APPENDIX 1

VISIBILITY OF PROJECT COMPONENTS

The visibility of an object in the landscape is influenced by a combination of factors. Empirical research indicates that the visibility of an object decreases as the distance between the observer and the object increases. The ability to perceive detail is dependent on several aspects of which distance from an object and contrast between the object and its background, is considered most influential[4] (Also refer to Section 5.2 of the main report for research done by Hull & Bishop (1988)).

The condition of the atmosphere plays a role in the perceivable contrast between an object and its background. Even on the clearest of days, the sky is not entirely transparent and airborne particulates cause a reduction in the vividness of colours. The contrast between light and dark diminishes as the viewing distance increases and the object becomes less and less visible. The object eventually appears to merge with the background, making it imperceptible.

To determine actual visibility, a technique referred to as visibility mapping is utilised to establish a first order impression of a project's extent of visibility. Visibility mapping assists the Visual Specialist in identifying sensitive observers that may be affected by a proposed project.

Visibility mapping is a technique used to determine the Zone of Visual Influence (ZVI) of a hypothetical point in the landscape. In this regard, a 22 m tall power line or substation has a ZVI limited to a 5 km distance. A Geographical Information System (GIS) is used to determine areas in a given study area that will have unobstructed view lines to this point/s considering the screening potential of the local topography.

A further development on this technique is referred to as a frequency visibility analysis. This allows for visibility mapping of a continuous linear or vertical structure and reflects the degree of visibility of that structure. The result is a range of colours on a map grading from red to yellow. Red is an indicator of maximum visibility, i.e. a relatively long section of the power line will be visible from this area. Yellow, being the minimum visibility category is representative of an area that will only experience views of a relatively short section of the power line (Figure 4 to Figure 8).

In the case of the substation, a vertical frequency visibility reflects the degree of visibility over the vertical height of the substation. The red areas will experience complete views of the entire substation. As the colour grades to yellow, topography screens an increasingly larger part of the substation until it completely disappears behind a landform (Figure 11).

[4] To explain this concept the following example can be used: A black object displayed against a white background from a particular distance will be much more visible than a red object displayed against a maroon background at the same distance. This is because the contrast in colour between a black object and white background is greater and therefore easily distinguished. The same account for texture and form.

