6'35.15"E
	27°50'41.06"S	30° 6'37.51"E
	27°50'38.99"S	30° 6'40.42"E
	27°50'36.66"S	30° 6'37.91"E
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

#### Substation 1

Substation 1 is adjacent to houses and is located across substation 2. The substation is located along Ingonyama Trust land. The site has a gradual slope towards drainage lines that connect to wetlands down-slope. The site faces a gravel road that separates it from the mine site and substation 2. Open grasslands cover the site. According to the ecological specialist report the vegetation on the site is dominated by *Diheteropogon amplexus* and *Hyparrhenia hirta*, forming the dominant species on site. This grass species is generally associated with a fire disturbance which is common to the region. This vegetation also occurs on substation site 2. The site is used for grazing. However most grazing occurs west of the study area particularly at the bottom slope of the mountain, figure 8. Figure 9 shows part of substation area. A dry wetland exists about 50m from the substation site. The wetland was delineated during Ikwezi Mining (Pty) Ltd environmental assessment study. There were no observed sign of erosion. The site is able to accommodate feeder lines leaving the substation to the mine and to the community. Substation is preferred due to its ability to accommodate feeder lines and has an extensive open area.

#### Substation 2

Substation 2 is located along Ikwezi Mining (Pty) Ltd property. The site is adjacent to mine buildings and access track. The site is within a fenced area. Substation 1 has a gradual slope. Grass cover is stable even though not thick in its coverage along the site. There are no signs of erosion along the site. This site will not be able to accommodate the routing of feeder lines out of the substation due to landuse constraints.



Fig.8 Cattle grazing along substation



Fig. 9 Ikwezi mine in the background

### c) Technology alternatives

#### **Solar panels**

Solar energy is often used to augment electrical power from substations thus provided limited power supply. A number of rural schools, homes and holiday cottages use solar power primarily for lighting and for heating water. Installation of solar panels is expensive. To make solar panels affordable the panels need to be subsidised by a third party, either Eskom or local government. A few users may be able to purchase solar panels. To be able to provide adequate power supply for all the energy needs as per requirement, a number of solar panels may need to be installed. Need for multi solar panels may not be financially viable to many customers. Eskom has a solar programme which interested parties can contact for more information.

#### **Generators**

Generators are used on temporary basis as back-up. They do not provide a long term solution towards sustainable supply. Fuel costs over long term may become expensive.

#### **Alternative design**

##### **Underground cabling**

Underground cabling is the only alternative design available to over head powerline. Cabling of the conductor has no visual impact. Cables are placed in dug trenches. The size of a cable is influenced by the required load. Suitability of the trench is determined by geotechnical assessments.

### **Advantages of underground cable**

- The cable does not impact with the visual character (scenery) of the area
- It does not impact on birds
- The cable is not exposed to environmental hazards such as storms, fire, lightening gale winds
- It is not exposed to vandalism and theft .

### **Disadvantages of underground cable**

- Technical difficulties of maintaining underground cables, i.e., tracing and locating a fault
- Cables with high voltages are not suitable for underground due to high temperatures that can accumulate in the cable
- Digging a trench and installation costs are high
- Trees with big root system need to be removed as the roots will interfere with the cable

### **Advantages of overhead powerlines**

- Cheaper to install
- Conductors are not affected by high atmospheric temperatures
- Easier to access the line
- Easy to trace and repair fault
- Easy to maintain infrastructure
- Supply can be augmented by installing boosters
- Easier to route on land
- Bird friendly designs are available
- Can be located nearer roads to minimise clearing of trees along wooded areas

### **Disadvantages of overhead powerlines**

- Exposed to environmental hazards such as lightening, fire, snow and gale winds
- Affects the scenery of the area
- Collision risks with birds is high
- Exposed to vandalism and theft
- Wooded areas need to be cleared for safety

**Alternative 1 (preferred alternative)**

**Alternative 2**

**Alternative 3**

## BASIC ASSESSMENT REPORT

**Table 3 Comparing different energy sources**

Aspect	Line Booster	Solar energy	Generator	Cable	Powerline
<b>Capacity to meet power demands</b>	Will not be able to boost power to acceptable levels as demands increase	Depends on number of panels used More panels will be needed for high power demands	Able to meet limited power demand	Capable to me satisfy load demands	Capable, depends on the capacity in the network
<b>Mixed use power demand</b>	Will not be able to support demands from other higher energy users	May not be able to satisfy all power demand	Will not be able to support demands from other higher energy users	Voltage capacity is limited	Is able to support various developments as per voltage capacity
<b>Reliability</b>	Have a limited capacity	Not reliable depends on the availability of sun energy	Requires continuous maintenance	Reliable, however can be disrupted by various factors	Reliable, however can be disrupted by various factors
<b>Affordability</b>	Affordable	High installation costs	Smaller generators are affordable while big ones are costly	Costly over distance covered	Capital costs borne by the developer
<b>Suitability</b>	Suitable for the network	Suitable for all users	Suitable for limited power supply	Suitable over short distance	Suitable for different power supply
<b>Accessibility</b>	Accessible	Easily accessed however logistics need to be made public	Different sizes costs differ, Bigger generators are costly	Accessible	Accessible
<b>Desirability</b>	Desirable for short term use	Desirable but not widely used	Desirable for short periods	Desirable with town planning	Desirable in most landuse, except within towns
<b>Constraints</b>	Inability to improve capacity when network capacity deteriorates further	Theft of solar panels	Costly to operate	Difficulty in locating fault, difficulty in cabling over long distance,	Landform, landuse, fires, theft, long distance voltage regulation



BASIC ASSESSMENT REPORT

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**d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)**

<b>Alternative 1 (preferred alternative)</b>		
<b>Alternative 2</b>		
<b>Alternative 3</b>		

**e) No-go alternative**

The do-nothing option means no provision of electricity to the mine and to the community. The existing supply is already saturated and has no capacity for new connections from the surrounding communities. Councillors reported that there are a number of planned SMME developments in the area which cannot be implemented due to power constraints. If no electricity is provided to the mine the area will miss out on job creation as well as skills development. The mine was going to contribute to the GDP of the area which in turn will contribute to SMME development and tourism. Electricity will also address the backlog to service delivery as mentioned in the Dannhauser IDP.

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

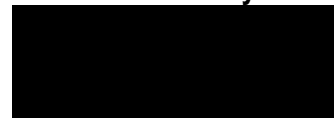
**3. PHYSICAL SIZE OF THE ACTIVITY**

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

**Alternative:**

Alternative A1<sup>1</sup> (preferred activity alternative)  
 Alternative A2 (if any)  
 Alternative A3 (if any)

**Size of the activity:**



or, for linear activities:

**Alternative (Corridors):**

Alternative A1 (preferred activity alternative)  
 Alternative A2 (if any)  
 Alternative A3 (if any)  
 Alternative A4 (if any)

**Length of the activity:**

	<b>4019.3m</b>
	<b>2263.04m</b>
	<b>2788.44m</b>
	<b>4455.69m</b>

---

<sup>1</sup> "Alternative A.." refer to activity, process, technology or other alternatives.

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

**Alternative (Substation sites):**

Alternative A1 (preferred activity alternative)  
 Alternative A2 (if any)  
 Alternative A3 (if any)

**Size of the site/servitude:**

	10000m <sup>2</sup>
	10000m <sup>2</sup>

**4. SITE ACCESS**

Does ready access to the site exist?

<b>YES</b> ✓	NO
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If NO, what is the distance over which a new access road will be built

	m
--	---

Describe the type of access road planned:



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

**5. LOCALITY MAP**

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.). The map must indicate the following:

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
  - Appendix A
- indication of all the alternatives identified;
  - Appendix A(1 – 4)
- closest town(s);
  - Dannhauser
- road access from all major roads in the area;
  - Appendix A (1-4)
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
  - P272
- all roads within a 1km radius of the site or alternative sites; and ✓
- a north arrow; ✓
- a legend; and ✓
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).
  - Coordinates shown in Appendix A1

## 6. LAYOUT/ROUTE PLAN

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

The site or route plans must indicate the following:

- the property boundaries and numbers of all the properties within 50 metres of the site;
  - Appendix A1 shows cadastral boundaries
- the current land use as well as the land use zoning of the site;
  - Landuse is characterised by mining in the south and grazing along open grasslands, figures 8 & 9
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
  - Alternative corridors coordinates appear Appendix A1
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

## 7. SENSITIVITY MAP – Appendix A

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
  - Tendeka river and streams
- the 1:100 year flood line (where available or where it is required by DWA);
  - Not required
- ridges;
  - Western edge of the study area
- cultural and historical features;
  - None
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
  - Grasslands
- critical biodiversity areas.
  - None – See attached ecological report

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

**Vegetation and Landscape features:**

According to Vegetation Types of KZN the dominant vegetation within the study area is Northern KwaZulu-Natal Moist Grassland. According to Conservation Targets and Status for Vegetation Types in KZN 2011 the conservation status of the grasslands is vulnerable. This is a result of land use such as grazing, residential expansion, mining and farming taking vast areas of this grassland. Sparse woodlands are commonly found along disturbed sites and are dominated by woody Acacia species such as *A. sieberiana* var *woodii* can form sparse.

KZN Veg Type Code	KZN Veg Type Name	KZN Biome	Veld Type	SANBI Veg Type Code	SANBI Veg Type Name	SANBI Biome	Conservation Status
25	Northern KwaZulu-Natal Moist Grassland	Grasslands	Sourveld	Gs 1	Northern KwaZulu-Natal Moist Grassland	Grasslands	Vulnerable
35	Eastern Valley Bushveld	Savanna	Sweetveld	SVs 6	Eastern Valley Bushveld	Savanna	Least threatened

The vulnerability of Northern KwaZulu-Natal Moist Grassland is caused by effects of nature such as ferocious floods and anthropogenic effects such as overgrazing, residential extension, mining etc. These factors take up vast areas of this grassland rendering its conservation vulnerable.

**Effects of powerline construction on the sensitive habitats**

Construction of a powerline involves clearing of vegetation to accommodate 20m x 20m tower bases. The cleared vegetation will occur over a small area. This will not transform the fragmented grassland habitats and will not contribute to species loss. Disturbed areas around tower bases will be rehabilitated to prevent erosion and weed invasion. Specialised habitats/ecological systems such as wetlands, rivers and riparian areas occur along corridors 1 and 4. These habitats are eroding as a result of the sensitive nature of the soils coupled with vicious floods and overgrazing which exposed underlying grounds. Gullies occur along these habitats rendering them dysfunctional and unable to do their ecological functions of channelling runoff and water into local watercourse system. Locating towers outside these habitats will minimise the effects of potential erosion and will prevent further expansion of the gullies as a result of powerline construction. Wetlands, riparian areas and drainage lines have been widened by effects of floods that ravage the area. Locating towers across these systems will not be attainable as a result of spanning constraints.

**8. SITE PHOTOGRAPHS (Appendix B)**

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

**9. FACILITY ILLUSTRATION – Appendix C**

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

**10. ACTIVITY MOTIVATION**

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

<b>1. Is the activity permitted in terms of the property's existing land use rights?</b>	<b>YES ✓</b>	<b>NO</b>	Please explain
The area is rural and has informal residential area on the west and open grasslands grazed by livestock on the east. An existing 88kV and 275kV powerlines run through at the start of the study area. The proposed corridor starts at 88kV powerline stretching south towards a substation site. The area is already incised by powerlines. Eskom servitudes are registered at the Deeds office and are part of the property in the area.			
<b>2. Will the activity be in line with the following?</b>			
<b>(a) Provincial Spatial Development Framework (PSDF)</b>	<b>YES ✓</b>	<b>NO</b>	Please explain
Even though the proposed development is to provide electricity to a mine, the surrounding community will benefit from the substation. The network capacity constraints will be addressed by injection of stronger voltage capacity in the area. Electricity backlogs will be addressed by providing adequate electricity to connect new applicants. In page 57 of KZN Growth and Development Strategy and Plan (2030), value of development/rezoning application some are currently not approved due to electricity supply constraints. Therefore, need to increase supply to meet current and future demands are aligned to the provincial growth and development strategy and plan. Research on renewable energy such as hydro power, wind turbines and solar energy are currently being investigated in order to provide sustainable energy needs for the province.			
<b>(b) Urban edge / Edge of Built environment for the area</b>	<b>YES</b>	<b>NO ✓</b>	Please explain
There is no urban edge and urban sprawl. The area is characterised by informal residential area.			

## BASIC ASSESSMENT REPORT

<p>(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).</p>	<p>YES ✓</p>	<p>NO</p>	<p>Please explain</p>									
<p>Dannhauser IDP 2012-2013 mentions engaging with Eskom in submitting household electrification numbers</p> <p style="text-align: center;"><b><u>5. STRATEGIES AND PERFORMANCE TARGETS</u></b></p> <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px auto;"> <thead> <tr> <th style="width: 30%;">Priority item</th> <th style="width: 35%;">Strategies</th> <th style="width: 35%;">Performance Targets</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;"><b>BASIC SERVICE DELIVERY: ROADS ELECTRICITY</b></td> <td style="padding: 5px;"> <ul style="list-style-type: none"> <li>Full MIG utilization</li> <li>Identification of roads to be done by the District Municipality</li> </ul> </td> <td style="padding: 5px;">Construction of the 80km of access (rural) roads to all identified 11 wards</td> </tr> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px;"> <ul style="list-style-type: none"> <li>Engagement with DCE and ESKOM on achievement of universal access</li> <li>Submission of the balance of households to the said two stakeholders.</li> </ul> </td> <td style="padding: 5px;">Electrification of unelectrified households in the Dannhauser area between 2012 and 2013 and submission no later than June 2012</td> </tr> </tbody> </table> <p style="text-align: center;"><b>4.2 <u>ACCESS TO BASIC SERVICES OVERVIEW</u></b></p> <p style="text-align: center; margin-top: 20px;">The Dannhauser area, particularly the town and the surrounding rural settlements, are characterised by service backlogs in respect to water, sanitation and electricity. Major strides have been made in addressing these issues with achievement on number of households who are</p>				Priority item	Strategies	Performance Targets	<b>BASIC SERVICE DELIVERY: ROADS ELECTRICITY</b>	<ul style="list-style-type: none"> <li>Full MIG utilization</li> <li>Identification of roads to be done by the District Municipality</li> </ul>	Construction of the 80km of access (rural) roads to all identified 11 wards		<ul style="list-style-type: none"> <li>Engagement with DCE and ESKOM on achievement of universal access</li> <li>Submission of the balance of households to the said two stakeholders.</li> </ul>	Electrification of unelectrified households in the Dannhauser area between 2012 and 2013 and submission no later than June 2012
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<p>(d) Approved Structure Plan of the Municipality</p>	<p>YES ✓</p>	<p>NO</p>	<p>Please explain</p>
<p>Electricity for municipalities are one of the basic service delivery aimed at improving people's social and economic status. Dannhauser IDP 2012-2013</p> <p style="text-align: center;"><b>4.2.3 <u>ELECTRICITY</u></b></p> <p style="text-align: center; margin-top: 20px;">The Community Survey (2007) indicates that in terms of households using electricity for lighting, 81.6% of households in 2007 made use of electricity, which is an improvement on the 43.5% in 2001. The ADM's Electrical Supply Development Plan (ESDP) estimated some 2 823 households were below the basic level of service.</p>			



