



Southern African Power Pool

SAPP Sustainability Bulletin

Volume SD- 02, Issue 2/2015

February, 2015

Message from the desk of the SAPP Environmental Sub-Committee (ESC).

The February, 2015 Sustainable Development Bulletin focuses on Google Earth and its usefulness in enriching Environmental and Social impact Assessment studies In general and power line routing in particular”

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The SAPP Sustainability Bulletin for August, 2013

Introduction

For many years, topographic maps have been the sole tool available to assist in the routing of power lines, be they transmission or distribution. Today, an array of tools is at the planner’s disposal, the flagship tool being the Geographical Information System (GIS). For all its shortcomings, the topographic map remained a very useful tool in preliminary line routing until it was overtaken as access to remotely sensed data increased. And for all its advantages, acquiring the hardware and software required to set up a Geographical Information System and have it running is quite expensive, let alone, providing adequate training for the people to operationalize the system.

Google Earth – the Earth on your lap

Compared to the modern GIS programmes, Google Earth is a simpler and cheaper option, although it performs far less than what a GIS does. While GIS is a computerized system with a set of tools designed to enable the user to capture, store, analyze and display geo-information, Google Earth brings the Earth as it is onto the computer, enabling users to view landscape and human made features on the earth’s surface. It comes in 2 versions: Google Earth and Google Earth Pro. Both can be downloaded and used for free. Since earth surface data comes from

satellites, it means the data is more current than that displayed on topographic maps, making Google Earth a useful tool in ESIA studies and development of transmission and distribution infrastructure for utilities.

Activating Google Earth

Google Earth is user friendly. At the click of the Google Earth icon, the program comes alive, a bulging image of the globe which gradually shows continental and national boundaries. Zooming onto your country, you can navigate to various places of interest which could be power stations, substations or power lines.

Google Earth used to plot a Sub transmission line on the ZESA Network

Figure 1 shows an image from Google Earth with a proposed sub transmission line superimposed on the image. Using the image, one can easily see the landscape features hence can plot the line route while seated in the office. The clarity of the image is strongly influenced by the internet signal strength. The stronger the internet connection, the clearer the image and the easier it becomes to plot the line.