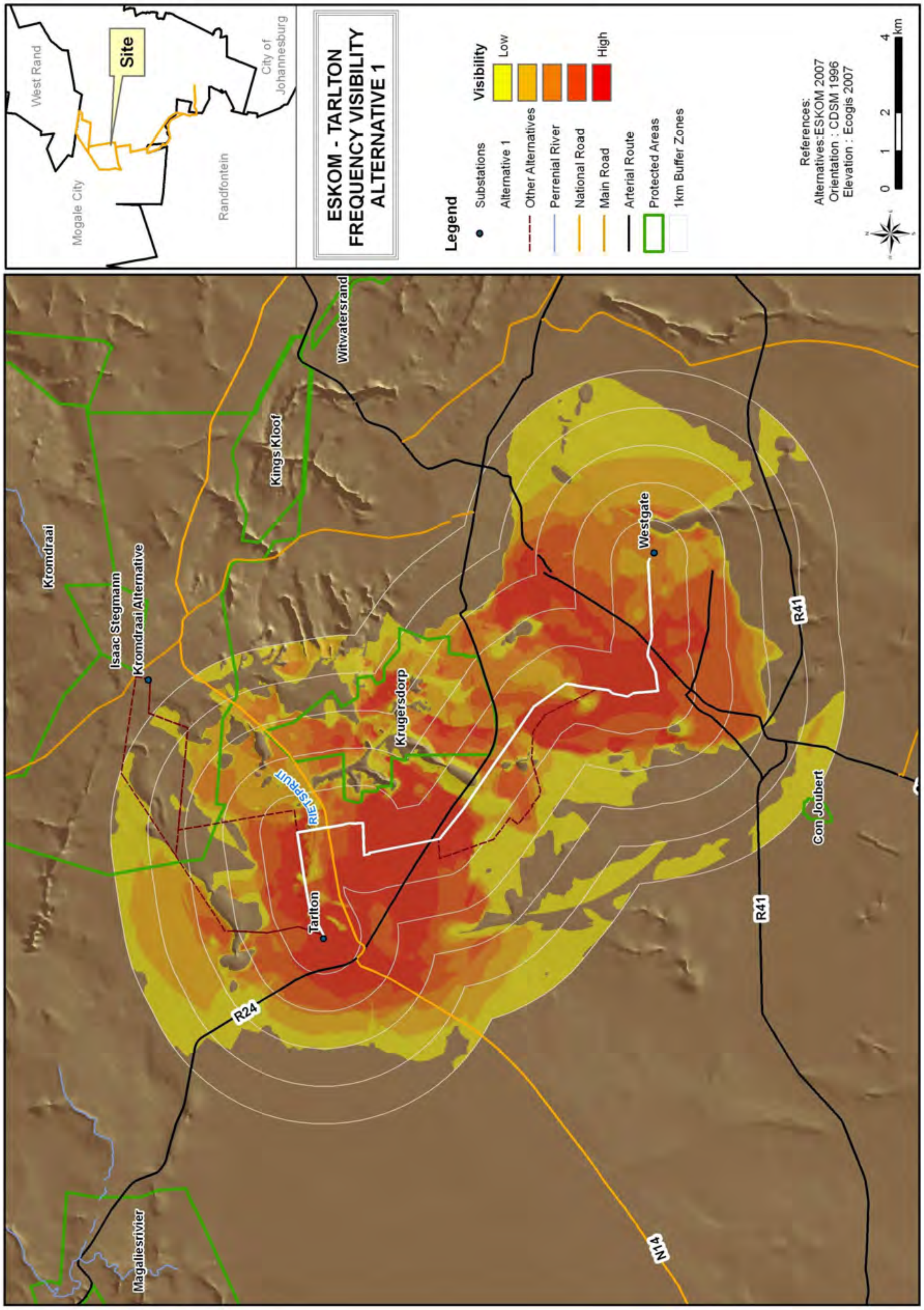

Figure 4: Alternative 1 – Linear frequency visibility map