BASIC ASSESSMENT REPORT

<p><b>(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)</b></p>	<p>YES ✓</p>	<p>NO</p>	<p>Please explain</p>
<p><b>The main environmental strategic focus areas of the Amajuba district are:</b></p> <ul style="list-style-type: none"> <li>• Mining and industrial pollution of rivers</li> <li>• Rehabilitation of damaged and degraded areas is not undertaken</li> <li>• Acquiring landfill sites</li> <li>• Air pollution</li> <li>• Areas of donga and sheet erosion are cause for concern due to the loss of valuable topsoil</li> <li>• Alien invasive vegetation</li> <li>• Loss of indigenous vegetation</li> <li>• Wetland degradation</li> <li>• Protection of environmentally sensitive environments within the district</li> <li>• Protect grasslands</li> <li>• Programme to promote sustainable agriculture</li> <li>• Sand winning permit requirements</li> <li>• Tourism</li> </ul> <p><b>The project will comply with the district main environmental focus by:</b></p> <ul style="list-style-type: none"> <li>• No causing pollution of rivers, groundwater and land through soil erosion or oil leak</li> <li>• Stabilising and rehabilitating all disturbed areas</li> <li>• Removing waste from site and disposing it at registered landfill sites</li> <li>• By not causing air pollution</li> <li>• Involving regional office of Department of Agriculture in suggesting erosion control measures</li> <li>• By locating towers outside riparian and wetland buffer zones</li> <li>• By stabilising and rehabilitating in order to prevent invasion of alien vegetation</li> <li>• By causing minimal impact on grasslands</li> </ul>			
<p><b>(f) Any other Plans (e.g. Guide Plan)</b></p>	<p>YES</p>	<p>NO ✓</p>	<p>Please explain</p>
<p><b>3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?</b></p>	<p>YES ✓</p>	<p>NO</p>	<p>Please explain</p>
<p>See number 2 (c) &amp; (d) above. Most of the area has electricity. However the capacity on the network is limited and will not be able to provide new connections with power. Councillors reported that there is a number of developmental initiatives that the municipality is unable to be implement due to lack of power.</p>			

## BASIC ASSESSMENT REPORT

<p><b>4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)</b></p>	<p><b>YES ✓</b></p>	<p><b>NO</b></p>	<p>Please explain</p>
<p>The proposed substation will provide electricity to both the mine and to surrounding communities. Improving network capacity is essential for development and economic growth of the area. Electrification projects depend on the voltage capacity of the network</p>			
<p><b>5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the <b>final Basic Assessment Report as Appendix I.</b>)</b></p>	<p><b>YES</b></p>	<p><b>NO ✓</b></p>	<p>Please explain</p>
<p>No capacity is needed from municipality. The project will be constructed by a private client with Eskom monitoring the construction and energising of the proposed powerline and substation.</p>			
<p><b>6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</b></p>	<p><b>YES ✓</b></p>	<p><b>NO</b></p>	<p>Please explain</p>
<p>The infrastructure of the proposed development will belong to Eskom Holdings SOC</p>			
<p><b>7. Is this project part of a national programme to address an issue of national concern or importance?</b></p>	<p><b>YES ✓</b></p>	<p><b>NO</b></p>	<p>Please explain</p>
<p>Provision of electricity is one of the top priorities in the national developmental plan. Most development is relying on electricity to operate and expand. Development of rural areas is also one of the national priorities to address poverty and prevent migration to urban areas</p>			
<p><b>8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)</b></p>	<p><b>YES ✓</b></p>	<p><b>NO</b></p>	<p>Please explain</p>
<p>The area is characterised by open grassland. It is adjacent to an informal residential area. It is used predominantly for grazing. The proposed powerline will connect to an existing powerline. The proposed development will not impact on current landuse</p>			

## BASIC ASSESSMENT REPORT

<b>9. Is the development the best practicable environmental option for this land/site?</b>	<b>YES</b> ✓	NO	Please explain
<p>The area is characterised by river systems, channelled riparian wetlands and un-channelled wetlands. The preferred powerline will be spanning across narrow section of the river system west of the study area. The powerline will not destroy the riparian area or the wetland area. Buffer areas will be maintained.</p>			
<b>10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?</b>	<b>YES</b> ✓	NO	Please explain
<p>Powerlines are constructed along linear servitudes thus impacts are localised and have minimal impacts. The most prominent impacts are disturbed areas, impact on avi-fauna, visual, loss of land along substations site. Disturbed areas will be stabilised and rehabilitated. No large birds were observed in the area. The substation footprint is along un-used open grassland area</p>			
<b>11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?</b>	YES	<b>NO</b> ✓	Please explain
<p>The need for powerline and substation is driven by power demand associated with developmental initiatives. Need for electrical infrastructure stems from customer applications, Eskom NDP and assessment of the network. Two powerlines exist within the area.</p>			
<b>12. Will any person's rights be negatively affected by the proposed activity/ies?</b>	YES	<b>NO</b> ✓	Please explain
<p>No person's right will be negatively affected. The right of people to receive electricity is upheld in the country's constitution. No household will be relocated by the construction of the powerline. There will be no change in landuse and spatial plan</p>			
<b>13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?</b>	YES	<b>NO</b> ✓	Please explain
<p>The study area is outside the urban edge corridor and sprawl</p>			
<b>14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?</b>	<b>YES</b> ✓	NO	Please explain
<p>The project is to ensure that the mine receives electricity for its operation and also enable Eskom to provide electricity thereby enabling the local municipality to meet its future and current service delivery targets. SIP 10 looks at the distribution of electricity for all, this project will ensure that existing and future recipients will receive electricity.</p>			
<b>15. What will the benefits be to society in general and to the local communities?</b>	Please explain		
<p>Provision of electricity to the mine will also enable the mine to offer employment to the locals thus alleviate poverty and provide needed skills and empowerment. The prominent benefit will be provision of the needed energy for development which will address poverty through economic development.</p>			

## BASIC ASSESSMENT REPORT

<b>16. Any other need and desirability considerations related to the proposed activity?</b>	Please explain
The mine needs the electricity for its operation. Provision of a new substation in the area will also provide the community with needed electricity.	

<b>17. How does the project fit into the National Development Plan for 2030?</b>	Please explain
<p>The NDP aims to eliminate poverty and reduce inequality by 2030. The role of electricity in fulfilling the aims of the NDP is to provide the energy needed to run the economy, improve people's lives, provide job opportunities, support development, achieve transformation etc. This can only be achieved if the quality of power supply is good and reliable. Even though the main aim of the proposed substation is provide electricity to the mine, surrounding communities will benefit from the substation. There is no adequate source of electricity in the area</p> <p>The extract from KZN Energy strategy 2030, shows the intrinsic need for electricity. KwaZulu Natal requires about 400MW and 470MW more electricity annually to achieve and sustain its development growth</p> <div data-bbox="220 898 1385 1144" style="border: 1px solid black; padding: 5px;"><p>As the world undergoes rapid urbanisation and greater numbers of people in developing countries move to the cities, the need to improve basic services and infrastructure such as drinking water, waste disposal, transportation infrastructure and access to electricity has reached a critical point. Infrastructure development is the foundation for economic growth and poverty reduction and the strategic objectives proposed herein will assist in laying that foundation.</p></div> <div data-bbox="220 1196 1385 1541" style="border: 1px solid black; padding: 5px;"><p>KwaZulu-Natal consumes in excess of 6700 MW of electricity or almost two Eskom six-pack power stations in its peak demand period. Average growth in electricity demand, which closely tags economic growth rates, is predicted to be between 6 and 7%. This implies that KwaZulu-Natal requires between 400 MW and 470 MW more electricity each year to achieve and sustain its growth targets. The recent unscheduled power cuts and national initiatives to reduce electricity consumption during peak demand periods are signs that Eskom is currently unable to meet national electricity demands.</p></div>	

**BASIC ASSESSMENT REPORT**

**18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.**

There must be public participation in environmental governance	Public participation was facilitated
People and their needs are most important	Affected people and individuals expressed dire need for electricity
Development must be sustainable and non-destructive	All disturbed areas will be stabilised and rehabilitated
There must be equity with regard to access to environmental resources	The proposed development will not negatively impact on the cultural and social needs of people
Decisions must take note of all the concerns of Interested and Affected Parties (IAP's)	All concerns, comments and suggestions will be incorporated and attached to the report
Environmental Education (EE) must ensure empowerment and well being	The report will provide information about the environmental status, potential impacts and practical mitigation measures
All impacts on the socio-ecological environment must be assessed	Specialist studies on wetlands, botanic and heritage impact assessments were undertaken. Reports area attached
Sensitive, vulnerable, highly dynamic or stressed ecosystems require specific attention in management and planning procedures	Sensitive environments have been identified and reports are attached

**19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.**

<b>Objectives of IEM</b>	<b>Comments</b>
promote the integration of the principles of environmental management set out in section 2 into the making of all decisions which may have a significant effect on the environment	Principles have been incorporated
identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimizing negative impacts, maximizing benefits. and promoting compliance with the principles of environmental management set out in section 2;	Appendix F Table 1 and 2
ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them;	EMP – Appendix G Appendix F (Mitigation)
ensure the consideration of environmental attributes in management and decision-making which may have a significant effect on the environment;	Positioning of towers outside riparian and wetland area Liaising with interested and affected people to incorporate their input (Appendix D)
identify and employ the modes of environmental management best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management set out in section 2	EMP – Appendix G

## 11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

**Table 4 Legislation**

<b>Title of legislation, policy or guideline:</b>	<b>Applicability to project</b>	<b>Administering authority:</b>	<b>Date:</b>
<b>Section 24 of the Constitution, 108 of 1996:</b>	Everyone has the right- (a) to an environment that is not harmful to their health or well-being; and (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that- (i) prevent pollution and ecological degradation; (ii) promote conservation; and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development	Parliament	1996
<b>National Environmental Management Act 107 of 1998</b>	Provides an overall framework for environmental management in South Africa to ensure active protection and responsible utilisation of the environment	Department of Environmental Affairs (DEA)	1998
<b>National Water Act No. 36 of 1998 – Section 19</b>	The purpose of the Act is to ensure that the country's water resources are protected, conserved, managed and controlled in a way that prevents degradation and reduction	Department of Water Affairs	1998
<b>Development Facilitation Act No. 67 of 1995</b>	Facilitates release of land for development / planning	Town and Regional Planning Commission	1995
<b>KZN Planning and Development Act (PDA) No. 5 of 1998</b>	Replaces the Town Planning Ordinance. Responsibility for preparing development plans, development control, special case areas, facilitating development through an integrated approach to planning.	The Minister Regional Councils Metropolitan Councils Local Councils Town and Regional Planning Commission	1998
<b>Conservation of Agricultural Resources Act, 1983 (Act No 43 of 1983) KwaZulu-Natal Heritage Act, 1997 (Act No. 10 of 1997)</b>	The objective the Act is to provide for the conservation of natural agricultural resources of the country by the maintenance of the potential of land, by the combating and prevention of erosion and of the weakening or destruction of the water sources, and by the protection of the vegetation and combating of weeds and invader plants	Department of Agriculture Amafa aKwaZulu-Natali	1983 1997
<b>Soil Conservation Act no 76 of 1969</b>	Attempts to minimise soil erosion, this act has a particular effect on the estuaries	National Department of Agriculture	1969
<b>National Environmental Management: Waste Act (Act 59 of 2008)</b>	The Act provides for: Reforming the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development Specific waste management measures The remediation of contaminated land Creates a system for listing and licensing of waste management activities Waste management activities above certain	Department of Environmental Affairs (DEA)	

## BASIC ASSESSMENT REPORT

	thresholds are subject to a process of impact assessments and licensing, or a requirement to comply with certain additional standards		
<b>National Heritage Resource Act No. 25 of 1999 (NHRA)</b>	Promotes good management of national estate and to encourage communities to protect their heritage for the benefit of future generations The Act considers resources of cultural significance or other special value for the present and future generations. The Act considers the demolition of structures older than 60 years and provision of permits to do so, burial grounds and graves, heritage resource management	South African Resource Agency National Council for Heritage	1999
<b>NEMA: Biodiversity Act No. 10 of 2004</b>	The purpose of the Act is to protect the country's biodiversity within the framework of NEMA so as to protect species and ecosystems. The Act must read together with NEMA	Department of Environmental Affairs	2004
<b>Fencing Act (Act no 31 of 1963)</b>	Prohibition of damage to a property owner's gates and fences	Department of Agriculture	1963
<b>The Eskom Act 40 of 1987 as amended by the Eskom Amendment Act 51 of 1991; section 11 and 12 authorises Eskom to</b>	Generate or supply or to generate and supply electricity within the Republic of South Africa subject to the right of local authorities and holders of licenses under the provisions of the Electricity Act, 1987 investigate, establish, acquire, maintain, co-ordinate, amalgamate and carry on undertakings to provide an efficient and cost-effective supply of electricity to anybody or person in the republic	National Energy Regulator	1991
<b>National Forest Act No. 84 of 1998</b>	No person may cut, disturb, damage or destroy any indigenous living tree in a natural forest except in form of licence issued under section 7(4) or section 23 or an exemption of the provisions of this subsection published by the minister in the Gazette Section 12-16 deals with the protected tree species, no person may cut, disturb, damage or destroy or remove any protected tree or collect, remove, transport or export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree except under a licence granted by the minister	Department of Agriculture, Fisheries and Forestry	1998

### 12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

#### a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase of powerline?  
If YES, what estimated quantity will be produced per month?

YES ✓	NO
m <sup>3</sup>	

Will the activity produce solid construction waste during the construction/initiation phase of substation?  
If YES, what estimated quantity will be produced per month?

YES ✓	NO
m <sup>3</sup>	

## BASIC ASSESSMENT REPORT

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

Some of the construction waste will be recycled and general waste will be disposed at registered landfill site

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

At registered landfill site. The contractor will liaise with municipality to enquire about use of registered landfill site

Will the activity produce solid waste during its operational phase?

YES	NO ✓
m <sup>3</sup>	

If YES, what estimated quantity will be produced per month?

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

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

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

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

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?

YES	NO ✓
-----	---------

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

Is the activity that is being applied for a solid waste handling or treatment facility?

YES	NO ✓
-----	---------

If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

### b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

YES	NO ✓
-----	---------

If YES, what estimated quantity will be produced per month?

m <sup>3</sup>	
----------------	--

Will the activity produce any effluent that will be treated and/or disposed of on site?

YES	NO ✓
-----	---------

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



## BASIC ASSESSMENT REPORT

Will the activity produce effluent that will be treated and/or disposed of at another facility?

YES	NO ✓
-----	---------

If YES, provide the particulars of the facility:

**Facility name:**

**Contact**

**person:**

**Postal**

**address:**

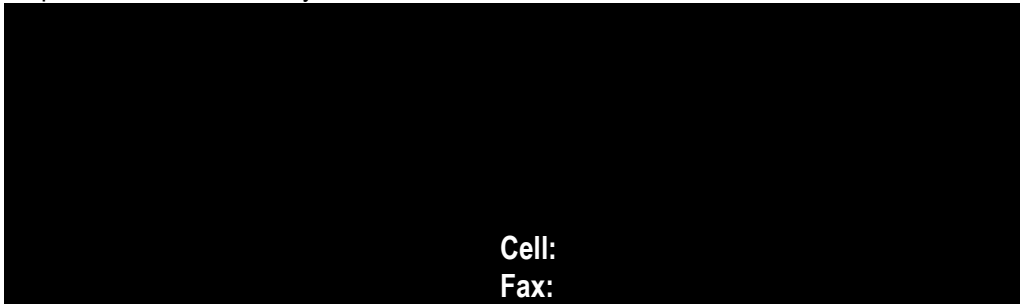
**Postal code:**

**Telephone:**

**Cell:**

**E-mail:**

**Fax:**



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



### c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?

YES	NO ✓
-----	---------

If YES, is it controlled by any legislation of any sphere of government?

YES	NO ✓
-----	---------

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

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

Emissions from the construction vehicle will have minimal impact. Vehicles will be serviced to prevent smoke emission.

### d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?

YES	NO ✓
-----	---------

If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

### e) Generation of noise

Will the activity generate noise?

YES ✓	NO
----------	----

If YES, is it controlled by any legislation of any sphere of government?

YES	NO ✓
-----	---------

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

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

The noise will be coming from construction vehicles and assembling of towers. The level of the noise will be minimal

## BASIC ASSESSMENT REPORT

### 13. WATER USE

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

<del>Municipal</del>	<del>Water board</del>	<del>Groundwater</del>	<del>River, stream, dam or lake</del>	<del>Other</del>	The activity will not use water ✓
----------------------	------------------------	------------------------	---	------------------	-----------------------------------

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

Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

litres	
YES	NO ✓

### 14. ENERGY EFFICIENCY

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

The conductors transmitting electricity are made of material with least resistance. Most parts of the powerline stretches in relatively straight lines thus improving on efficiency as turning structures are weak spots.

