Specialist Basic Wetland Delineation Assessment report:

Report on the Jane Furse/Tshatane power line.

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Introduction

This report is to discuss the wetland delineation survey conducted for the project. During the survey, a 100m corridor was investigated along the corridors for the proposed power line (Figure 1). A brief discussion on rivers, streams and drainage lines will be given.

> *According to the National Water Act (Act 36 of 1998) a **wetland** is defined as: land which is transitional between terrestrial and aquatic systems where the water table is usually at o] new the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.*
>
> *In contrast, a river or **watercourse** is defined as: a river or spring, a natural channel in which water flows regularly or intermittently, a wetland, lake or dam into which or from which water flows or any collection of water which the Minister may by notice in the Gazette declare to be a watercourse. A reference to a watercourse includes where relevant, its bed and banks.*

Project Description

The brief for the project supplied by DIGES was:

- The proposed construction of ±36 km 132 kV power line from the proposed Tshatane switching substation to the proposed Lesego substation within Fetakgomo and Makhuduthamaga local municipalities of Sekhukhune district, Limpopo Province.
- Construction of the proposed new Tshatane switching substation.

Project Locality:

The study site is north of Jane Furse within Fetakgomo and Makhuduthamaga local municipalities of Sekhukhune district in the Limpopo Province (Figure 1).

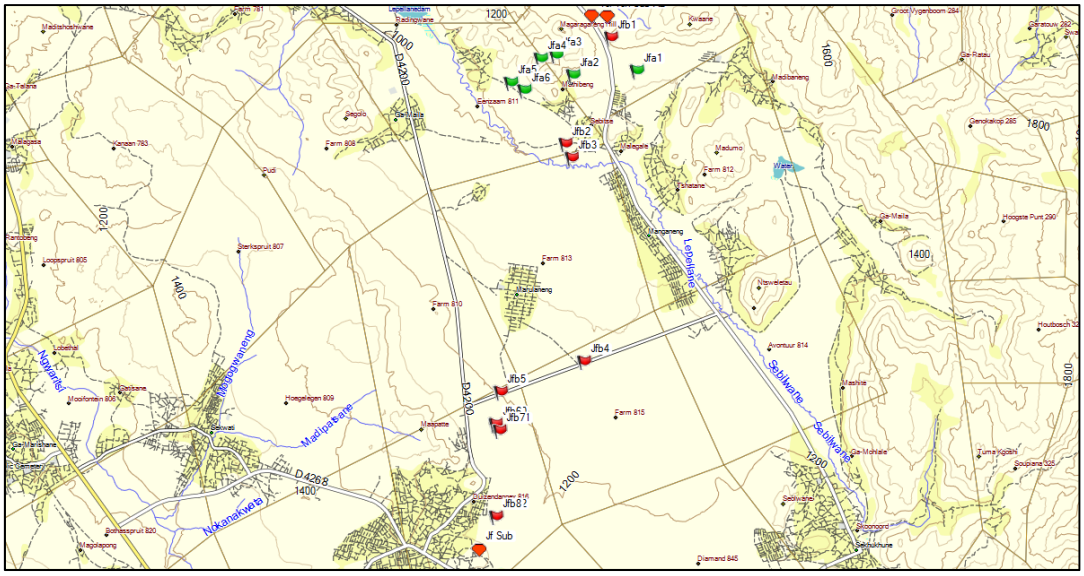

Figure 1: Approximate study site for the new power line – Alternative 1 in green and Alternative 2 in red.

Assumptions and limitations

Availability of baseline information

Sufficient baseline information from maps and NFEPA (2011) was available for the desktop study.

Constraints

The time allocated for the survey was limited. All the different habitats at the site were investigated and it was therefore possible to complete a rapid survey and obtain information on the wetlands and streams associated with the study area.

Bio-physical constraints

Weather conditions during the period were warm with a light wind blowing. The region has received some rainfall prior to the site visit and the vegetation was green and with some standing water present. Nevertheless, the conditions during the survey were ideal for a survey of this nature.

Confidentially constraints

There were no confidentially constraints.

Implications for the study

Apart from the prevailing weather conditions at the site, there were no other significant constraints that would negatively impact upon the study. There is sufficient good quality data available in the literature that partially negates the negative effect that the type of survey had on the quality of the assessment.

Methods

Desktop study

Prior to the site visit and field survey, information of the study site was available. The appropriate 1:50 000 maps were used to identify the major habitat features such as roads, railways, drainage channels, old cultivated fields, wooded areas, wetlands, koppies etc. in the area. Prior to the site visit, the desk top study was conducted to determine if there are any known protected wetland areas are present.