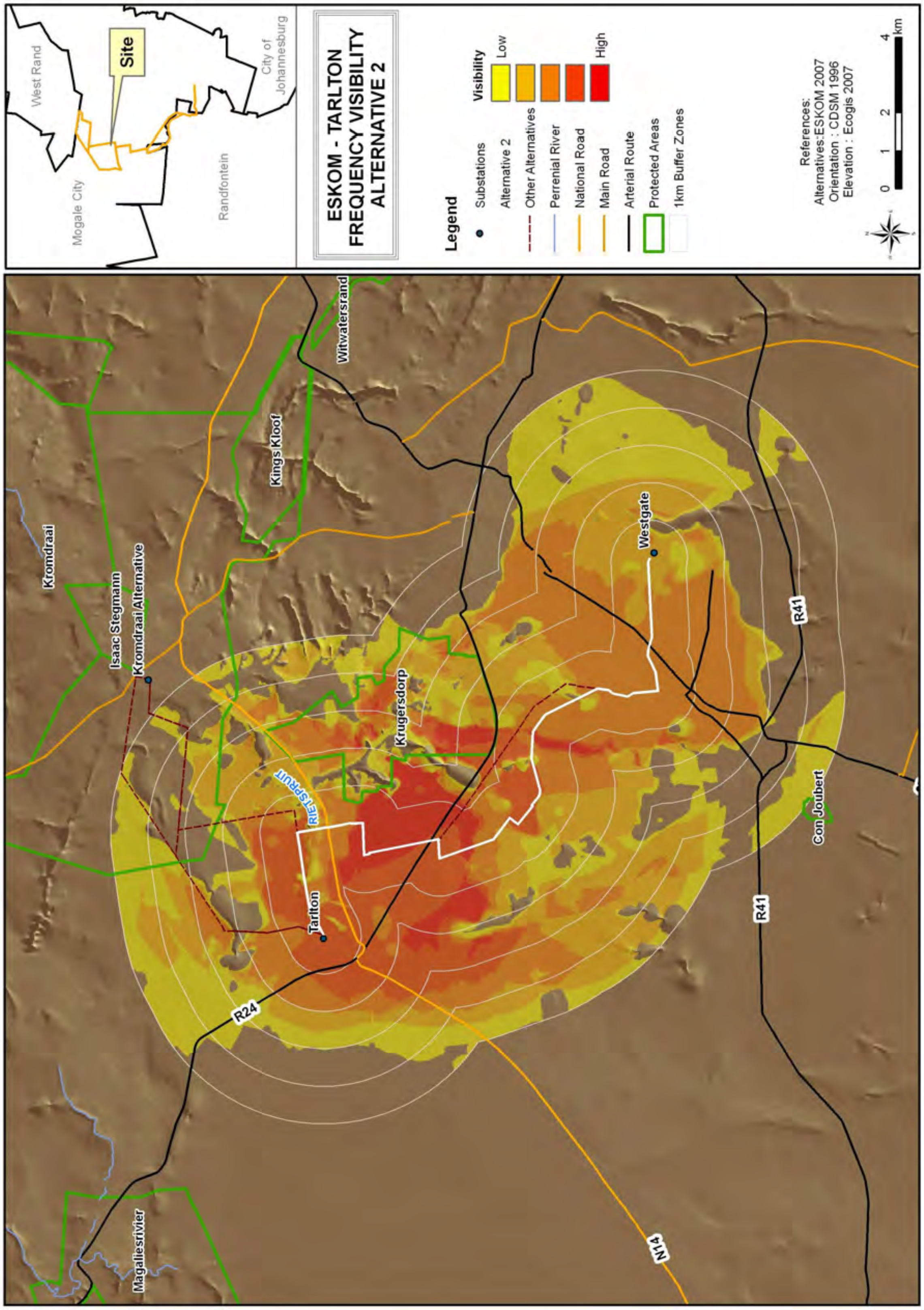

Figure 5: Alternative 2 – Linear frequency visibility map

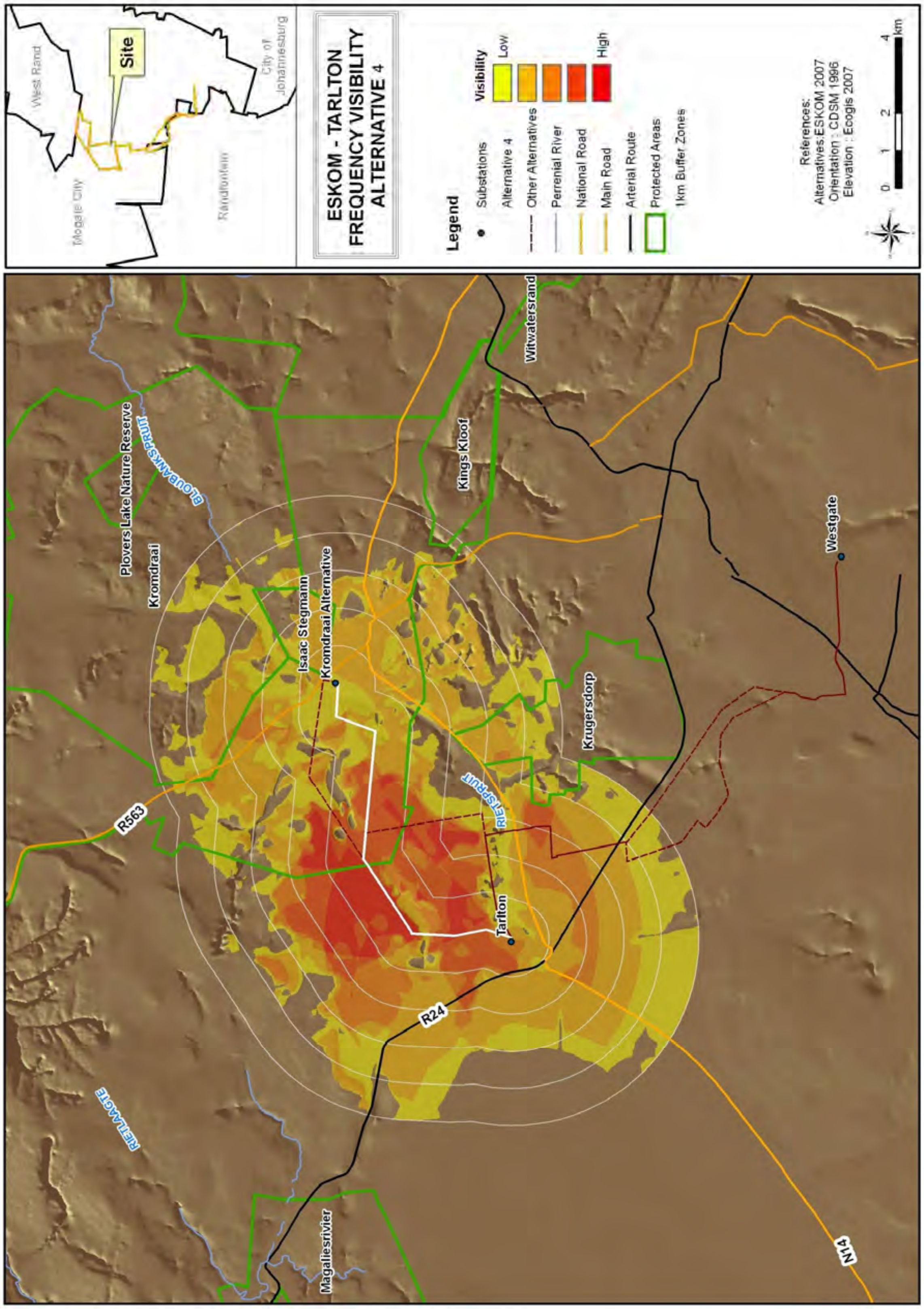