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

Solar power:	Depends on sunlight. Has limited energy
Generators:	Run by fuel. Are be expensive. Has limited energy
Hydro generated power:	Provides power for peak periods. Augments current supply
Biomass:	Depends on biomass. Has limited power
Wind power:	Can only supply limited area. Affects birds

## SECTION B: SITE/AREA/PROPERTY DESCRIPTION

**Important notes:**

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

Section B Copy No. (e.g. A):

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

3. Has a specialist been consulted to assist with the completion of this section?

<b>YES</b> ✓	<b>NO</b>
-----------------	-----------

If YES, please complete the form entitled “Details of specialist and declaration of interest” for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

**Property description/physical address:**

<b>Province</b>	KwaZulu Natal
<b>District Municipality</b>	Amajuba DM
<b>Local Municipality</b>	Dannhauser LM
<b>Ward Number(s)</b>	Ward 10
<b>Farm name and number</b>	See table below
<b>Portion number</b>	See table below
<b>SG Code</b>	See table below

**Current land-use zoning as per local municipality IDP/records:**

Rural settlement

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use or a consent use application required?

<b>YES</b>	<b>NO</b> ✓
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Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

## BASIC ASSESSMENT REPORT

**Table 6 Affected landowners**

Property Name	Portion	Number	Owner	Name	Position	Telephone	Address	Email
Struisvogel Kop	1	4275	Dortry Coal Holdings Pty Ltd	Malcolm Ford	Representative	011 994 8900 0836542827	3rd Floor, 198 Oxford Road, Illovo, Johannesburg, Postnet Suite 30, Private Bag X11, Birnam Park, 2015,	<a href="mailto:malcolm@ikwezi.co.za">malcolm@ikwezi.co.za</a>
Struisvogel Kop	2	4275	Ingonyama Trust Trustees	Patrick Hadebe	Chief	078 251 6800	Amahlubi Tribal Authority 6870 Madadeni Section 4	
Struisvogel Kop	6	4275	Nyembe Manfirifiri Phillip	S.C. Nyembe	Representative	072 801 1629	P/Bag X 6601 Newcastle	
Struisvogel Kop	6	4275	Nyembe Qalangaye	S.C. Nyembe	Representative	072 801 1629	P/Bag X 6601 Newcastle	
Struisvogel Kop	6	4275	Nyembe Robinson Jabulani	S.C. Nyembe	Representative	072 801 1629	P/Bag X 6601 Newcastle	
Struisvogel Kop	6	4275	Nyembe Wilfred Komdani B-E	S.C. Nyembe	Representative	072 801 1629	P/Bag X 6601 Newcastle	
Struisvogel Kop	0	4275	Ingonyama Trust Trustees	Patrick Hadebe	Chief	078 251 6800	Amahlubi Tribal Authority 6870 Madadeni Section 4	
Kromdraai	3	8626	Mdlalose Frank Themba	Mdlalose Frank Themba	Landowner	072 460 3514	P.O. Box 14110 Madadeni, 2951	
Klip Rand	1	8627	Regional & Land Affairs	S. Ntombela	Representative	033 355 4300 071 683 5806	Private Bag X9000, Pietermaritzburg, 3200 188 Hoosen Haffejee Street, Pietermaritzburg, 3201	<a href="mailto:snntombela@ruraldevelopment.gov.za">snntombela@ruraldevelopment.gov.za</a>

N	0	H	T	0	0	0	0	0	0	0	0	4	2	7	5	0	0	0	0	1
N	0	H	T	0	0	0	0	0	0	0	0	4	2	7	5	0	0	0	0	2
N	0	H	T	0	0	0	0	0	0	0	0	4	2	7	5	0	0	0	0	6
N	0	H	T	0	0	0	0	0	0	0	0	4	2	7	5	0	0	0	0	0
N	0	H	T	0	0	0	0	0	0	0	1	5	0	5	4	0	0	0	0	0
N	0	H	T	0	0	0	0	0	0	0	0	8	6	2	6	0	0	0	0	3
N	0	H	T	0	0	0	0	0	0	0	0	8	6	2	7	0	0	0	0	1

## BASIC ASSESSMENT REPORT

### 1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

#### Alternative S1:

Flat	1:50—1:20	1:20 1:15✓	—	1:15—1:10	1:10—1:7,5	1:7,5—1:5	Steeper than 1:5
------	-----------	---------------	---	-----------	------------	-----------	------------------

#### Alternative S2 (if any):

Flat	1:50—1:20	1:20 1:15✓	—	1:15—1:10	1:10—1:7,5	1:7,5—1:5	Steeper than 1:5
------	-----------	---------------	---	-----------	------------	-----------	------------------

#### Alternative S3 (if any):

Flat	1:50—1:20	1:20 1:15✓	—	1:15—1:10	1:10—1:7,5	1:7,5—1:5	Steeper than 1:5
------	-----------	---------------	---	-----------	------------	-----------	------------------

#### Alternative S4 (if any):

Flat	1:50—1:20	1:20—1:15	1:15 1:10✓	—	1:10—1:7,5	1:7,5—1:5	Steeper than 1:5
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#### Substation 1

Flat	1:50—1:20	1:20 – 1:15 ✓		1:15—1:10	1:10—1:7,5	1:7,5—1:5	Steeper than 1:5
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#### Substation 2

Flat	1:50—1:20	1:20 – 1:15 ✓		1:15—1:10	1:10—1:7,5	1:7,5—1:5	Steeper than 1:5
------	-----------	------------------	--	-----------	------------	-----------	------------------

### 2. LOCATION IN LANDSCAPE

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

2.1 Ridgeline	<input checked="" type="checkbox"/>	2.4 Closed valley	<input type="checkbox"/>	2.7 Undulating plain / low hills	<input checked="" type="checkbox"/>
2.2 Plateau	<input type="checkbox"/>	2.5 Open valley	<input type="checkbox"/>	2.8 Dune	<input type="checkbox"/>
2.3 Side slope of hill/mountain	<input checked="" type="checkbox"/>	2.6 Plain	<input type="checkbox"/>	2.9 Seafront	<input type="checkbox"/>

### 3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

	Alternative S1:		Alternative S2 (if any):		Alternative S3 (if any):	
Shallow water table (less than 1.5m deep)	YES ✓	NO	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	YES	NO ✓	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES ✓	NO	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES ✓	NO	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO ✓	YES	NO	YES	NO

## BASIC ASSESSMENT REPORT

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Soils with high clay content (clay fraction more than 40%)  
 Any other unstable soil or geological feature  
 An area sensitive to erosion

YES ✓	NO
YES ✓	NO
YES ✓	NO

YES	NO
YES	NO
YES	NO

YES	NO
YES	NO
YES	NO

According to the geological study the study area is underlain by a mantle of transported and residual soils overlying weathered sandstone and with subordinate shale and siltstone horizons of the Vryheid Formation. Transported materials along the stream channels may be clayey yellow sands or potentially active sandy soil grey clays. Holes dug for testing the stability of the soil did not collapse. This could be due to the fact that the soil was relatively dry as the digging took place during autumn. The soils can be susceptible to erosion and degradation if disturbed during wet season. Hence construction should take place during dry weather season.

## BASIC ASSESSMENT REPORT

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted.

### Groundwater

No groundwater was encountered in any of the augered boreholes. The groundwater assessment was undertaken during onset of winter. This could be due to seasonal changes. Prolonged rainfall, particularly during the summer season, increased groundwater seepage flow can be anticipated, particularly at the soil / rock interface are likely to become more prolific in the rain.

### Summary of towers soil profile

Tower	Depth	Descriptions	Soil type
1	0.3m	Top soil, loose, Brown	3
	1.2m	Stiff, intact, grey clay and showing some little rocks	
	4m	Between 1.5m-4m grey, moist and stiff clay, with mixture of white clay. And yellow clay from 4m down.	
2	0.5m	Black top soil, loose Soft moist black clay, loam soil	1, boulders, hard rock
	1m	Moist, loose, grey Soft silt soil	
	1.5m	Refusal, with boulders coming out, this was near the ridge	
3	0.3m	Top soil, loose, Brown	1, soft rock
	0.7m	Stiff clay, grey, hard to drill	
	1m-3.5m	Yellowish, stiff clay-moist, hard to drill, due to availability of weathered sand stone	
	3.5m	Weathered sandstone, bedrock	
4	Could not access the site	Could not access the site due to stream going through the tower position, made assumption that the sandstone is also high therefore we gave it soil type 1	1
5	0.3m	Dark brown to black top soil	1, hard sandstone bed rock
	0.8m	Hard to drill, weathered sandstones, Dark yellow	
	1.5m	Refusal, bedrock at 1.5m deep	
6	0.5m	Brown top soil, loose	1, weathered Soft Rock
	2 m	Sand dry, becoming a little Harder to drill, weathered sandstones, Dark yellow, Clay, moist	
	1m	Sand stone, dry- loose	



## BASIC ASSESSMENT REPORT

### 4. GROUNDCOVER – Botanic and Wetland assessment Report attached in Appendix D

Indicate the types of groundcover present on the site. The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

<del>Natural veld in good condition<sup>E</sup></del>	<b>Natural veld with scattered aliens<sup>E</sup></b> ✓	<del>Natural veld with heavy alien infestation<sup>E</sup></del>	<del>Veld dominated by alien species<sup>E</sup></del>	Gardens
Sport field	Cultivated land	Paved surface	<del>Building or other structure</del>	Bare soil

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

The dominant veld type within the region comprises of KwaZulu Natal Highland Thornveld. Soil, climate and human effects play an important role in determining species composition and veld condition. The shallow duplex soils that are common in this BRG have a particularly low resistance to grazing pressure and generally the veld based on these soils is in a poor condition and erosion is a common occurrence on these soils. The western side of the study area has wetland type soil, retain water over extended periods. There is little intrusion by alien vegetation due to poor soils. No threatened red data species were reported within the study area. No avi-fauna species were observed near the river system. Overgrazing and movement of people has greatly reduced the bird species observed in the area. The preferred powerline corridor and substation site will have minimal impact on the local vegetation type. Powerline structures occupy a relatively small area along tower bases. Substation may take up about three quarter of a hectare. However, current landuse around the substation will not be stopped as result of location of the substation.

### 5. SURFACE WATER Botanic and Wetland assessment Report attached in Appendix D

Indicate the surface water present on and or adjacent to the site and alternative sites?

<b>Perennial River</b>	<b>YES ✓</b>	NO	UNSURE
<b>Perennial and non-perennial streams</b>	<b>YES ✓</b>	NO	UNSURE
<del>Non-Perennial River</del>	<del>YES</del>	<del>NO</del>	<del>UNSURE</del>
<del>Permanent Wetland</del>	<del>YES</del>	<del>NO</del>	<del>UNSURE</del>
<b>Seasonal Wetland</b>	<b>YES ✓</b>	NO	UNSURE
<b>Non-perennial pans/depressions</b>	<b>YES ✓</b>	NO	UNSURE
<del>Artificial Wetland</del>	<del>YES</del>	<del>NO</del>	<del>UNSURE</del>
<del>Estuarine / Lagoonal wetland</del>	<del>YES</del>	<del>NO</del>	<del>UNSURE</del>

## BASIC ASSESSMENT REPORT

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

### Perennial River wetlands and riparian areas

Perennial and non-perennial streams drain into Tendeka River. Tendeka River is one of the tributaries of Buffalo River. Figure 10 shows map showing riparian area and wetlands generated by ecologist. The proposed project will not impact on the aquatic systems within the study area, especially along the preferred corridor 1. The study area falls with Buffalo Water management area and within DWA V32C catchment area. The terrain adjacent to the streams has a gradual slope that channels run-off into local streams and into Tendeka River. The river banks show vertical erosion and the sediment is carried downstream. The effects of flood have lowered the river channel to its erodible shale rock. The washing away of the riverbanks, figure 11, has extended and raised the riparian edge. The riparian edge is the high terrace (rarely inundated): relict flood plains which have been raised above the level regularly inundated by flooding due to lowering of the river channel. Most of floodplain adjacent to the river banks shows active inundation by floods. This has resulted in dysfunctional riparian areas. Wetlands get their water from seasonal high water table. Pans hold water after heavy rains as well as after floods.

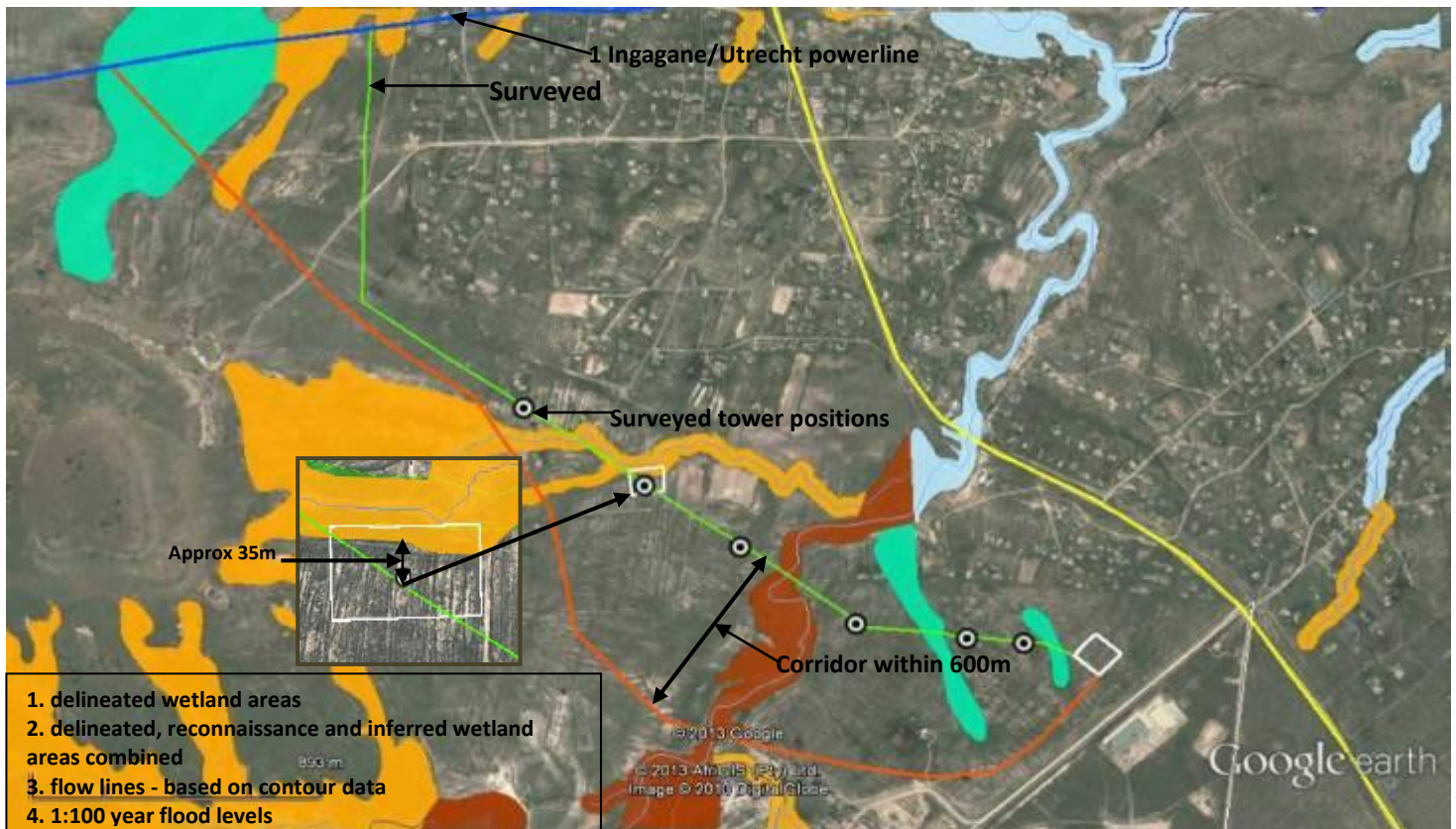
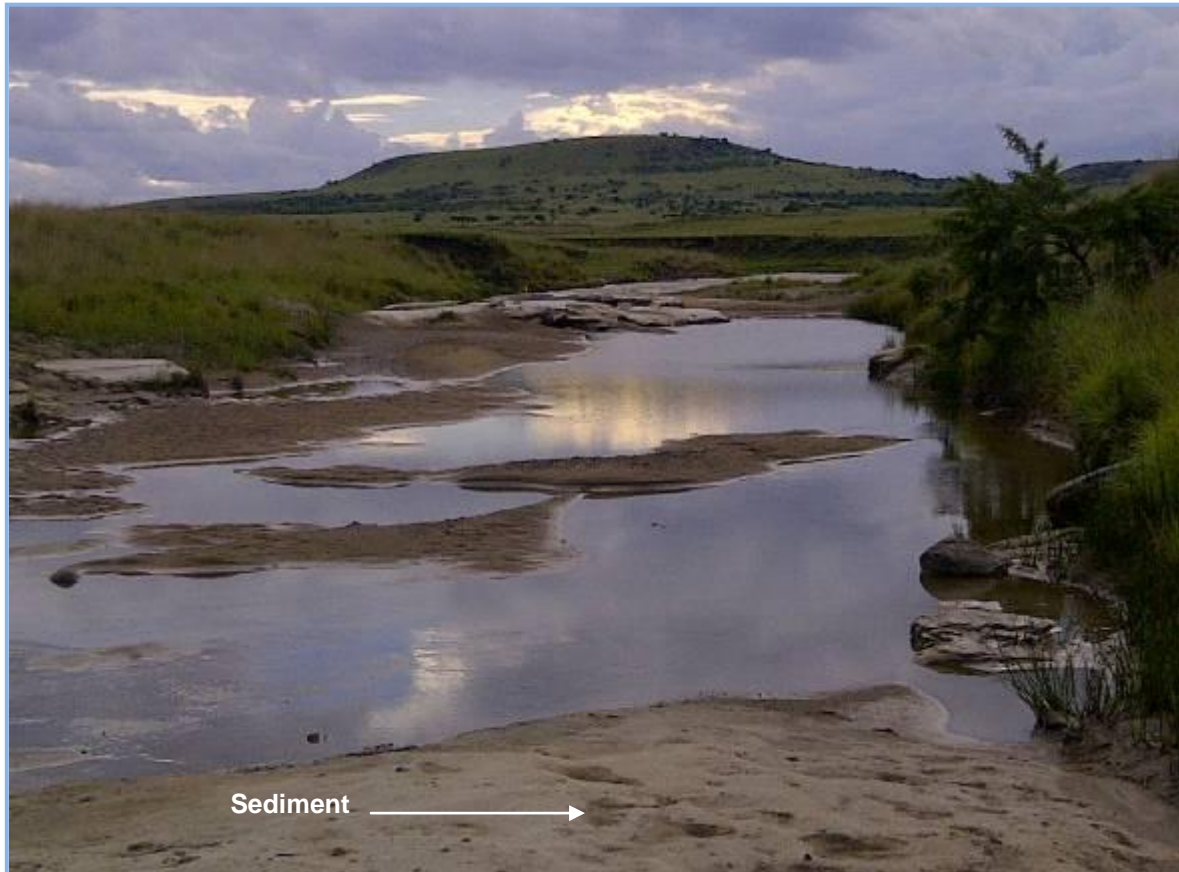