Field survey

The field survey was planned to include all the different habitat types and to target the identified streams and further to look if any other wetted areas are present. During the survey, a walk-about was conducted to investigate the current status of the areas and to determine impacts on the streams along the corridor. Photographs of important features were taken and will be included in the report.

The study area falls into the Water Management Area 4 (MWA 4) associated with the Olifants River. The streams in the study area drain into the Olifants River (quaternary catchment B52A, B52B and B52E). From the NFEPA Atlas (2011), no priority wetlands, rivers or fish sanctuaries are listed for the area.

Results

From the desktop survey, no prominent wetlands were identified. In addition, the routes were covered during the survey to ensure no wetlands are present. Apart from the number of drainage lines and streams, no wetlands were observed along the proposed corridors. Some impoundments are present, but they are all outside the current alignment for the power line alternatives. For the wetland delineation survey, all two alternatives were investigated using a motor cycle to travel the routes (Figure 2 and 3).

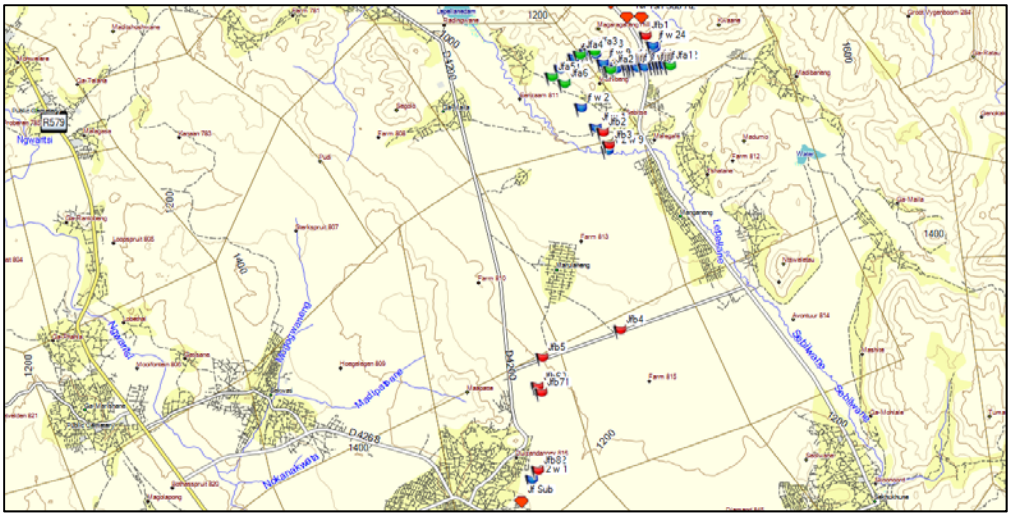

Figure 2: View of Alternative 1 with the drainage line flagged in blue.

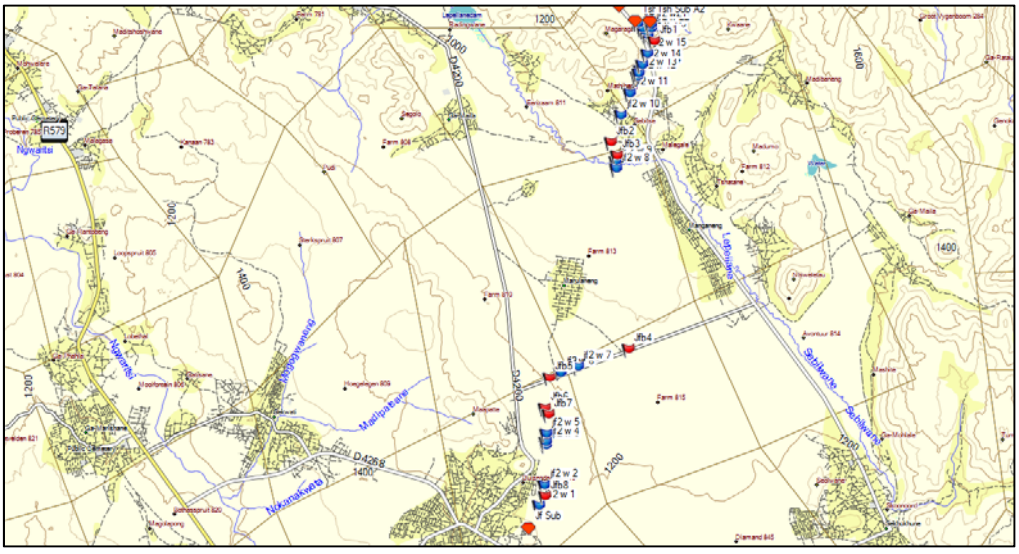

Figure 3: Drainage lines Alternative 2 – note overlap with Alternative 1.