Figure 6: Alternative 4 – Linear frequency visibility map

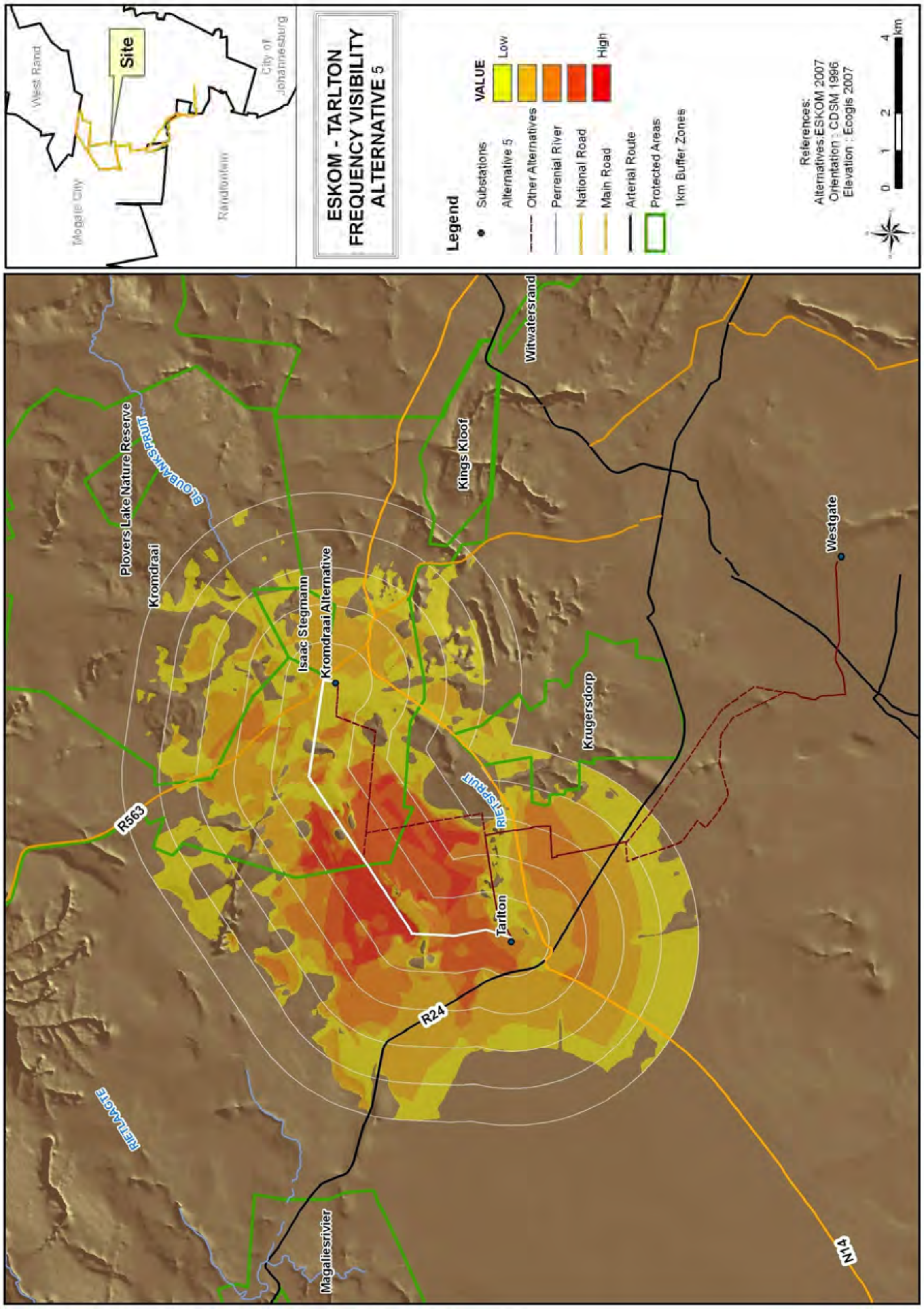