Fig 10 Wetland Delineation extracted from Ikwezi Mining (Pty) Ltd – Doornkop Colliery



**Fig 11 Tendeka River channel**

The area has channelled and un-channelled riparian wetlands, figure 10. A 32m buffer will be maintained for location of towers and substation site. The ecological importance of these riparian areas is considered to be low as a result of their dysfunctional status. The riparian wetlands are damaged by livestock, flooding and cracking soils. The proposed powerline will span across the riparian area and wetlands.

Sedimentation along the river channel, figure 11, is caused by the vertical erosion, figure 12 of the riverbanks thereby lowering the quality of water downstream. Rapid erosion of the stream bed results in a lowering of the local groundwater table. High rainfall, steep terrain and adjacent flat plains maximises the effects of floods. The velocity of floods is able to dislocate vulnerable topsoil and thus causing cumulative effect of loss of ground cover and eventually habitat.



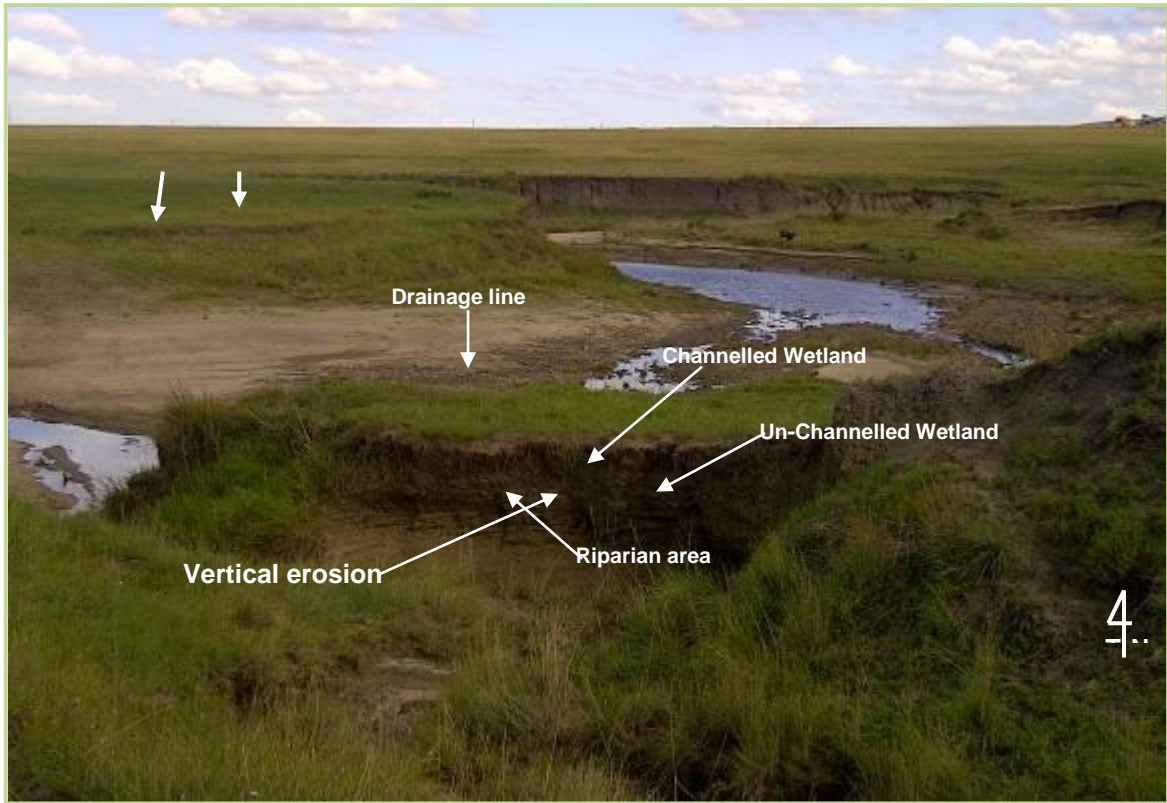


Fig 12 Eroding river bank

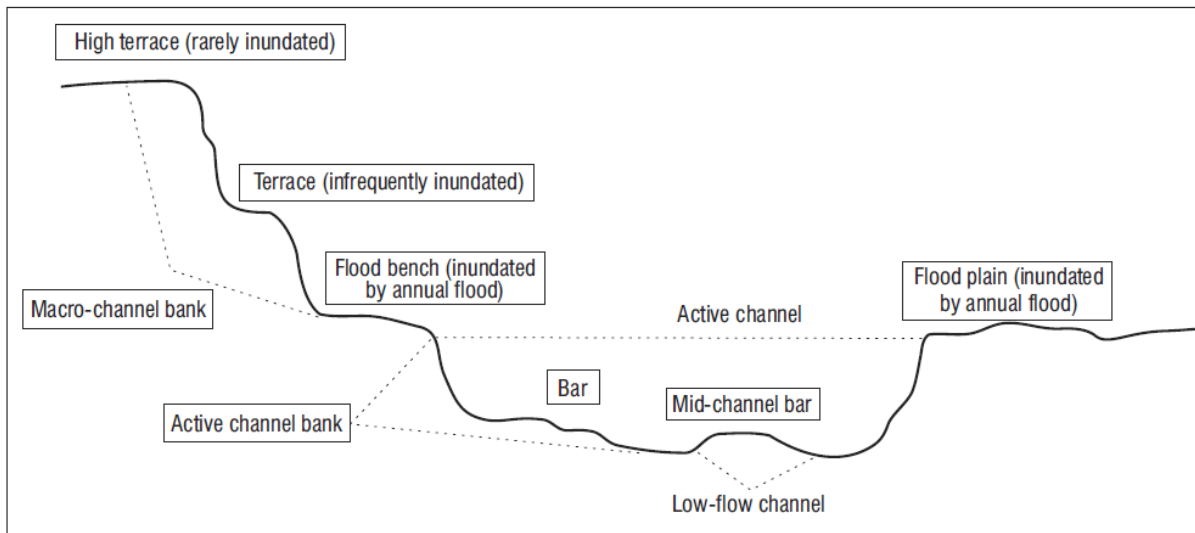


Fig 13 Riparian areas and floodplain (Extracted Riparian area and wetland delineation SA Guideline DWA)

## BASIC ASSESSMENT REPORT

### Riparian and wetland area

Tendeka River has distinct riparian areas. Many riparian areas show wetland indicators and can be classified as wetlands. However, other riparian areas are not saturated long enough or often enough to develop wetland characteristics, but also perform a number of important functions. High energy water flow characterise the water velocity in a riparian area associated with the water flowing in a water channel, whereas wetlands generally display more diffuse flow and are lower energy conditions. Figure 13 shows indicators of upper terrace used to delineate the edge of a riparian area. Wetlands in the area do not show surface water saturation however they show hydromorphic soils. The upper terraces are visible about 50m from the river bank. Two wetlands were observed along west part of the study area. They were recognised by the unique grass species and hydromorphic soils. One of them is a channelled wetland and one is non-channelled. The proposed powerline will span across these water systems. Figure 14 shows eroding gullies along riparian area along corridor 1. Location of powerline will be able to span across the riparian area and the river. Figure 10 above shows that both the preferred corridor and surveyed powerline route will not impact on the water systems.



Fig 14 showing erosion gullies

## 6. LAND USE CHARACTER OF SURROUNDING AREA

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

Natural area	Dam or reservoir	Polo fields
Low density residential	Hospital/medical centre	Filling station <sup>H</sup>
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential <sup>A</sup> ✓	Church	Agriculture/grazing ✓
Retail commercial & warehousing	Old age home	River, stream or wetland ✓
Light industrial	Sewage treatment plant <sup>A</sup>	Nature conservation area
Medium industrial <sup>AN</sup>	Train station or shunting yard <sup>N</sup>	Mountain, koppie or ridge ✓

## BASIC ASSESSMENT REPORT

Heavy industrial <sup>AN</sup>	Railway line <sup>N</sup>	Museum
Power station	Major road (4 lanes or more) <sup>N</sup>	Historical building
Office/consulting room	Airport <sup>N</sup>	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam <sup>A</sup>	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

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



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

The informal residential area is situated on the west side of the study area. Corridor 2 & 3 which are not considered but were investigated as alternatives run through the informal residential area. The preferred substation site lies west of the residential area along an open grassland area. The residential area will not be impacted by the proposed powerline and the substation.

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



Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan)	YES	NO ✓
Core area of a protected area?	YES ✓	NO
Buffer area of a protected area?	YES ✓	NO
Planned expansion area of an existing protected area?	YES	NO ✓
Existing offset area associated with a previous Environmental Authorisation?	YES ✓	NO
Buffer area of the SKA?	YES	NO ✓

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A. (**Wetland map Appendix A5**)

### 7. CULTURAL/HISTORICAL FEATURES – Specialist Heritage Impact assessment attached in Appendix D

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



## BASIC ASSESSMENT REPORT

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

The proposed construction of the powerlines and associated structures may proceed from a heritage point of view as no sites or features are in danger of being destroyed or altered. However, it should be pointed out that the KwaZulu-Natal Heritage Act requires that operations exposing archaeological and historical residues including potential grave sites should cease immediately pending an evaluation by the heritage authorities.

Will any building or structure older than 60 years be affected in any way?

YES	NO ✓
YES	NO ✓

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.



8. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

**Level of unemployment:**

In 2011, approximately 47.6%, figure 14, of the population in Dannhauser was unemployed out of which 58.2% was youth (i.e. 15-34 years). The highest level of unemployment is amongst the youth (15-34). This is of concern as unemployment youth turns to engage in social evils. This high level of unemployment amongst the youth could be caused by lack of work in the area or lack of required skills.

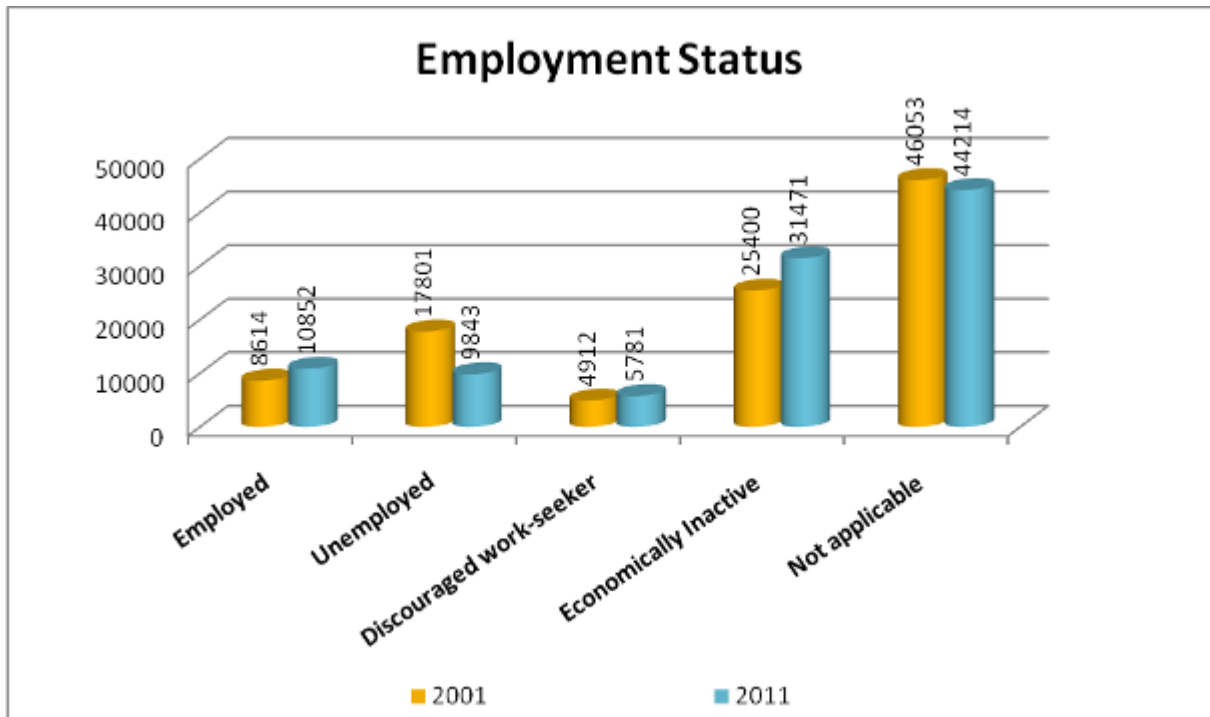


Fig 15 Extracted from Dannhauser Draft IDP Review 2013/14

### **Economic profile of local municipality:**

The major economic sectors within Dannhauser are agriculture and mining. Mining is however, moving away from large-scale operations to smaller operations. There are some opportunities for the establishment of small-scale mining of coal, clays or reworking coal dumps, prospecting for other minerals. Large urban centres servicing and offering employment opportunities to the population of Dannhauser are the towns of Dundee and Newcastle.