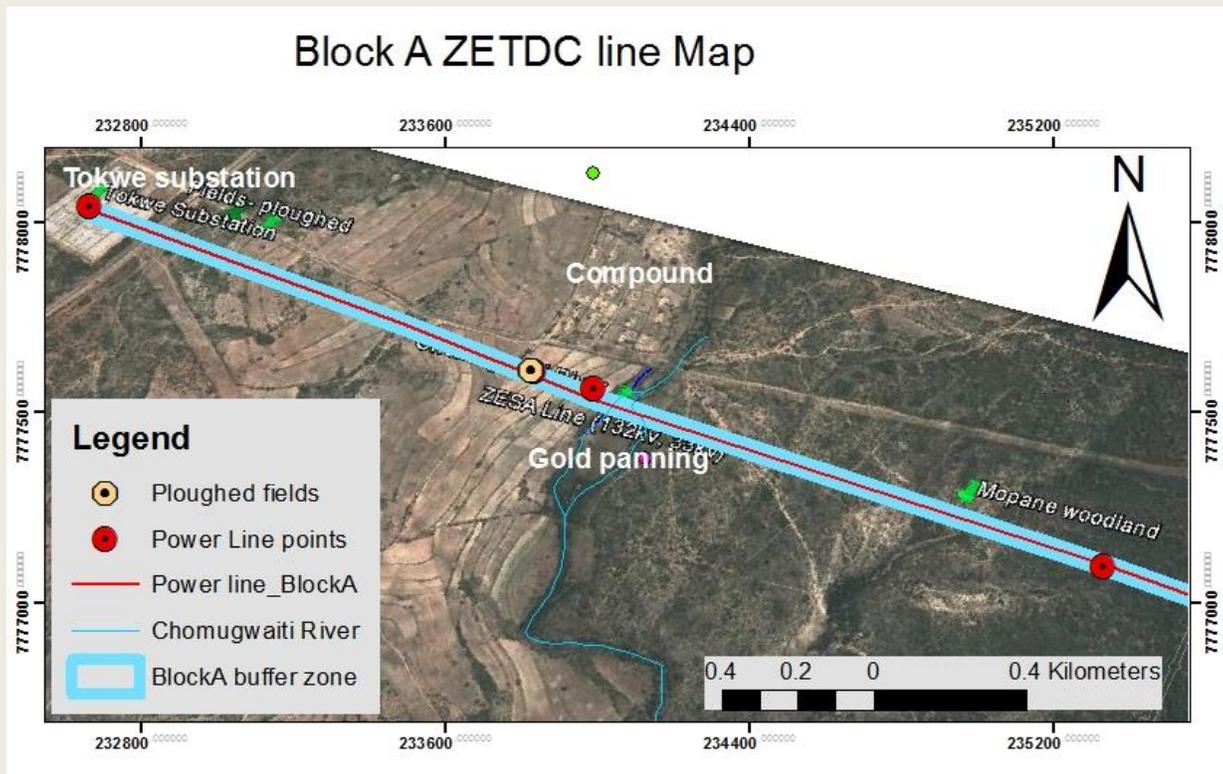


Figure 1: Google Earth image showing the 30m servitude for the proposed line

At the correct resolution, Google Earth enables one to easily identify location of structures such as houses, huts, fields and features such as mountains, rivers, wetlands and valleys. These features have a bearing on the alignment of the line route. In

figure 1 above, the line traverses arable lands as it exits the substation, crosses a river before dissecting a fairly well vegetated stretch of land. When zoomed closer, most human activities going on in an area become visible.

Figure 2 shows the proposed line as it passes a mining area and a residential area. Without even going out for ground truthing, one can easily see the points where the line can cut through and those where it cannot. Routing of the line can be done to avoid residential areas hence reducing the social impact and the cost of relocations.

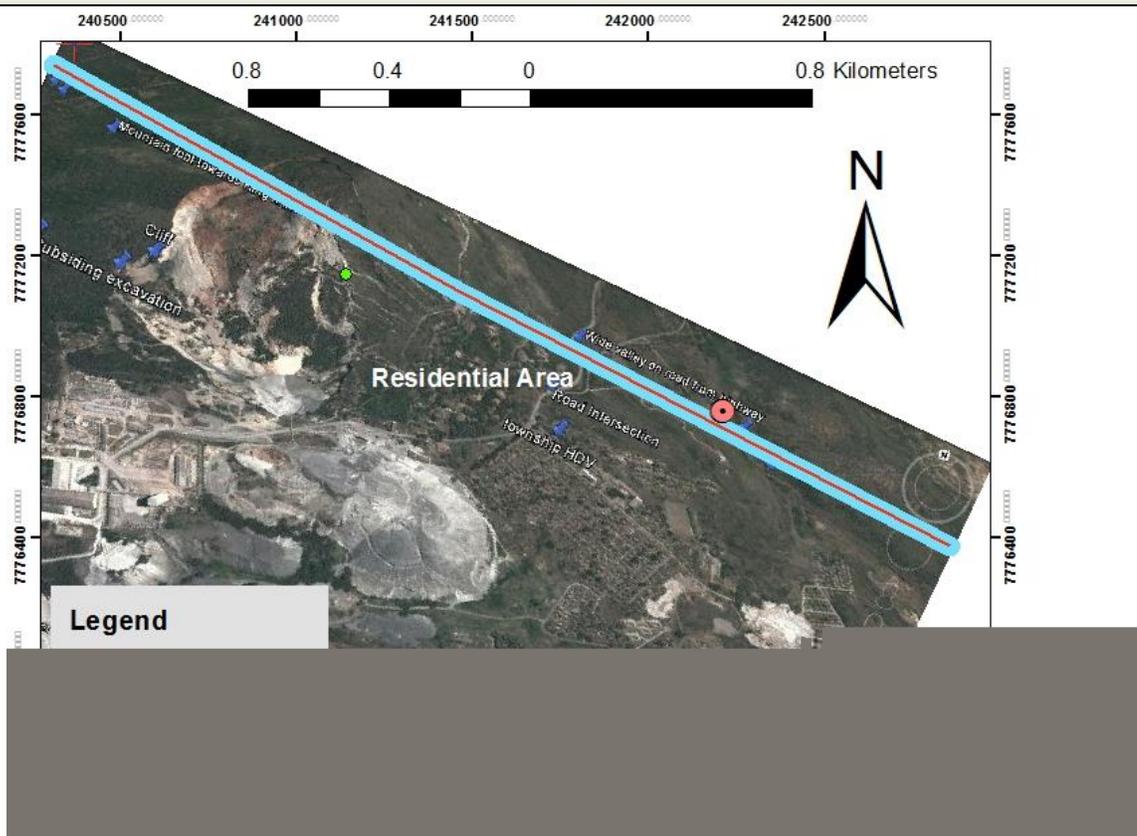


Figure 2: Satellite overlay map of the area of interest for line clearing passing through the mining area

Conclusion

Google Earth is a useful tool in power line routing and ESIA studies. While it cannot compare with GIS in terms of functionality, it remains a valuable resource where GIS is not available. The program is user friendly and comes at no cost to the user. It provides the user with all the information which a topographic map provides but has an edge over the map in that it shows features in real time or very close to real time hence increasing confidence levels when planning a transmission or distribution line route or when undertaking ESIA studies.