Figure 7: Alternative 5 – Linear frequency visibility map

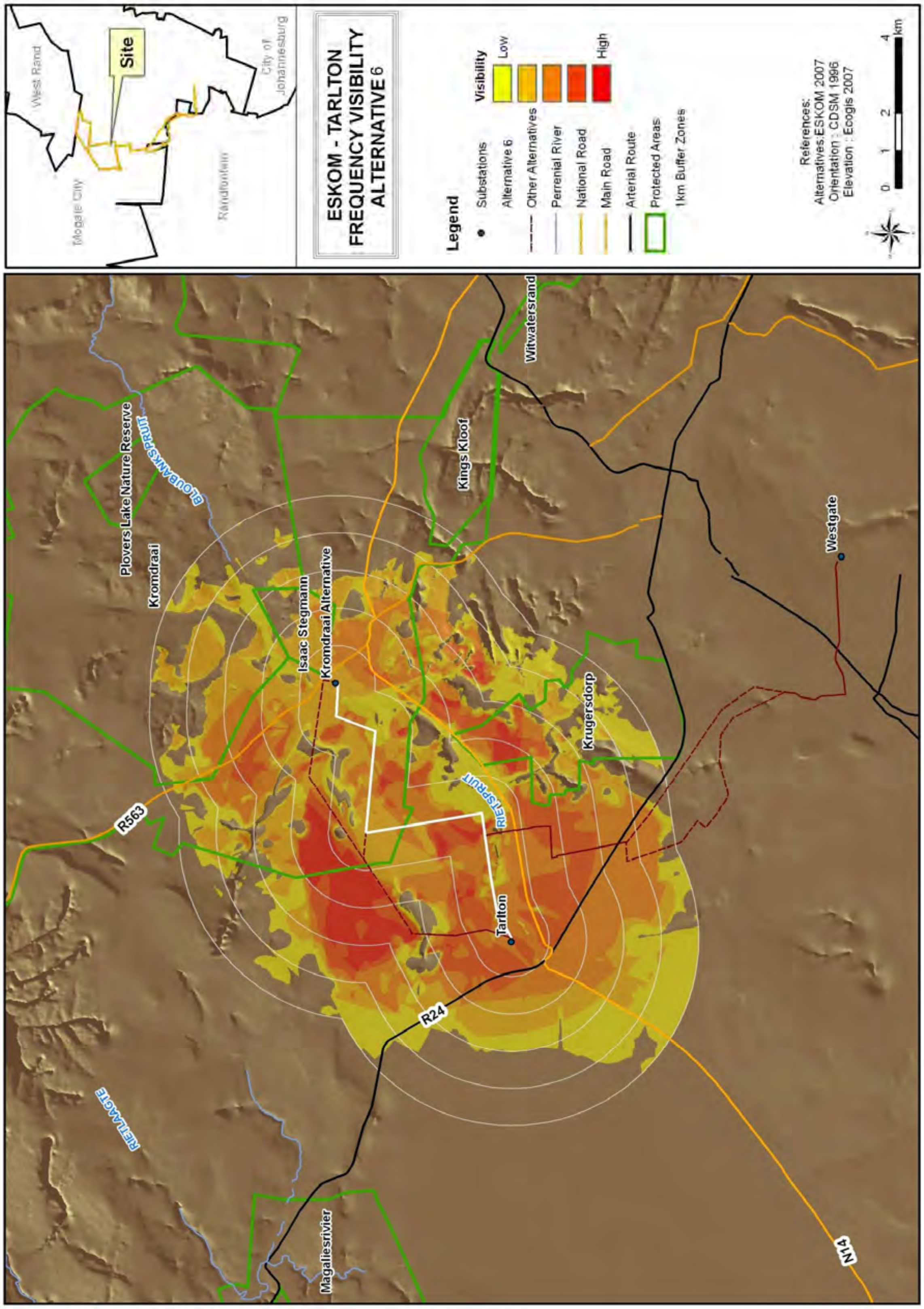

Figure 8: Alternative 