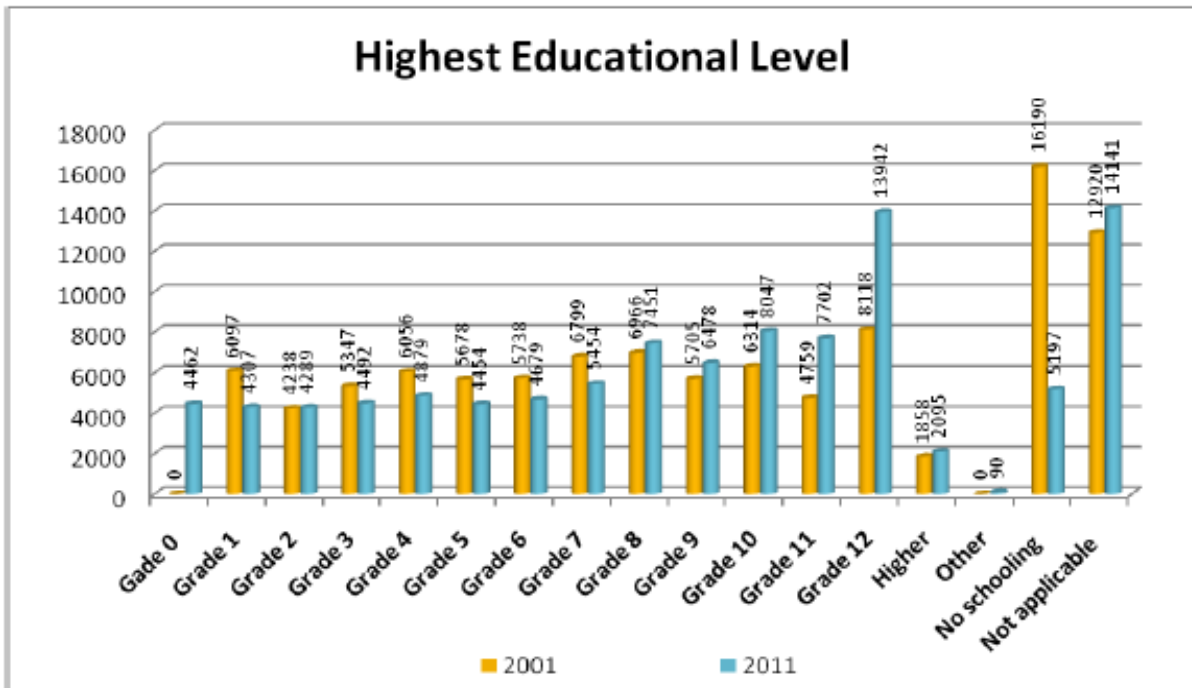
The decline in employment in commercial agriculture due to mechanisation and lack of farmer subsidy from the government has somehow promoted subsistence farming which has become the main agricultural activity in Dannhauser. This type of farming is mostly concentrated in the more rural parts of the municipality.

The manufacturing sector in Dannhauser is relatively small and does not have the same infrastructure and services available at neighbouring towns, Dundee and Newcastle. Dannhauser has space zoned for industrial development, but the industrial area lacks proper-tarred roads and other infrastructure such as electricity and water to effectively promote the development of the manufacturing sector. The current **electricity infrastructure** in Dannhauser must be upgraded to accommodate the expansion of the manufacturing sector.

**Level of education:**

**Extracted from Dannhauser Municipality Draft IDP Review 2013/14**

Educational statistics conducted in 2011 shows that only 1.3% of the population in Dannhauser had a higher level of education and approximately 25.3% had matrics. Number of people with no schooling declined to 8.9% in 2011 from 22.8% in 2001. The declined is believed to be possibly because of a higher level of primary school enrolment that occurred in 2011 as it recorded at 94.5% in the same year. Other studies show that many pupils drop out of school before they complete their metric. Likewise, only a handful of those who finish matric pursue further studies. Figure 15 shows education levels in the district.



**Fig 16 Extracted from Dannhauser Draft IDP Review 2013/14**

**b) Socio-economic value of the activity**

- What is the expected capital value of the activity on completion?
- What is the expected yearly income that will be generated by or as a result of the activity?
- Will the activity contribute to service infrastructure?
- Is the activity a public amenity?
- How many new employment opportunities will be created in the development and construction phase of the activity/ies?
- What is the expected value of the employment opportunities during the development and construction phase?
- What percentage of this will accrue to previously disadvantaged individuals?
- How many permanent new employment opportunities will be created during the operational phase of the activity?

What is the expected capital value of the activity on completion?	R100,000.00	
What is the expected yearly income that will be generated by or as a result of the activity?	R	
Will the activity contribute to service infrastructure?	YES ✓	NO
Is the activity a public amenity?	YES ✓	NO
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	R	
What is the expected value of the employment opportunities during the development and construction phase?	R	
What percentage of this will accrue to previously disadvantaged individuals?	%	
How many permanent new employment opportunities will be created during the operational phase of the activity?	R	

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What is the expected current value of the employment opportunities during the first 10 years? R  
 What percentage of this will accrue to previously disadvantaged individuals? %

**9. BIODIVERSITY**

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult <http://bgis.sanbi.org> or [BGIShelp@sanbi.org](mailto:BGIShelp@sanbi.org). Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

a) **Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category** N/A

Systematic Biodiversity Planning Category				If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	

b) **Indicate and describe the habitat condition on site**

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	%	
Near Natural (includes areas with low to moderate level of alien invasive plants)	%	
Degraded (includes areas heavily invaded by alien plants)	%	
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	60% 30% 2% 8%	60% transformed into informal urban 30% natural grass 2% trees 8% weeds

## BASIC ASSESSMENT REPORT

**c) Complete the table to indicate:**

- (i) the type of vegetation, including its ecosystem status, present on the site; and
- (ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		Aquatic Ecosystems								
<b>Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)</b>	Critical	Wetland (including rivers, depressions, channelled and unchannelled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline			
	Endangered									
	Vulnerable									
	Least Threatened									
		YES ✓	NO	UNSURE	YES	NO	YES	NO		

**d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)**

**Reference**

1. Conservation Targets and Status for Vegetation Types in KZN October 2011

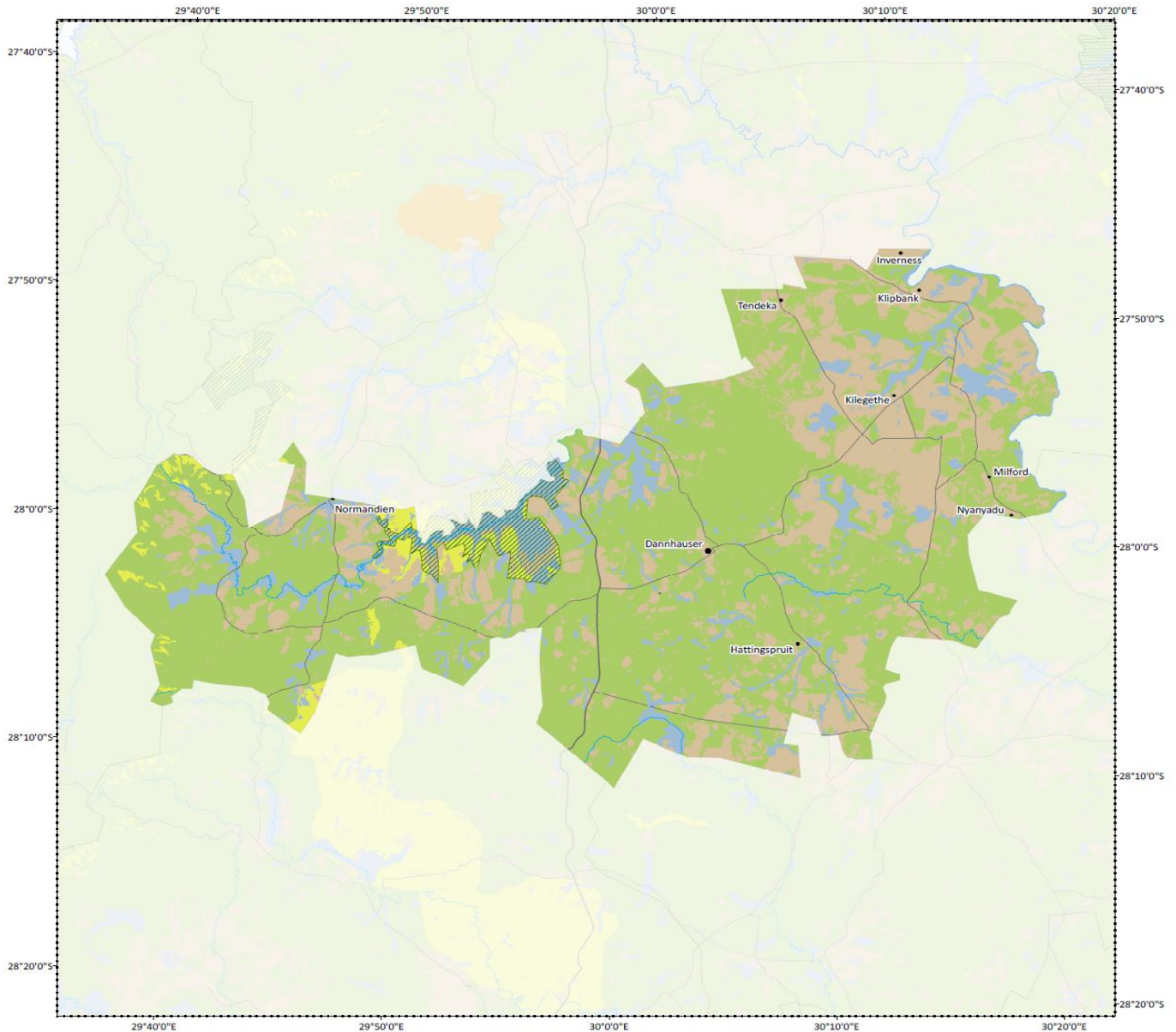
The dominant veld type within the region is classified as Northern KwaZulu Natal Moist grassland which according to SANBI its conservation status is vulnerable. The vulnerability is a result of fragmentation of the grassland habitat due to various landuse. The grassland is fragmented by residential area, mining, farming etc. This grassland is dominated by *Themeda triandra* and *Hyparrhenia hirta*. Open Acacia sieberiana var. woodii savannoid woodlands encroach up the valleys, usually on disturbed (strongly eroded) sites. Both grasses are palatable and thrive in poor soils. *Hyparrhenia hirta* is probably the most popular thatching grass used in South Africa. It is grazed by livestock early in the growing season and after fires, but becomes less palatable for grazing later. This grass is seen as a drought resistant grass, which protects the soil and stabilizes hard soil and eroded places. It is also used to weave mats and baskets. According to the ecological report species diversity in the area is low. These grasses thrive in poor shallow sandy soils. The shallow duplex soils are clayey and expansive. They swell when wet and shrink when dry making them erosion prone. These soils have a particularly low resistance to grazing pressure and generally the veld based on these soils is in a poor condition and erosion is a common occurrence on these soils. Figure 17 shows SANBI municipality vegetation map showing Tendeka as an area with little natural vegetation.

**Aquatic ecosystem**

Aquatic ecosystem is explained in section 5 above. Construction of the powerline and substation will not

Municipality:  
**DANNHAUSER,**  
KwaZulu-Natal

**Terrestrial  
Biodiversity  
Summary Map**



**LEGEND**

**PROTECTED AREAS**

- Land-based Protected Area (formal)
- Land-based Conservation Area (informal)
- Ramsar Site

**TERRESTRIAL ECOSYSTEMS**

Threatened Terrestrial Ecosystems

- Critically Endangered
- Endangered
- Vulnerable
- Least Threatened

Areas Remaining Natural

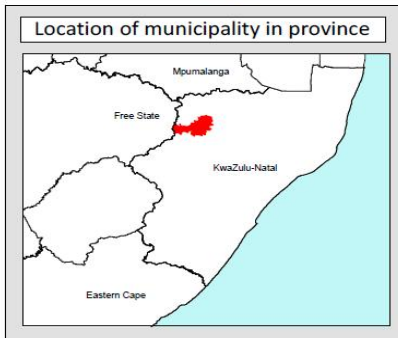
- Areas Where No Natural Habitat Remains

**FRESHWATER ECOSYSTEMS**

- Rivers
- Wetlands

**OTHER**

- Major Town
- Towns
- Roads



0 5 10 15 Kilometers

environmental affairs  
Department of Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

For more information contact:  
Biodiversity GIS (BGIS)  
South African National Biodiversity Institute (SANBI)  
Tel: (021) 799 8738 OR  
Email: bgishelp@sanbi.org

Disclaimer: The Municipal Biodiversity Summary Project uses data generated as of December 2009 and is based on the best available national spatial layers. Finer-scale biodiversity information is available for some municipalities and, if available, should be considered in land-use planning and decision-making within the municipality.

Fig 17 SANBI Dannhauser Municipality Biodiversity information map

**Ecological functions along alternative corridors**

The main ecological function is to channel run-off from upland catchment, through the riparian area and wetlands into the river. The main ecological systems within the study area are upland catchment, riparian areas, drainage lines, a river and grasslands. The ecological systems are also considered habitats. In stable systems the habitats are able to deliver runoff into the river without detrimental effects. The environment along corridor 1 has been disturbed by overgrazing and irregular fire. The effects are compaction of the soil, reduced porosity for filtrating water and sediment, expansion and erosion of bare soils leading to erosion. Gullies exist along corridor 1 and 4. The grasslands are part of the integrated ecological systems. Their function is to drain and filter run-off, protect underlying soils, reduce the effects of floods. Grasslands are associated with the upland catchment area and along the riparian and riverbank. Riparian vegetation will normally have more species than upland grasslands. However overgrazing drastically reduces species diversity and population.

Ecological system	Corridor 1	Corridor 2	Corridor 3	Corridor 4
Conservation status	None	None	None	None
Vegetation cover	Present with low species diversity	Fragmented	Fragmented	Present with low species diversity
Integrity of the ecological system	Not reliable	Non-existent		
Status of the vegetation	Vulnerable	Fragmented	Fragmented	Vulnerable
Functionality of the integrated ecological systems	Functioning poorly	None	None	Dysfunctional
Extent of gullies	Narrow along the riparian area	None	None	Wide along riparian areas

**Effects of powerline on biodiversity**

Powerline construction requires clearance of vegetation to accommodate pile foundation holes. Powerline towers will occupy 20mx20m hole dimension. Excessive driving of vehicle across the vegetation may disturb the grass exposing the ground to erosion. Creating multiple tracks across the grass will increase the impact on grass.

**Mitigation**

The work area will be limited to accommodate construction of pile foundations and erection of towers. Clearance of vegetation will be limited to the work area. Bare areas around tower bases will be grassed to prevent point erosion and weed invasion. Driving should be limited along existing tracks and traffic should also be limited. Fewer towers will be located along corridor 1 thus limiting the area to be cleared. Disturbance to the grass will not lead to species loss or further habitat fragmentation. The powerline will not block movement of people and livestock. The powerline will not disintegrate the habitat connectivity. No towers will be located close to edge of dongas and gullies.

## SECTION C: PUBLIC PARTICIPATION

### 1. ADVERTISEMENT AND NOTICE

<b>Publication name</b>	Isolezwe (Zulu) newspaper; Mercury (English) newspaper	
<b>Date published</b>	25 April 2013	
<b>Site notice position</b>	<b>Latitude</b>	<b>Longitude</b>
	30° 6'43.17"E 30° 6'36.26"E	27°50'32.69"S 27°50'37.54"S
<b>Date placed</b>	30 April 2013	

Include proof of the placement of the relevant advertisements and notices in **Appendix E1**.

