

**PERSEUS HYDRA 765 KV TRANSMISSION LINE**

**ADDENDUM TO VISUAL IMPACT REPORT**

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# **PERSEUS HYDRA 765 KV TRANSMISSION LINE**

## **ADDENDUM TO VISUAL IMPACT REPORT**

### **1 INTRODUCTION**

The Environmental Impact Assessment Report for the proposed 765 kV transmission line between Perseus Substation near Dealesville (east of Bloemfontein) and Hydra Substation (near De Aar) has been completed by Arcus Gibb (2006).

Certain concerns have been raised by landowners and have been responded to by Arcus Gibb.

At the request of Ms Carol Streaton of Eskom Transmission Division, Mark Wood Consultants were appointed to review specific issues raised by Interested and Affected Parties (I&APs). The review document dated April 2007 also addressed "a range of concerns of a general nature that apply to all other sections of route as well".

This report responds to the particular issue of the visual impact of alternative alignments on the sense of place and character of the landscape and the visual intrusion caused by a proposed 50 metre high guyed transmission towers along alternative routes.

### **2 TERMS OF REFERENCE**

Consideration of the following in the response to the reviewer's comments is set as the terms of reference:

- 2.1 Respond to the reviewer's concerns on the specialist's motivation on the visually preferred route. This includes the following:
- The visual significance of placing another transmission line alongside a corridor that already has four major transmission lines;
  - The placement of the visual burden on landowners who already experience visual intrusion from existing parallel transmission lines;
  - The number of affected homesteads along the alternative routes with respect to actual occupation.

### **3 THE ADDITION OF ANOTHER PARALLEL TRANSMISSION ROUTE TO EXISTING PARALLEL ROUTES**

The saying 'That is the straw that broke the camel's back' has some relevance as an analogy.

Visually a landscape may accommodate an intrusion that can be argued to have negligible visual impact. The argument stands that to add another similar structure / line has support that the visual impact is contained along this route. To add a third and fourth to the same route alignment on the same argument that the visual impact is contained, will not always rest easily on the receiving landscape or receiving community.

Research has shown that consideration should first be given to this alternative approach, i.e. the placement of an additional transmission line alongside an existing line. What it does not advocate is that this approach should be the standard. The question to be asked is what is the limit to the number of parallel lines that can visually be accepted in one wide servitude? In other words, when is the critical mass of the structures reached that pushes the visual impact from acceptable to not acceptable? This will depend on a number of factors such as visibility, landform, landscape pattern, scale form and colour of the structure.

The visual impact of adding another line, this time spreading the corridor over some 200 metres through a landscape that is already visually overloaded with transmission lines, has been considered unacceptable. In other words the visual critical mass will be exceeded in the specialist's opinion.

This opinion is considered in terms of the reverse application of the researched findings that the visual impact of a structure reduces by the square of the distance from the viewer (Hull & Bishop, 1987, Scenic Impacts of Electricity Transmission Towers: The Influence of Landscape Type and Observer Distance, Journal of Environmental Management, 1988). This means that as the distance is doubled the visual impact is reduced by four times. Consequently one can argue if the structure in the landscape is doubled, usually in bulk, and this is true of the transmission pylons even although the new design is significantly less visually prominent, the perceived visual impact should reasonably be said to be four times as great.

This is the converse of the accepted principle that the visual impact of a structure / element in the land diminishes by the square of the distance. That means that if the viewing distance doubles the visual impact is reduced by four times.

The statement in the Visual Impact Assessment Report "The additional visual intrusion of Alternative Route 4 will not double the significance of the

intrusion but may quadruple its intrusion”, paragraph 4.6.2, p. 4-18, is based on this premise.

#### **4 THE PLACEMENT OF THE VISUAL BURDEN ON NEARBY LANDOWNERS**

With the placement of another transmission line parallel to the existing four lines will further add to the intrusion of views experienced by existing landowners. In reality the line will also be closer to those landowners west of the existing lines and therefore will experience a greater visual intrusion of vistas from their homesteads.

The question arises as to when does it become unacceptable to load the same group of the community with additional or increased visual intrusion caused by a new transmission line? Conversely, what number of parallel transmission lines is acceptable before the visual intrusion in the landscape of a new line should be shared by other communities along an alternative route?

There is no easy answer to this dilemma, but rational arguments, based on the physical attributes of the landscape, the number of affected parties and on other specialists' findings, will assist in coming to a conclusion.

#### **5 THE NUMBER OF AFFECTED HOMESTEADS ALONG THE ALTERNATIVE ROUTES**

One measure of the visual intrusion of a transmission line is to determine the number of persons along its route who will be affected by its presence in the landscape. This includes tourist related land uses.

Accurate information on this aspect was not available, consequently 1:50 000 cadastral mapping was used to identify already mapped homesteads to give a realistic assessment of the homesteads within predefined visual impact intensity zones.

This process, coupled with tourist associated land uses, e.g. lodges, game farms, is a good indicator of the extent of visual impact on residents along the route.

## 6 CONCLUSIONS

The explanation of a possible four times increase in the visual impact by doubling the structures from one to two by placing another transmission line parallel and relatively near (within a predefined or expanded existing servitude) an existing transmission line has been presented. It is relevant to that four parallel transmission lines existing.

Each situation is unique and must be assessed according to the corridor, and receiving environments attributes.

There still remains a moral dilemma concerning the sharing of the visual impact load by communities when existing corridors are expanded by adding new lines.

The use of the number of persons or, in this case homesteads, coupled with tourist related land use that will be exposed to different routes is a useful approach that will assist in identifying the alternative route that will have the least visual impact. This information will form part of the Social Impact Assessment which is associated in some ways to the visual impact experienced.