6 – Linear frequency visibility map

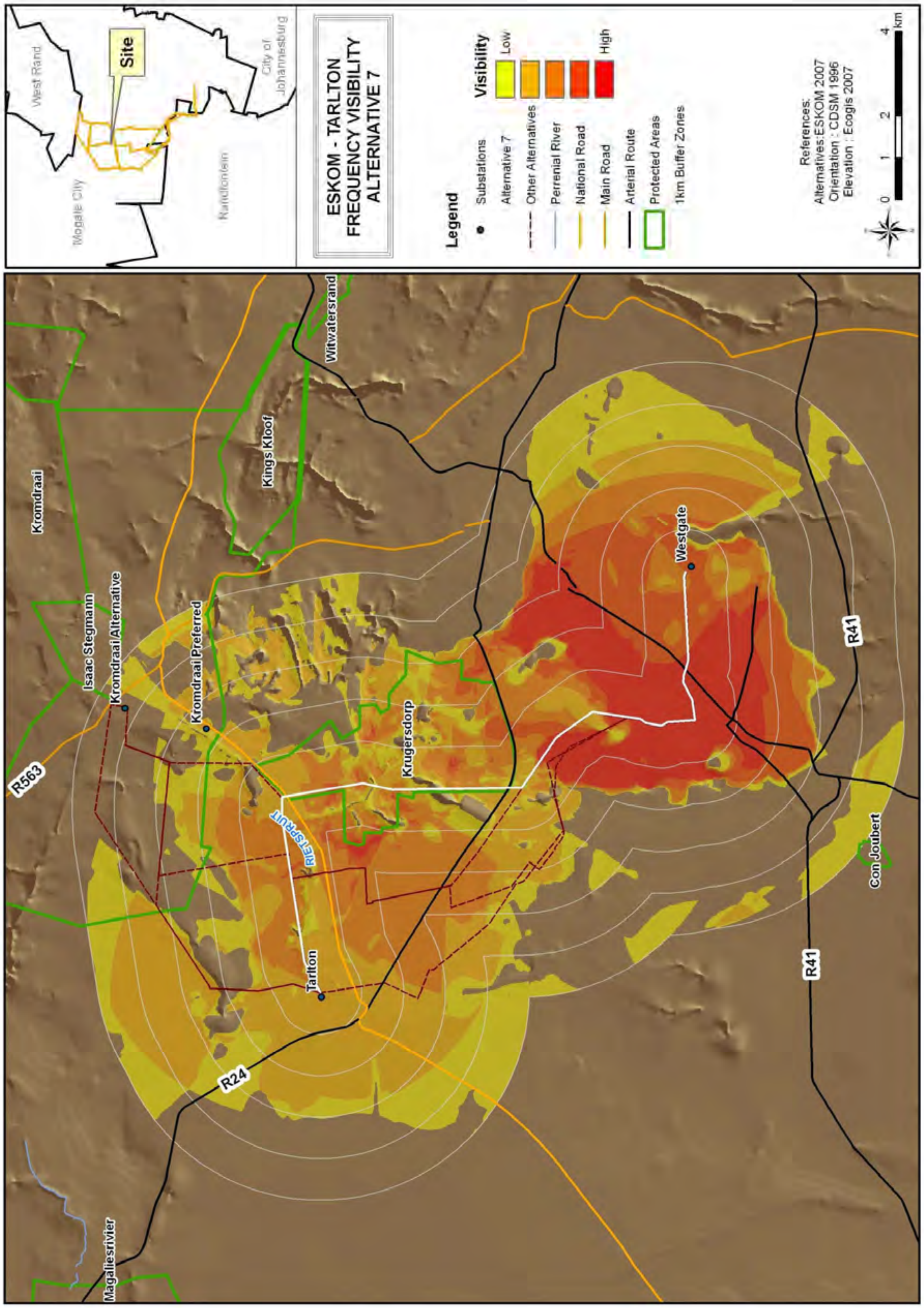

Figure 9: Alternative 7 – Linear