### 2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 54(2)(e) and 54(7) of GN R.543.

Key stakeholders (other than organs of state) identified in terms of Regulation 54(2)(b) of GN R.543:

**See section 5 below for key stakeholders  
Table 7 showing affected landowners**



## BASIC ASSESSMENT REPORT

**Table 7 Affected Landowners**

Property Name	Portion	Number	Owner	Name	Position	Telephone	Fax	Address	Email
Struisvogel Kop	1	4275	Dortry Coal Holdings Pty Ltd	Malcolm Ford	Representative	011 994 8900 0836542827	011 327 1885	3rd Floor, 198 Oxford Road, Illovo, Johannesburg, Postnet Suite 30, Private Bag X11, Birnam Park, 2015,	<a href="mailto:malcolm@ikwezi.co.za">malcolm@ikwezi.co.za</a>
Struisvogel Kop	2	4275	Ingonyama Trust Trustees	Patrick Hadebe	Chief	078 251 6800		Amahlubi Tribal Authority 6870 Madadeni Section 4	
Struisvogel Kop	6	4275	Nyembe Manfirifiri Phillip	S.C. Nyembe	Representative	072 801 1629		P/Bag X 6601 Newcastle	
Struisvogel Kop	6	4275	Nyembe Qalangaye	S.C. Nyembe	Representative	072 801 1629		P/Bag X 6601 Newcastle	
Struisvogel Kop	6	4275	Nyembe Robinson Jabulani	S.C. Nyembe	Representative	072 801 1629		P/Bag X 6601 Newcastle	
Struisvogel Kop	6	4275	Nyembe Wilfred Komdani B-E	S.C. Nyembe	Representative	072 801 1629		P/Bag X 6601 Newcastle	
Struisvogel Kop	0	4275	Ingonyama Trust Trustees	Patrick Hadebe	Chief	078 251 6800		Amahlubi Tribal Authority 6870 Madadeni Section 4	<a href="mailto:karna@kmclegal.co.za">karna@kmclegal.co.za</a>
Kromdraai	3	8626	Mdlalose Frank Themba	Mdlalose Frank Themba	Landowner	072 460 3514		P.O. Box 14110 Madadeni	
Klip Rand	1	8627	Regional & Land Affairs	S. Ntombela	Representative	033 355 4300 071 683 5806		Private Bag X9000, Pietermaritzburg, 3200 188 Hoosen Haffejee Street, Pietermaritzburg, 3201	<a href="mailto:ssntombela@ruraldevelopment.gov.za">ssntombela@ruraldevelopment.gov.za</a>

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Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2. This proof may include any of the following:

- e-mail delivery reports;
  - emails are attached
- registered mail receipts;
- ~~courier waybills;~~
- signed acknowledgements of receipt; and/or
  - Attached notification forms
- or any other proof as agreed upon by the competent authority
  - Minutes of the meeting with Dannhauser local municipality, Amajuba Region Environmental affairs, Ikwezi mining (Pty) Ltd representatives, Amahlubi Tribal Authority, Landowners

### Outline of public participation process

#### Summary of public participation process

- Identification of affected landowners and relevant stakeholders
- Initial contacting of affected landowners briefly explaining the project and requesting contact details
- Telephone communication with local iNkosi (chief Mavundla) about the project
- Preparation of briefing information document (BID) with ortho photos and shapefiles
- Writing of letters to affected landowners and stakeholders (**Appendix E**)
- Emailing and/or hand delivering of the letter and BID
- Confirming meeting date and venue by telephone with regional land affairs
- Meeting with regional land affairs
- Meeting with Ezemvelo KZN Wildlife and Amafa AkwaZulu-Natali requesting response
- Written email from a landowner to EAP (**Appendix F**)
- Written email from district and local municipalities
- Meeting with Eskom surveyor to discuss line layout and depression along corridor 1

## BASIC ASSESSMENT REPORT

**Table 8 Methods of communication with I&AP**

Owner	Name	Position	Documents	Contact means
Dortry Coal Holdings Pty Ltd	Malcolm Ford	Representative	<ul style="list-style-type: none"> <li>• BID</li> <li>• Notification letter</li> <li>• Ortho-photo map</li> <li>• Cadastral map</li> <li>• Google kmz map</li> <li>• Shapefile</li> <li>• Meeting</li> </ul>	<ul style="list-style-type: none"> <li>• Meeting</li> <li>• Email</li> </ul>
Ingonyama Trust Trustees	Patrick Hadebe	Chief	<ul style="list-style-type: none"> <li>• BID</li> <li>• Notification letter</li> <li>• Ortho-photo map</li> <li>• Cadastral map</li> <li>• Meeting</li> </ul>	<ul style="list-style-type: none"> <li>• Email</li> <li>• Telephone</li> </ul>
Nyembe Manfirifiri Phillip	S.C. Nyembe & Patrick Hadebe	Family Representative	<ul style="list-style-type: none"> <li>• BID</li> <li>• Notification letter</li> <li>• Ortho-photo map</li> <li>• Cadastral map</li> <li>• Google kmz map</li> <li>• Meeting</li> </ul>	<ul style="list-style-type: none"> <li>• Hand delivery</li> <li>• Telephone</li> </ul>
Ingonyama Trust Trustees	Patrick Hadebe	Chief	<ul style="list-style-type: none"> <li>• BID</li> <li>• Notification letter</li> <li>• Ortho-photo map</li> <li>• Cadastral map</li> <li>• Google kmz map</li> <li>• Meeting</li> </ul>	<ul style="list-style-type: none"> <li>• Email</li> <li>• Telephone</li> </ul>
Mdlalose Frank Themba	Mdlalose Frank Themba	Landowner	<ul style="list-style-type: none"> <li>• BID</li> <li>• Notification letter</li> <li>• Ortho-photo map</li> <li>• Cadastral map</li> <li>• Google kmz map</li> <li>• Meeting</li> </ul>	<ul style="list-style-type: none"> <li>• Email</li> </ul>
Regional & Land Affairs	S. Ntombela	Representative	<ul style="list-style-type: none"> <li>• BID</li> <li>• Notification letter</li> <li>• Ortho-photo map</li> <li>• Cadastral map</li> <li>• Google kmz map</li> <li>• Meeting</li> </ul>	<ul style="list-style-type: none"> <li>• Site visit</li> <li>• Email</li> </ul>
Archaeological Officer	Archaeology interested EIA Section	- Amafa aKwaZulu Natali	<ul style="list-style-type: none"> <li>• BID</li> <li>• Notification letter</li> <li>• Ortho-photo map</li> <li>• Cadastral map</li> <li>• Google Kmz map</li> </ul>	<ul style="list-style-type: none"> <li>• Hand delivery</li> <li>• Email</li> </ul>
Ms Dinesree Thambu	Planning interested EIA Section	- Ezemvelo KZN Wildlife Service	<ul style="list-style-type: none"> <li>• BID</li> <li>• Notification letter</li> <li>• Ortho-photo map</li> <li>• Cadastral map</li> <li>• Google Kmz map</li> <li>• shapefile</li> </ul>	<ul style="list-style-type: none"> <li>• Hand delivery</li> <li>• Email</li> <li>• Responded with requirements</li> </ul>

**3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES**

Summary of main issues raised by I&APs	Summary of response from EAP
<b>See attached minutes</b>	

**Table 9 Questions and Responses on meeting held with Ikwezi and landowners on 16 January 2013**

Item	Description
Project	Ikwezi Mining 20MVA 88/22kV substation and Ingagane/Utrecht/Ikwezi 88kV Powerline
Meeting date	16 January 2012
Venue	Ikwezi Mining (Pty) Ltd office
Status of minutes	<b>Draft</b>
Revision	<b>0</b>
Compilation date	28 January 2013
Compiled	Ludloko Developments

Question	Response
Who is the liaison person for Ikwezi Mining (Pty) Ltd	Mageba Zulu
What is corridor	It was explained that a corridor is linear area that has a width between 300m – 500m and its length is determined by the start and the connection/end of the proposed linear development. The location of the corridor is not exact, it merely occupies a linear area Changes of the powerline route can be done without application for amendment of the route The powerline corridor is the activity that will be applied for to national DEA Zulu name for corridor is umgudu
What is a powerline route	It is a geographically located strip/line that is located within a corridor. The location of the powerline route is exact. The route has a defined servitude which can be registered as a right-of-way. Changes to the route need to be applied for as amendments Zulu name for route is umzila
How is a powerline servitude located	The location of powerline servitude is done by Eskom surveyor. Once the powerline has been pegged its location is then discussed with the affected landowner
Explain the compensation process	Eskom explained that compensation process involves land evaluation by an independent land evaluator who will provide price of land affected. A landowner can also appoint his/her own land evaluator.
How are substation located	The source of power where the powerline will be linked is determined by the location of the substation. A substation is located nearer the centre of load demand in order to maximise voltage capacity. Location of substation away from centre of load demand will render voltage capacity to be low. There are no nearby substations that could provide electricity to Ikwezi (Pty) Ltd Mining.
How will the community benefit	Most electrification projects are sponsored by the Department of Energy. This process is often longer. In this case Eskom Holdings SOC requested from Ikwezi Mining (Pty) Ltd to connect the local network to the new substation so as to improve capacity on the network and thus provide

## BASIC ASSESSMENT REPORT

	more capacity for planned and future connections. The local network is experiencing poor voltage capacity and thus has no spare capacity which leads to outages and no adequate/spare capacity for connections
Ikwezi Mining (Pty) Ltd support	Ikwezi Mining (Pty) Ltd agreed for the connection of the local network to the substation. This is considered to be one of its social contribution to the community

### 4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the **Final BAR as Appendix E3**.

### 5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

**Table 10 Listed stakeholders**

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
KZN Department of Environmental Affairs	Poovey Moodley	034 315 3936 082 719 9907	034 312 9986	<a href="mailto:poovey.moodley@kzndae.gov.za">poovey.moodley@kzndae.gov.za/</a> <a href="mailto:poovimoodley@gmail.com">poovimoodley@gmail.com</a>	58 Allen street 1 <sup>st</sup> City Central Buld Office No.50 Newcastle
Dannhauser Local Municipality	Colin Krause Planning Department	034 621 2666	034 621 3114	<a href="mailto:aluretec@dannhauser.co.za">aluretec@dannhauser.co.za</a>	Dannhauser Local Municipality P.O. Box 1011 Dannhauser 3080 8 Church Street, Dannhauser, 3080
Amajuba District Municipality	Nothile Mthimkhulu Environmental management  Mark Durham Planning	034 329 7200	034 314 3785	<a href="mailto:nothilem@amajuba.gov.za">nothilem@amajuba.gov.za</a>  <a href="mailto:markd@amajuba.gov.za">markd@amajuba.gov.za</a>	Private Bag 6615 Newcastle 2940 Amajuba Building Main Street Section 1 Madadeni
SAHRA (National)	Amafa AkwaZulu Natali Archaeological Officer Bernadet Pawandiwa	033 394 6543	033 342 6097	<a href="mailto:amafa.pmb2@mweb.co.za">amafa.pmb2@mweb.co.za</a> <a href="http://www.sahra.org.za">www.sahra.org.za</a> sahris application upload	195 Langelibalele stree PMB P O Box 2685 Pietermaritzburg 3200
Ezemvelo KZN Wildlife Service	Ms Dinesree Thambu	033 394 6543	033 342 6097	<a href="mailto:thambud@kznwildlife.com">thambud@kznwildlife.com</a>	Acting Co-ordinator IEM P O Box 13053 Cascades, 3202

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Land Affairs	Sikhumbuzo Ntombela	033 355 4300		<a href="mailto:ssntombela@ruraldevelopment.gov.za">ssntombela@ruraldevelopment.gov.za</a>	188 Hoosen Haffejee Street, Pietermaritzburg, 3201 Private Bag X9000, Pietermaritzburg, 3200
DWA	Lindiwe Dladla	034 212 1158		<a href="mailto:dladlal@dwa.gov.za">dladlal@dwa.gov.za</a>	

Include proof that the Authorities and Organs of State received written notification of the proposed activities as appendix E4.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

### 6. CONSULTATION WITH OTHER STAKEHOLDERS

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

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

N/A

A list of registered I&APs must be included as appendix E5.

ATTACHED

Copies of any correspondence and minutes of any meetings held must be included in Appendix E6.

ATTACHED

## SECTION D: IMPACT ASSESSMENT

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

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

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.

In evaluating the environmental impacts the following standard assessment weighing criteria was used:

#### Impact assessment methodology

The significance and severity of impact, negative or positive is determined by the following factors

- Sensitivity of the environment
- Potential loss of habitat
- Negative social impacts
- Lack or poor mitigation measures

#### Impact levels

L – Low  
 M – Medium  
 H – High  
 HP – High Positive  
 N – Negligible  
 N/A – Not Applicable

#### Description

Low	The significance of the project is low due to negligible or low change in natural and social environment. Change constitutes a change from current or better state to damaged state.
State	Current or ideal functioning of the natural and social systems
Medium	Medium change to state of environment
High	Damage to natural systems Irreversible change to the natural systems High significance
Negligible	Insignificant change to the environment
Positive	The impact will enhance the natural or social environment



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## **Integrated habitats**

The study area is characterised by a hilly terrain west of the study area. The hilly terrain descends into the undulating valley below rolling into a flat terrain at the centre of the study area. Tendeka river flows across the study area. Run-off flowing from uplands flows over the surface through the grass, filters into the soil into sub-surface and reaches the river. When one of the habitats is disturbed it created a chain of events.

## **Potential Impacts on habitats**

Ecological impact issues of powerline along specialised habitats include vegetation clearance which involves exposing the underlying ground and loosening of the underlying topsoil structure making the soil vulnerable to erosion. Exposed grounds can also be invaded by weeds. Overgrazing, poor vegetation cover and unstable soils renders the soil susceptible to erosion. Gullies are caused by high velocity floods. The increased velocity is due to the dysfunctional riparian areas, and eroding banks. These habitats are unable to retard the speed of floods. Erosion is exacerbated into gullies which prevail especially along riparian areas, drainage lines and river banks.

## **How do riparian areas provide flood control**

Naturally vegetated riparian areas serve a number of beneficial functions for flood control. A vegetated floodplain reduces the force, height and volume of floodwaters by allowing them to spread out horizontally and relatively harmlessly across the floodplain. Water that floods into vegetated floodplains re-enters the main channel slowly, enabling it to be soaked up by the "sponge" of floodplain wetland soils and streamside vegetation on riparian lands that falls or extends into the water provides numerous barriers against moving water, which slows it down so water is not delivered downstream as quickly. Such vegetation also intercepts and detains runoff from adjacent upland areas that would otherwise flow directly into rivers and exacerbate flooding conditions downstream. The root systems of streamside forest and emergent aquatic vegetation keep pores of the soil open so that two to three times more water can infiltrate the soil.

In a stream surrounded by a riparian zone, sediment pollution is controlled. Riparian zones are densely populated, and thus have an intricate root system that helps to stabilize the bank and prevent erosion. In addition, the woody stems and grasses help to physically trap sediment by slowing down the water runoff from the surrounding area, allowing the sediment to settle out. Although floods are necessary for the diversity of life in the flood plain and riparian zone, a stream with a mature riparian zone controls flooding, keeping it at the moderate levels which help to stimulate growth. Where flood peaks are higher they remove the vegetation leading to an unstable system with less diversity in vegetation and ultimately erosion.

## **Factors affecting the stability of the integrated habitats**

Cattle movement along riparian areas coupled with overgrazing removes the vegetation resulting in increase in soil compaction and reduction in soil porosity thereby decreasing in infiltration and a subsequent increase in the speed and amount of flood runoff. The increased velocity also increases floods downstream.

## **Effect of locating towers on riparian habitat**

Riparian areas control erosion, and thus, to prevent sediment pollution. Riparian areas can be impacted by placement of towers and movement of vehicles. Tower placement involves opening ground and exposing soil to erosion. This could disrupt the hydrological function of a riparian zone. Riparian areas provide habitats to a number of species and help in reducing the impacts of floods. Downstream impacts will involve change in the river ecology. Disturbance to rivers involve damaging of the river bank by excavating holes near riverbanks and driving across intact riverbanks. The riverbank will collapse sending sediments into the river thereby polluting water downstream. Impacts on wetlands from direct disturbance caused by construction equipment or from erosion, or driving vehicles and impacts from tower placement or from existence of the completed line. Wetland habitats

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are more sensitive to disturbance than others. Wetland habitats, which depend on specific hydrological conditions, are particularly vulnerable to disturbance. Construction of power lines and associated corridors through wetland areas can generate long-term impacts to these sensitive habitats and ecosystems.

### **Mitigation against potential impacts**

To prevent and/or minimise effect of erosion is to engage community in controlling livestock numbers which will lead to increased vegetation cover. Expansion of gullies will be retarded by placing suitable material. Preventing movement of cattle along edge of eroding gullies which compacts the underlying soil causing them to break when dry and easily erodible. Towers are to be positioned outside the habitats. Riparian areas can be spanned across and towers placed outside the edge of the riparian area. Towers are to be located 32m from the edge of a wetland and river. The powerline will span across the riparian area, river and wetlands.

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A complete impact assessment in terms of Regulation 22(2)(i) of GN R.543 must be included as Appendix F.