A large number of drainage lines and small streams are present in the area. The impacts on these systems were discussed in the ecological report. Here the impacts and mitigation issues were discussed in detail. In the report, a summary of impacts will be mentioned.

The undulating terrain at the proposed Tshatane substation resulted in serious erosion related to the poor land use practices and most of the drainage lines are modified. The construction of the power line will have an impact if the existing roads are not used. The discussion on the best alternative in the ecological report refers. The low ridge to the south of the substation have areas with severe erosion (northern slopes), but the impacts on the southern slopes are less severe. Here the natural vegetation is in a fair condition, but there is evidence of increased wood harvesting and grazing and this have resulted in increased erosion in the area (Figure 4 – 14).

Figure 4: View of gully near Tshatane sub site.

Figure 5: Impacts related to grazing and wood collection.

Figure 6: Exposed areas prone to erosion.

Figure 7: Grazing, cultivation and trampling result in erosion on slopes.

Figure 8: Example of erosion – southern slope of koppies/ridge.

Figure 9: Example of erosion – increased runoff from hard surfaces.

Figure 10: Erosion in old cultivated areas.

Figure 11: Increased flow velocity from exposed areas increase erosion.

Figure 12: Grazing, cultivation and wood harvesting impacts.

Figure 13: Vegetation intact in koppies – southern slopes.

Figure 14: Some erosion – increased grazing and wood collection on north slopes.

The area south of the koppies is heavily populated with grazing, cultivation and wood harvesting having a severe negative impact on the natural vegetation. Here the drainage lines around the Lepellane River are eroded and deep gullies are present. This pattern is present for both the alternatives (Figure 15 – 20).

Figure 15: Impacts related to agriculture resulting in erosion gullies due to exposed soils.

Figure 16: Cultivation an important activity.

Figure 17: Drainage lines in cultivated lands.

Figure 18: Drainage lines eroded – high flow velocity from hard surfaces in the residential areas.

Figure 19: Due to overgrazing and wood harvesting – trampling increase erosion in the area.

Figure 20: Crossing point of the power line over the Lepellane River to Jane Furse.

South of the Lepellane River the corridor passes through a flat area with large cultivated fields and grazing areas present. Most of the natural vegetation is removed and erosion is prominent. Near the Jane Furse substation, the corridor passes over a deep erosion gully. This again is a result from run-off of the hard surfaces from the residential areas to the west. Being on steep slopes, the water is accelerated resulting in severe erosion downstream (Figure 21 – 29).

Figure 21: South of the river the area is flat – poor land use practices results in erosion gullies.

Figure 22: Natural vegetation modified.

Figure 23: Expose soils with severe erosion present.

Figure 24: Erosion gullies between cultivated fields – result of berms created to reduce surface flow.

Figure 25: Deep gully – result of poor land use practices.

Figure 26: Modified vegetation with exotics present – shallow gullies forming.

Figure 27: Deep gully near residential area – increased flow velocity resulting in increased run-off.

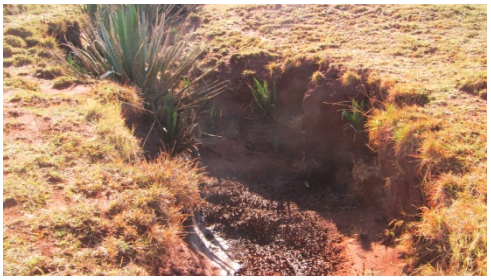

Figure 28: The increased run-off from Jane Furse residential resulting in erosion dongas.

Figure 29: View of extensive dongas north of the Jane Furse substation (arrow).

As mentioned earlier, no wetlands were encountered along the proposed corridors for the new power line to link the Tshatane and Jane Furse substations. The large number of drainage lines is mostly modified and erosion is present in large parts of the study area. The grazing pressure, wood harvesting and increased flow velocity from hard surfaces in the residential areas are the main problems related to the erosion.

Summary

- Both corridors investigated had a “poor to fair state” with regard to the habitat. Impacts are related to grazing, cultivation, wood harvesting, sand mining, trampling, increased flow velocity and other infrastructure development.
- From a “wetland” perspective, Alternative 1 is preferred due to the fact that the existing road can be used for access during construction (see Ecological report for full details).
- It is suggested that the pylons must be placed at least 75m from the larger stream banks and 50m from the erosion gullies. In addition, care must be taken to ensure no pylons are placed in any of the drainage lines. The final positions must be confirmed with the wetland specialist during the walk down study.

References

NFEPA. 2011. National Freshwater Ecosystem Priority Areas. South African National Biodiversity Institute, Pretoria.