frequency visibility map

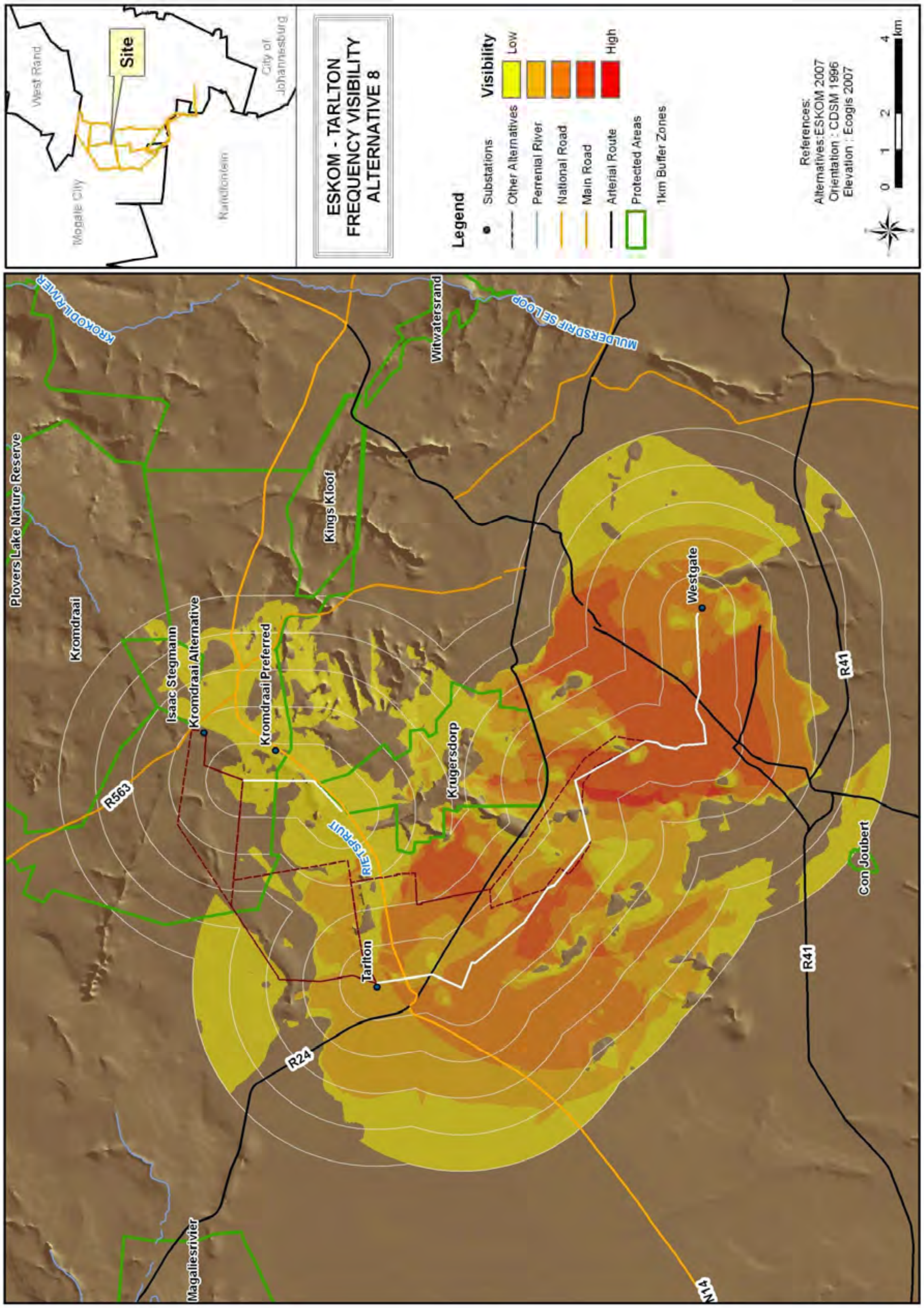

Figure 10: Alternative 8 – Linear frequency visibility map