Activity		Impact summary	Significance	Causes	Proposed mitigation
<b>Alternative 1 (preferred alternative)</b>					
Powerline construction	<b>Location of towers</b>	Disturbance to wetlands and riparian area	Low	Location of towers within wetland areas. Non-compliance with Water Act	Towers are to be located towers outside the wetland buffer area Buffer areas are to be marked on the site map and shown to the construction team
		Relocation of houses	None	Not getting the required servitude clearance in between houses	Corridor 1 will not relocate houses
		Landuse	Low	Powerline allow grazing and crop farming excluding centre pivot and buildings	There will be no change in landuse
		Proximity to houses	Low	Locating powerlines close to houses	Corridor 1 away from houses
	<b>Excavation of holes</b>	Ground disturbance and soil erosion	Low	Digging of holes, depending on soil type, can collapse Substation site excavation and levelling erosion maybe initiated particularly if no rehabilitation takes place or poor rehabilitation is done	Geotechnical study reported that the holes along the preferred route did not collapse this could be due to drier soil conditions than during rainy season Soils in the area are prone to erosion as a result of their loose nature especially when dry Vegetation of bare areas is mandatory to prevent potential erosion Prolonged exposure of bare areas is to be kept to a minimum to prevent potential erosion
		Disturbing of wetland area	Low	Locating and digging holes for towers and driving through wetlands	Towers are to be located towers outside the wetland buffer area Buffer areas are to be marked on the site map and shown to the construction team
		Destruction of drainage lines	Low-Medium	Locating and digging towers along drainage lines	Corridor 1 is able to span over the drainage lines The drainage lines are part of the wetland channel interconnected to the river system and streams
		Water pollution - sedimentation	Low-Medium	Caused by erosion	Un-rehabilitated areas will erode into wetland and into the river causing pollution Prevent erosion by vegetating of bare areas with suitable indigenous seed mixture
		Extension of gullies	Low-Medium	Due to disturbance of soil followed by eroding of the soil extending the gully	Towers will be located outside gully areas Prevent formation of gullies by implementing soil conservation methods

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		Habitat and biodiversity destruction	Low	Towers along grasslands occupy a small area	Species diversity is low due to poor soils, climate, overgrazing and unregulated burning There will be minimal disturbance to the habitat Powerline exists within the study area and the habitat within and nearby servitude is still intact
		Air pollution	Low	Smoke from vehicles	Smoke from poorly serviced vehicles will cause pollution, however on a low scale Construction vehicles are to be serviced regularly
	Open holes	Creation of new access	Low	No new access is required	Access from local roads into corridor 1 is available to the rest of the corridor
		Creation of dust	Medium	Dust occurs when there is excavation and presence of bare soil	Dust at substation construction can be minimised by sprinkling of water when needed
	Excavation	Weed invasion along bare areas	High	Weeds invade bare soils that had been disturbed	All bare areas need to be grassed
		Visual intrusion	Low Medium	Visual impact is significant if affected people mention that their view will be blocked or the powerline and substation is unable to blend with the environment	Most of the preferred route is not visible from the main road only sections of the powerline and substation are visible from the main road
		Manual labour	Medium	To provide temporary jobs	Provision of manual labour is recommended to offer temporary employment
	<b>Storage of chemicals and fuels</b>	Ground pollution	Low medium	Oil and chemical spill	Chemical, oil and fuel containers are to be located on a demarcated area within the office area and be placed on impervious surface to prevent leaking onto the ground
	<b>Construction period</b>	Soil erosion	High	Constructing during rainy season may initiate and exacerbate erosion	Construction during rainy season may render excavated soils unstable and prone to collapsing Construction is to be done during dry season to prevent potential erosion Soils in the area are prone to erosion as a result of their loose nature especially when dry Vegetation of bare areas is mandatory to prevent potential erosion Prolonged exposure of bare areas is to be kept to a minimum to prevent potential erosion
	<b>Use of registered</b>	Compliance with Water Act requirements	High	Use on non-registered landfill site in a non compliance as stipulated in the Water Act	Disposal of waste can only be done at registered landfill site

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	<b>landfill site</b>				Contractor to liaise with municipality and record the liaison and response from municipality
		Disturbance of graves	Negligible	This is a result of poor assessment prior to design and construction phases	No graves were observed Encountering of graves during excavation is to be reported to Eskom, ECO, Amafa and police
	<b>Construction cement</b>	Ground and water pollution	Low	Mixing of cement on site	No mixing of cement on-site should happen Pre-mixed cement is to be used
		<b>Indirect impacts:</b>			
		Economic development	High	Provision of electricity in the area which has not been electrified or has poor capacity	The new development will promote social and economic development
		Increased waste at landfill site	Medium	As a result of waste from construction mainly	Due to increase in disposable waste
		<b>Cumulative impacts:</b>			
Operation	<b>Use of fossil fuels</b>	Air pollution	High	Due to increased need of electricity from coal fired power stations	Particularly during peak demands and rising client applications for connections will increase the burning of coal and increase smoke which drifts to other areas and can cause health problems and greenhouse effect
<b>Alternative 2</b>					
	<b>Location of powerline route</b>	Relocation of houses	High	Not getting the required servitude clearance in between houses Inconvenience to people's lives Only done as the only possible option	Corridor 2 is not preferred mainly because of the need to relocate houses and cause inconvenience
	Excavation	Weed invasion along bare areas	High	Weeds invade bare soils that had been disturbed	All bare areas need to be grassed
		Disturbing of wetland area	None	Placing towers within wetlands	There are no wetlands along corridor 2
		Dust	High	Close proximity to houses	More water will be needed to sprinkle bare soil continuously
		Ground disturbance and soil erosion			
		Disturbing of wetland area		There are no wetlands	Unless the wetlands were drained prior to settling of people
		Destruction of drainage lines		There are no drainage lines	Not visible
		Water pollution - sedimentation		There are no water bodies	

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		Extension of gullies		None	
	Steel structures	Visual intrusion	High	Powerline in close proximity to houses	Corridor 2 is not preferred due to its close proximity to houses
	Open holes	Falling into open holes	Medium	Safety concern due to close proximity to houses	Holes need to be secured and marked as work area and left open for extended periods
		<b>Indirect impacts:</b>			
	Added open areas from relocated plots	Invasion of open plots	High	Squatters can invade the open plot due to need for houses	Liaise with local councillor to prevent invasion of servitude
		<b>Cumulative impacts:</b>			
Operation	<b>Use of fossil fuels</b>	Air pollution	High	Due to increased need of electricity from coal fired power stations	Particularly during peak demands and rising client applications for connections will increase the burning of coal and increase smoke which drifts to other areas and can cause health problems and greenhouse effect
Alternative 3					
		<b>Direct impacts:</b>		<b>Same as alternative 2</b>	<b>Same as alternative 2</b>
		<b>Indirect impacts:</b>			
		<b>Cumulative impacts:</b>			
Alternative 4					
		<b>Direct impacts:</b>			
	<b>Location of towers</b>	Disturbing of wetland area	High	Placing of towers within existing gullies. There extensive gullies along wetlands along the start of corridor 4	Location of towers outside the wetland buffer area may not be possible due to very long spans required
		Riparian area	High	Placing of towers within riparian areas Not complying with the Water Act	It is not possible to span across the extended riparian area
	<b>Excavation of holes</b>	Erosion	High	Erosion due to collapse of the hole and from bare areas affected by rain and floods	Excavation of holes within wetland and riparian area
		Destruction of drainage lines	High	There a number of drainage lines along corridor 4 The drainage lines are part of the wetland channel interconnected to the river system and streams Locating and digging towers along drainage	Corridor 4 has a number of drainage lines which may not be avoided

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				lines	
		Water pollution - sedimentation	Low-Medium	Caused by erosion	Un-rehabilitated areas will erode into wetland and into the river causing pollution Prevent erosion by vegetating of bare areas with suitable indigenous seed mixture
	<b>Access</b>	Extension of gullies	Low-Medium	Due to disturbance of soil followed by eroding of the soil extending the gully	Towers will be located outside gully areas Prevent formation of gullies by implementing soil conservation methods
		Water pollution - sedimentation		From erosion and accidental oil spills	All bare areas to be grassed Oil containers to be placed on designated areas on impervious substance
	<b>Drainage lines</b>		High	Inability to span and thus locate towers within the drainage lines	
	Access	Available	High	Not available	First section of the corridor across the expanded river channel is not easily accessible Banks form sheer drop into the river, therefore access needs to be constructed
		<b>Indirect impacts:</b>			
		Increased soil erosion	High	There is soil extraction along the banks coupled by excavation	The impacts of locating towers and causing soil erosion will add to the impact caused by soil extraction
		<b>Cumulative impacts:</b>			
Operation	<b>Use of fossil fuels</b>	Air pollution	High	Due to increased need of electricity from coal fired power stations	Particularly during peak demands and rising client applications for connections will increase the burning of coal and increase smoke which drifts to other areas and can cause health problems and greenhouse effect

Activity	Impact summary	Significance	Causes	Proposed mitigation
<b>Alternative 1 (preferred alternative)</b>				
	<b>Direct impacts</b>			
Substation construction	<b>Adequate space</b>	Lack of adequate space	Low	The site is able to accommodate the substation and incoming lines as well as outgoing feeder lines
				Ability to connect feeder lines makes it preferred



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	<b>Landuse</b>	Change in landuse	High		The site will not be used
	<b>Perimeter fence</b>	Livestock and people accessing and disturbing the work area Disturbance of grassed area by livestock Safety concern	Medium - high	Open work area	Work area is to be demarcated to limit disturbance within perimeter lines Substation construction site needs to be secured
	<b>Excavation</b>	Dust generation	High	Presence of bare areas	During windy days bare areas need to be watered
		Disturbing of wetland area	None		
		Destruction of drainage lines	None		
		Water pollution - sedimentation	None		
		Extension of gullies			
	<b>Stockpile area</b>	Mixing of topsoil and subsoil  Washing away Dust	Low	Not separating topsoil from subsoil Not securing the bottom of the pile	Low volumes of excavated soils will be stockpiled due to flatness of the area Stockpile should be located away from work area Stockpiled soil is to be protected from contamination and blowing away which may cause dust Water must be sprinkled on it when necessary
	<b>Office camp</b>	Bad location	Low	There are no drainage lines	To be located away from drainage lines and water systems Office site must be demarcated No removal of vegetation should take place Gravel stones are to be placed on the entrance of the office site and vehicle parking area to prevent erosion Office area to be grassed when construction has finished
	<b>Landuse</b>	Change in landuse	High	A 100mx100m space will be sterilised to accommodate the substation	Grazing can occur around the substation
	<b>Storage of chemicals and fuels</b>	Ground pollution	Low - medium	Oil and chemical spill	Chemical, oil and fuel containers are to be located on a demarcated area within the office area and be placed on impervious surface to prevent leaking onto the ground

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	<b>Noise</b>	Unacceptable noise levels	Low	Excessive construction noise Constructing over weekends	Construction of substation will generate acceptable noise levels All mechanical devices that can cause noise need to be serviced Work is to be done during work week days
	<b>Access</b>	Availability	Low	Access is available from local roads	
	<b>Bare areas</b>	Poor or lack of grassing	Medium – High	Restricted rehabilitation budget Poor grassing Lack of grassing Using dead grassing material	Areas denuded of vegetation by construction activities are to be exposed for a limited period to prevent potential erosion
	<b>Grassing material</b>	Use of alien grass	Low – medium	Alien grass such as Kikuyu is sometimes used to grass bare areas	Only indigenous seed material and other material are to be used for grassing Using of Kikuyu needs to be permitted by local department of agriculture – soil conservation
	<b>Outlet drains</b>	Poor drainage	Low	Outlet drains draining to nearby water Poor construction of outlet drains and dissipaters	Drains are to be designed to fast track channelling of run-off Drains are to be able to handle 1;100 flood level Cement drains are to be constructed to prevent silting and constant excavation to attain correct slope Dissipaters are to be fitted at the end of each drain
	<b>Substation structure</b>	Visual intrusion	Low – Medium	Intrusive steel structures Poor blending	Substation is visible from local roads and from main road The visual impact is however low
	<b>Application of herbicides</b>	Pollution	Low – Medium	Spillage of herbicides	Only Eskom approved herbicides are to be applied on the substation yard
	<b>Use of local roads</b>	Blocking flow of traffic	Low – Medium	Parking heavy construction vehicles along the road	Construction vehicles are to keep recommended speed along local roads There should be no parking along local roads blocking movement of vehicles
	<b>EMF</b>	EMF	Low		No is no direct and provable association of occurrence of cancer due to EMF Electricity infrastructure is far from houses and people
	<b>Landuse</b>	Landuse	Low		Current landuse around the substation site will not change The area is used for grazing

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	<b>Spread of fire</b>	Soil erosion Loss of property	Low	Making firebreaks around substation is important	Firebreaks around substation should be established to prevent spread of fire from Eskom site to neighbouring properties Smoking areas are to be demarcated and arranged to stop the spread of fire, such as spreading sand along an adequate smoke area Fire extinguishers must be checked for proper functioning
		<b>Indirect Impacts</b>			
		Theft	Low-Medium	Theft of copper	Eskom to work with the local community to stop theft of copper cables
		Economic development	High	Provision of electricity in the area which has not been electrified or has poor capacity	The new development will promote social and economic development
		<b>Cumulative impacts</b>			
Operation	<b>Use of fossil fuels</b>	Air pollution	High	Due to increased need of electricity from coal fired power stations	Particularly during peak demands and rising client applications for connections will increase the burning of coal and increase smoke which drifts to other areas and can cause health problems and greenhouse effect
<b>Site 2</b>					
		<b>Direct impacts</b>			
Substation construction	<b>Adequate space</b>	Lack of adequate space	Low	The site is not able to accommodate the substation and incoming lines as well as outgoing feeder lines	Locate a suitable site that will accommodate feeder lines
	<b>Perimeter fence</b>	Livestock and people accessing and disturbing the work area Disturbance of grassed area by livestock Safety concern	Medium - high	Open work area	Work area is to be demarcated to limit disturbance within perimeter lines Substation construction site needs to be secured
	<b>Landuse</b>	Change in landuse	None		The site will not be used
	<b>Pollution</b>				
	<b>Excavation</b>	Dust generation	High	Presence of bare areas	During windy days bare areas need to be watered
		Erosion	Low	Erosion from bare areas	All bare areas need to be grassed
	<b>Outlet drains</b>	Pollution of wetland	Low	The site is near a wetland Drainage from the substation site draining into the wetland	Outlet drains to drain away from the nearby wetland

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		<b>Indirect Impacts</b>			
		Theft	Low-Medium	Theft of copper	Eskom to work with the local community to stop theft of copper cables
		<b>Cumulative impacts</b>			
Operation	<b>Use of fossil fuels</b>	Air pollution	High	Due to increased need of electricity from coal fired power stations	Particularly during peak demands and rising client applications for connections will increase the burning of coal and increase smoke which drifts to other areas and can cause health problems and greenhouse effect

Activity	Impact summary	Significance	Causes	Proposed mitigation
<b>No-go option</b>				
		<b>Direct impacts</b>		
	Lack of construction powerline and substation	High	No impacts on the environment as there will be no construction of the powerline	The current state of the environment will remain the same Opportunity to involve department of agriculture to help with soil conservation will be lost
		<b>Indirect impacts:</b>		
	Supporting service delivery and economic development	High	Current voltage regulation problems and capacity constraints will not be addressed No new connections will be possible Eskom will not meet the IDP targets and national development targets on delivery basic service	Electrification of houses
		<b>Cumulative impacts:</b>		
	No effect on climate change	High	There will be no demand on coal There will be increase in power theft and resulting accidental deaths	

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**Table 10 Summarised impact assessment**