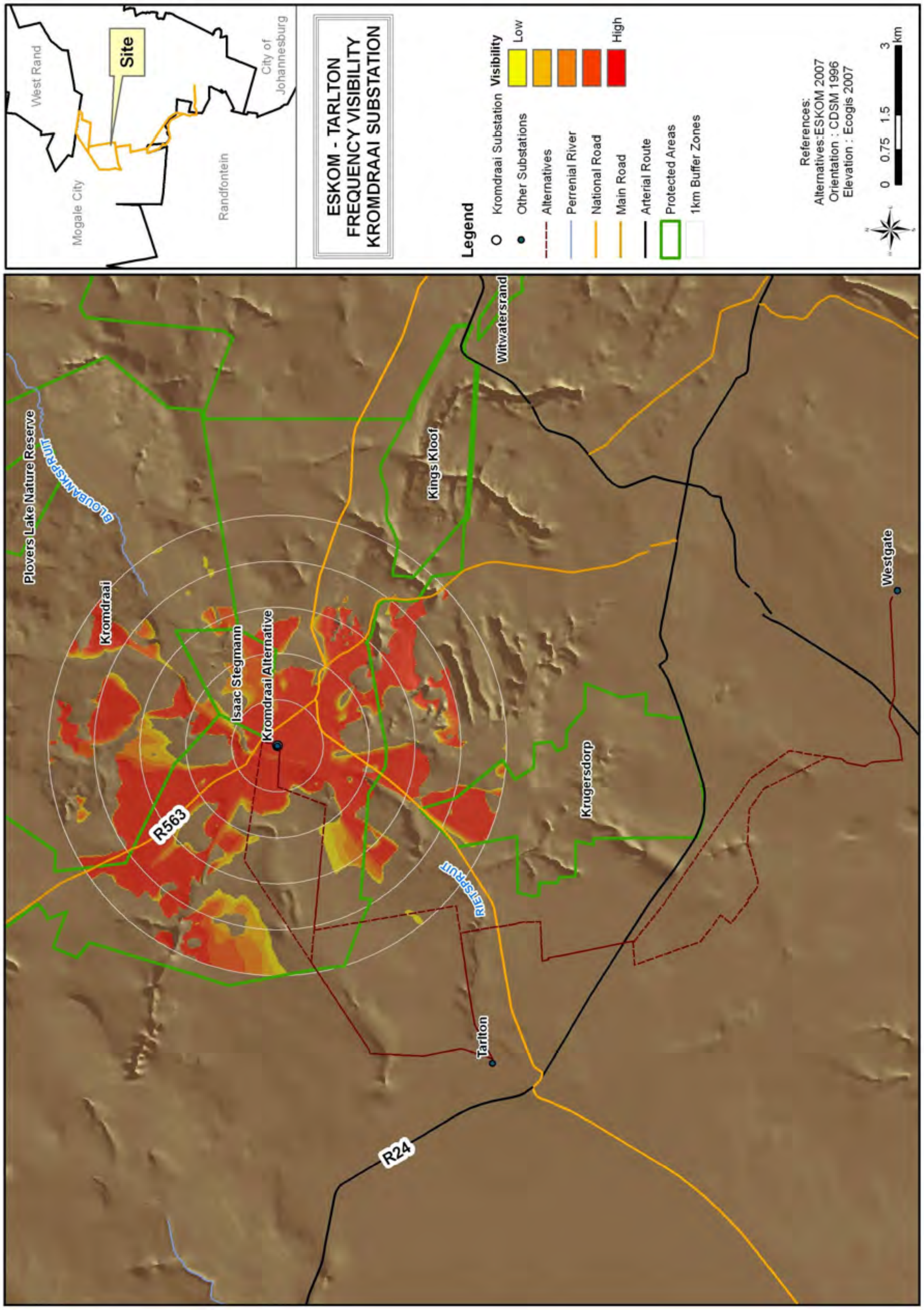

Figure 11: Kromdraai Substation – Vertical frequency visibility map