<b>Alternative site 2</b>			
Construction of substation	<b>Direct impacts:</b>		
	Inadequate space	Low	The site is able to accommodate the substation and incoming lines as well as outgoing feeder lines
	Poor demarcation of work area	Medium - high	Work area is to be demarcated to limit disturbance within perimeter lines
	Dust generation	Low – Medium	
	Erosion of soil stockpile area	Low	Low volumes of excavated soils will be stockpiled due to flatness of the area Stockpile should be located away from work area Stockpiled soil is to be protected from contamination and blowing away which may cause dust Water must be sprinkled on it when necessary
	Poor demarcation of camp site	Low	To be located away from drainage lines and water systems Office site must be demarcated No removal of vegetation should take place Gravel stones are to be placed on the entrance of the office site and vehicle parking area to prevent erosion Office area to be grassed when construction has finished
	Poor demarcation of office footprint	Low – Medium	A 100mx100m space will be sterilised to accommodate the substation
	Storage of chemicals and fuels	Low – medium	Chemical, oil and fuel containers are to be located on a demarcated area within the office area and be placed on impervious surface to prevent leaking onto the ground
	Increased noise levels	Low	Construction of substation will generate acceptable noise levels Work is done during work week days
	Creation of new access	Medium	New and surveyed access track into the substation is needed. The area has a gradual slope so there will be minimal cut and fill
	Lack of or poor vegetation of denuded areas	Medium – High	Areas denuded of vegetation by construction activities are to be exposed for a limited period to prevent potential erosion
	Planting of alien grassing material	Low – medium	Only indigenous seed material and other material are to be used for grassing
	Poor design and construction of outlet drains	Low	Drains are to be designed to fast track channelling of run-off Drains are to be able to handle 1;100 flood level Cement drains are to be constructed

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			to prevent silting and constant excavation to attain correct slope Dissipaters are to be fitted at the end of each drain
	Visual intrusion	Low – Medium	Substation is visible from local roads and from main road The visual impact is however low
	Incorrect application of herbicides	Low – Medium	Only Eskom approved herbicides are to be applied on the substation yard according to Eskom Herbicide Application Procedure
	Inconsiderate usage of local roads	Low – Medium	Construction vehicles are to keep to recommended speed along local roads There should be no parking along local roads which may block movement of vehicles
	EMF	Low	No is no direct and provable association of occurrence of cancer due to EMF Electricity infrastructure is far from houses and people
	Affecting landuse	Low	Current landuse around the substation site will not change The area is used for grazing
	<b>Indirect impacts:</b>		
Provision of power	Economic development and social upliftment	High	Substation will bring electricity to the mine and to the surrounding community
	<b>Cumulative impacts:</b>		
Use of fossil fuels	Global warming	High	Increased demand of electricity requires increased used of coal and subsequently impacts on climate through emissions from smoke stacks at power stations
<b>Alternative site 1</b>			
	<b>Direct impacts: Same as alternative site 1</b>		
	Adequate space	High	There is not enough space for establishing substation with its associated infrastructure
	<b>Indirect impacts:</b>		
	Same as alternative site 1		
	<b>Cumulative impacts:</b>		

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<b>No-go option</b>		
<b>Direct impacts:</b>		
Limited capacity for planned and future connections	High	The mine will get electricity
No operations and employment at the mine	High	The mine has started operating using generators which are unable to provide needed capacity It will be difficult to tell community that work prospects are no longer going to take place due to lack of power
No electrification	High	Presently there is backlog in provision of electricity The substation was going to enable electrification
Extraction of wood	High	Already taking place
<b>Indirect impacts:</b>		
Weed invasion	Medium	Where wood is harvested it leaves gaps and allow weed invasion
Limits people's development	Medium	People trapped in circle of poverty
<b>Cumulative impacts:</b>		
Progressive deterioration of network performance	High	Progressive deterioration leads to damage to infrastructure and thus increase maintenance costs and that has bearing on capital allocated to Eskom for infrastructure by Revenue
Mine stands idling	High	Loss of investment in the area Loss of revenue in the area
Community despair	High	Leads to riots as a result of lack of service delivery

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**Table 1 Summary of impact assessment of alternative corridor**

Potential impact	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Comments
Change of land use	None	none	None	No	No change in landuse will take place
Removal and relocation of houses	None	Yes	Yes	No	Only <u>corridor 2 and 3</u> require relocation of houses
Habitat destruction	No	No	No	No	There will be minimal disturbing of the habitat
Removal of soils	No	No	No	Yes	Soils outside eroding areas are stable Placing towers along a degraded riparian area will increase the damage to the soil
Species loss	Minimal	Insignificant	Insignificant	Minimal	Species diversity is low due to environmental factors including human effects within the study area
Digging of wetlands	No	No	No	Possible	Towers along <u>corridor 1</u> will be located outside the buffer/riparian zone
Damage to river banks and the river	No	No	No	Yes	Location of tower bases may be located within riparian area along <u>corridor 4</u> as a result of the wider extent of the area
Destruction of riparian areas	No	No	No	Yes	Towers in <u>corridor 1</u> are able to span across the riparian upper terrace
Disturbance to the floodplain	No	No		Yes	Floodplain has expanded wider and higher along <u>corridor 4</u>
Extending of gullies	No	No	No	Yes	Towers can be positioned along riparian area and hence along gullies along <u>corridor 4</u> extending existing gullies
Impacting on subsistence farming activities	No	N/A	N/A	None	Livestock grazing and croplands can continue within both <u>corridors 1 and 4</u>
Powerline spanning	Possible	N/A	N/A	Not possible	Towers along corridor 1 can be placed outside the riparian and wetlands as the spans can reach up to 450m
Potential impact	Substation 1	Substation 2			Comments
Change of land use	Yes	Yes			A substation makes a concrete footprint of 100mx100m which can only be used for distributing power
Impacting on houses	No	No			There are no houses along both sites
Impacting on biodiversity	Minimal	Minimal			Species diversity is low due to environmental factors including human effects
Impacting on wetlands	No	No			Substation 1 is located away from the nearest delineated wetland
Impacting on rivers	No	No			Both substations are located a distance from the river
Ability to place feeder lines	Yes	No			Feeder lines out of substation 2 will be constrained by operations at the mine
Impacting on subsistence farming activities	Minimal	No			Substation 1 is located along grazing area but the local tribal authority has approved the use of site



## BASIC ASSESSMENT REPORT

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Potential impact	Preferred corridor 1	Preferred substation 1	Floods along corridor 1	Livestock effect corridor 1	Comments
Change on land use	No	Yes	No	No	Substation construction will change use of land
Removal on houses	No	No	Yes	No	Floods can affect houses near floodplains
Habitat destruction	No	No	Yes	Yes	High volume and velocity floods and overgrazing livestock that take place in the area can destroy habitat by removing soil substrate as occurring along gullies
Species loss	No	No	Yes	Yes	Construction of powerline will not lead to species loss Overgrazing in the area has encourage flourish of mono grass species Floods remove soil and vegetation
Disturbance to wetlands	No	No	Yes	Yes	Most wetlands in the area are dysfunctional. Towers along corridor 1 will be located outside wetland areas including substation Overgrazing leads to erosion as observed along drainage and riparian area
Damage to river banks and the river	No	No	Yes	Yes	Floods have destroyed the river banks more so along corridor 4 and to a lesser extent along corridor 1
Destruction of riparian areas	No	No	Yes	Yes	Riparian area will be disturbed along corridor 4
Impacting on floodplain	No	No			Substation is located outside the floodplains areas
Extended gullies	No	None	Yes	Yes	Overgrazing and floods can extend gullies
Impacting on subsistence farming activities	No	Yes	No	Yes	Substation site will change landuse

## 2. ENVIRONMENTAL IMPACT STATEMENT

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

### Impact Statement

**Corridor 1**, preferred, east of the study area has less extensive riparian channelled wetlands as compared on **corridor 4** east of the study area and east of main road P272. Tendeka River channel narrows towards the far west of the study area allowing for ease of spanning across the river channel and adjacent riparian zone

The prevalent erosion occurring along the extent of the study area results from eroding gullies and drainage lines. The erosion is caused by water seepage that weakens the underlying soils along its weak points, high velocity floods that washes away river banks and riparian area, livestock compaction that weakens the soil and breaks it and high velocity run-off along bare areas such as paths and tracks. The soils swell when containing water and crack when dry making them susceptible to erosion. Floods push eroded soil into the river channel as sediment. This hydrological force expands the channel thereby lowering the depth of the river channel to the underlying shale rock and thus elevates and expands the riparian/flood terrace. Floods erode wetland areas making them dysfunctional. This has a bearing on the ability of the powerline to span across longer distances in order to locate towers outside the riparian edge. Along corridor 1 the extent of the riparian area and river channel is smaller than along corridor 4 enabling the towers to be located outside the riparian and wetland areas. The upper riparian terrace can be identified as the end of the riparian zone. The terrace can be used as the demarcation of the riparian zone and an area outside the floodline.

Alternative **corridor 4** has an expanded riparian area/wetland which makes it difficult to span and locate towers outside the riparian area and within the floodline. Biodiversity status in the area according to SANBI vegetation status map is less threatened and has low species diversity due to nutrient deficient soils. Other driving forces behind the low species diversity are un-regulated fires scotching the area, hydrological patterns, and overgrazing. Vertical erosion is observed along Tendeka river banks and stream banks. This is caused by rapid movement of flood current. **Corridors 2 and 3** have been eliminated due to lack of open space for locating corridor and the necessity to relocate houses.

The size of the preferred **substation site 1**, along Ingonyama trust land makes it possible for the substation to be accommodated with its in-coming and outgoing feeders. Alternative **substation 2** has limited space to adequately accommodate the substation with its associated feeders. The attached EMP provides general recommendations on management of potential impacts in order to minimise, prevent, or control them.

Identified potential impacts can be minimised by implementation of mitigation measures. The regional department of agriculture will be involved in providing practical soil conservation measures against expanding gullies in the area. Tower bases will be limited within their specification thus limiting the extent of disturbance. Construction will be best done during dry season when soils do not easily collapse as mentioned in the geotechnical study. Bare areas around the towers need to be compacted slightly and vegetated within a relatively short period after excavation to prevent.

### **No-go alternative (compulsory)**

- The receiving environment will remain intact as there will be no potential impact from the proposed project
- The opportunity to collaborate with the regional department of agriculture soil conservation to address the expansion of sheet erosion will be lost
- Ikwezi mine will not have the electricity it has requested
- Job prospect from Ikwezi mining venture will not happen
- Scarce skills development within Amajuba district will not be addressed by mining corporate through it corporate social responsibility
- Ikwezi mine has offered electricity supply to the surrounding community from Ikwezi substation
- Provision of electricity through Government protocol will take longer while Ikwezi mine has made it possible without the long waiting for delivery of one of the basic services
- The difficulty of informing the community that the provision of electricity that had been made aware of is no longer possible is not an easy one

### **Impact summary**

Tendeka River and its associated channelled riparian wetlands have a narrow channel along the west of the study area. This enables the powerline along Corridor 1 to span across the wetland system/buffer zone and to locate towers along or beyond the upper terrace of the riparian zone. This ensures that there will be no interference with the wetland system. These wetlands are actively eroding rendering them to be dysfunctional. Water on these wetlands drains along gullies into Tendeka River. Extent of the riparian area is much wider in the east of the study area. This area is crossed by corridor 4. Spanning across this section is not possible. Towers will inevitable land within the riparian area .

**SECTION E. RECOMMENDATION OF PRACTITIONER**

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?

<b>YES</b> ✓	<b>NO</b>
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If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment).

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

**General**

- The provision of electricity to Ikwezi Mine Pty (Ltd) is crucial for the operation of the mine
- Corridor 1 (orange line on project map) along the western side of the study area is the most suitable corridor for locating a powerline
- The receiving environment on the western side of the study area has limited environmental constraints restricting the location of a 600m wide corridor. The design and planning of the powerline corridor will also pose minimal impacts on the receiving environment
- The placement, where possible, of all towers outside of, or as close to the riparian edge as can be accommodated from a technical perspective.
- Avoidance of active erosion galleys' and steeper slopes when placing towers. Where applicable, suitable management measures should be implemented to avoid the establishment of point discharge areas for stormwater from tower bases, which may lead to surface erosion.
- Locals be considered for temporary manual labour
- Dispose waste at registered landfill site
- Construction should be monitored by an independent ECO on a monthly basis and Post Construction Audit report should be submitted to DEA Enforcement and Compliance once construction has being completed
- Weeds must be removed when construction has been completed
- Construction vehicles must maintain recommended driving speed
- Driving is to be limited along existing tracks and roads
- Damage to wetlands by construction vehicles is prohibited
- Mobile chemical toilets must be used
- Graves discovered during excavation must be reported to the SAP, ECO and Eskom. Work must cease immediately along the discovered grave site
- Working staff are to be inducted on environmental issues prior to starting work
- Safe cooking stoves are to be provided to the working staff. No open fires are to created
- Site communication protocol must be established
- Workers are prohibited on discussing construction activities with strangers
- Safe smoking area is to be established
- No blocking of public roads by construction vehicles

**Substation**

- Locate office site away from drainage lines and water bodies
- Establish a perimeter fence to keep livestock and intruders out of the work area
- Establish site office demarcate office container, material storage area, vehicle parking area
- Cut-off drain be constructed out of cement
- Pre-mix cement to be used on site
- Provide separate bins for different waste
- Recycle waste where possible
- Grass denuded area must be done with indigenous seed mixture
- Place soil stock pile away from work area

## BASIC ASSESSMENT REPORT

- There should be no mixing of topsoil and sub-soil
- Manage dust by sprinkling with water
- An adequate bund wall must be constructed around transformer to contain oil spills
- Bund walls must constructed using approved material
- Grassing plan must be discussed with the ECO and project manager
- Emergency preparedness must be in place to deal with oil spill accidents and other accidents
- EMP must be kept on site
- Registered herbicide applicators must apply Eskom approved herbicides along the HV platform
- The office site must be kept clean at all times
- All denuded areas must be stabilised and rehabilitated after construction has been completed

### Powerline

- All excavating activities be limited within a demarcated work area
- No collection of biological resources or hunting is allowed
- Damage to private properties is to be repaired accordingly
- Grassing around tower bases is essential to prevent potential erosion prevalent in the area

### Campsite

- Location of campsite on private property must be discussed with affected landowner
- No removal of vegetation along the campsite should take place
- Storage area within campsite must be designated

Is an EMPr attached?

YES ✓	NO
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The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

Busisiwe Duduzile Ngidi

NAME OF EAP

SIGNATURE OF EAP

13 August 2013

DATE

**SECTION F: APPENDIXES**

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information

**Appendix A**  
**MAPS**



**Appendix B  
Photographs**

**Appendix C**  
**Facility illustrations**

**Appendix D: Specialist reports (including terms of reference)**

**Specialist Reports**

1. Ikwezi Ecological/Wetland Assessment - May 2013
2. Ikwezi Heritage Impact Assessment Report - May 2013
3. Ikwezi Geotechnical assessment – May 2013

**Appendix E1  
Site Adverts**

**Appendix E2**  
**Newspaper Adverts**

**Appendix E2  
Notification  
Letters and Emails**

**Appendix E3**  
**Comments and Response Report – Final BAR**

**Appendix E4**  
**Authorities and Organs of State Notification**



**Appendix E5**  
**Registered and Interested Parties**

**Appendix E5**  
**Responses from I&AP**

**Appendix E6  
Agenda and Minutes**

**Appendix F**  
**Impact Assessment**

**Appendix G 1**  
**Environmental Management Programme (EMPr)**

**Appendix G2**  
**General Environmental Management Programme (EMPr)**

**Appendix H**  
**Details of EAP and expertise**

**Appendix I**  
**Specialist's declaration of interest**

1. Active Heritage
  - a. Frans Prins
2. Sustainable Development projects (SDP)
  - a. Simon Bundy



**Appendix J 1**  
**Additional Information**

**References**

1. Environmental Management Programme in terms of the Mineral and Petroleum Resources Development Act, 2002 and the National Environmental Management Act, 1998 (and its subsidiary Acts) Ikwezi Mining (Pty) Ltd – Doornkop Colliery for execution April 2012
2. Dannhauser IDP 2012 – 2013
3. Amajuba SEA 2004
4. Amajuba District IDP
5. Wetland and riparian assessment report Doornkop Colliery. By Wetland Consulting Services (Pty.) Ltd.
6. Conservation Targets and Status for Vegetation Types in KZN October 2011. D. Jewitt Ecosystem Ecologist Ezemvelo KZN Wildlife
7. The KwaZulu Natal provincial Growth and Development Strategy and Plan 2030

**Appendix J 2**  
**Additional Information**

**Approval letter for Ikwezi Mining (Pty) Ltd**  
**Minerals and Resource Department**