

**PROPOSED TRANSALLOYS COAL-FIRED POWER PLANT AND  
RELATED INFRASTRUCTURE, MPUMALANGA PROVINCE**

**AMENDMENT:  
COMPARATIVE VIEWSHED ANALYSIS AND VISUAL ASSESSMENT**

**Produced for:**

**Transalloys**

**On behalf of:**



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Lourens du Plessis (t/a LOGIS), a specialist in Visual Impact Assessments (VIA) and Geographical Information Systems (GIS), undertook the comparative viewshed analysis and visual assessment for the proposed amendment to the infrastructure layout for the Transalloys Coal-fired Power Plant. Lourens, then director of MetroGIS (Pty) Ltd, did the Visual Impact Assessment for the original Transalloys Power Plant (submission date 2014/15).

Lourens has been involved in the application of GIS in Environmental Planning and Management since 1990. He has extensive practical knowledge in spatial analysis, environmental modeling and digital mapping, and applies this knowledge in various scientific fields and disciplines. His expertise is often utilised in Environmental Impact Assessments, State of the Environment Reports and Environmental Management Plans.

Lourens is familiar with the "Guidelines for Involving Visual and Aesthetic Specialists in EIA Processes" (Provincial Government of the Western Cape: Department of Environmental Affairs and Development Planning) and utilises the principles and recommendations stated therein to successfully undertake visual impact assessments.

Savannah Environmental (Pty) Ltd appointed Lourens du Plessis as an independent specialist consultant to undertake the visual assessment for the proposed amendment to the Transalloys Power Plant. He will not benefit from the outcome of the project decision-making.

## 1. INTRODUCTION

**Transalloys** wishes to amend the infrastructure layout of the proposed Transalloys Coal-fired Power Plant located near Emalahleni, Mpumalanga Province. The amendment primarily relate to the change in the proposed sites selected for respectively the power plant infrastructure and the ash disposal facility (ash dump). During the original EIA the northern site (Site 1) was selected for the development of the power plant and the southern site (Site 2) for the ash dump. Please refer to **Map 1** for the authorised layout as assessed in the Visual Impact Assessment (VIA).

The proposed amended layout is displayed on **Map 2**. Here the power plant is located on Site 2 and the ash dump on Site 1. The final layout of this power plant layout may vary slightly from the one on Map 2, but is not expected to alter the potential visual exposure significantly.

Additional alterations include:

**Table 1:** Modifications to the proposed Transalloys Power Plant layout.

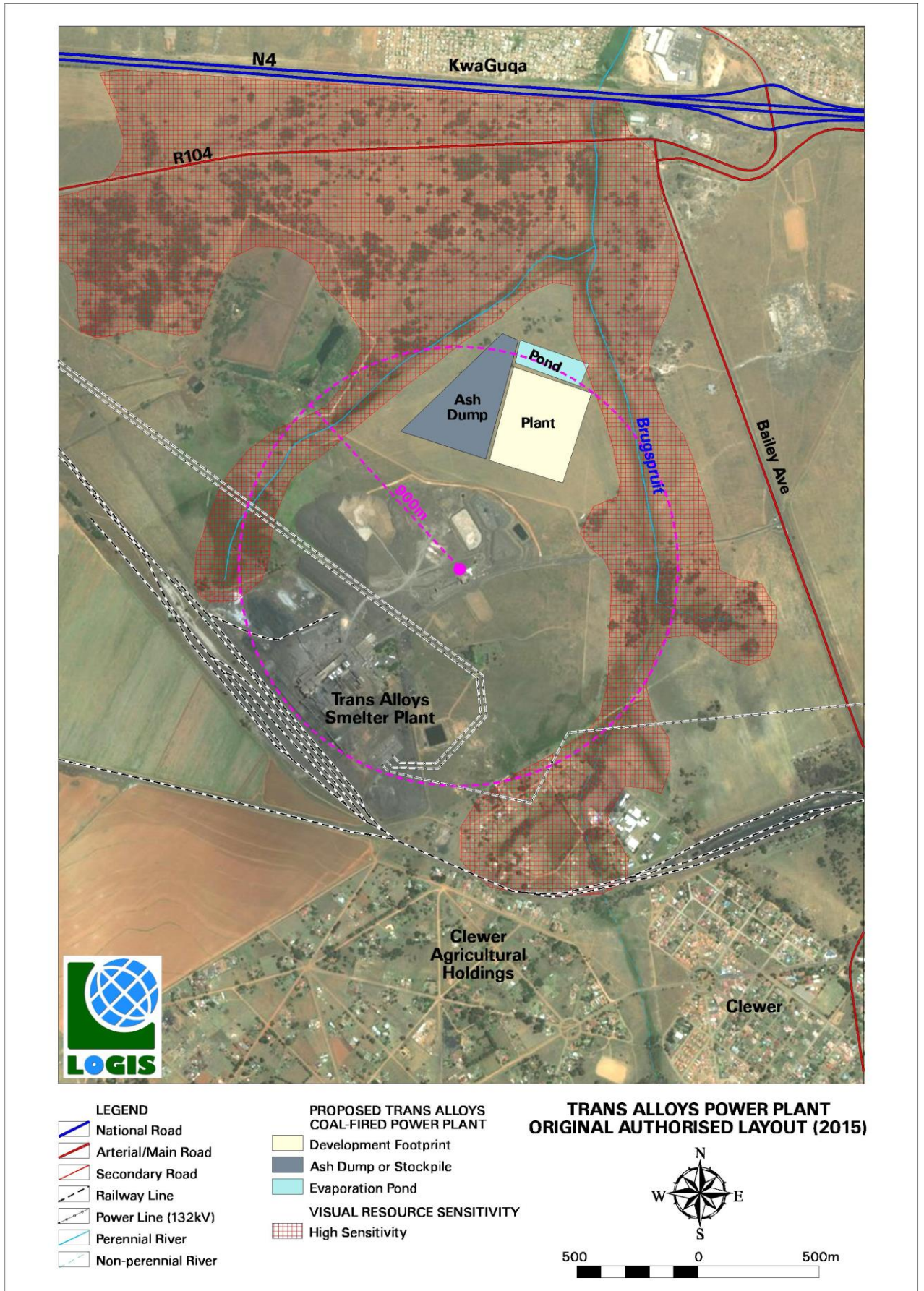
<b>Modification</b>	<b>Original Authorised Application (55MW)</b>	<b>Proposed Amended Application</b>
Generation Capacity	55MW	Range of 120-150MW
Smoke Stacks	1 smoke stake at maximum height of 65m agl	1 smoke stack at 120m agl
Overall Plant Footprint Area (incl. stockpiles)	Approx. 38 ha	Approx. 64 ha
Ash Dump Footprint Area	Approx. 10 ha	Approx. 40,98 ha
Final Ash Dump Height	Approx. 50m agl	Maximum 60m agl

*Note: agl = above ground level*

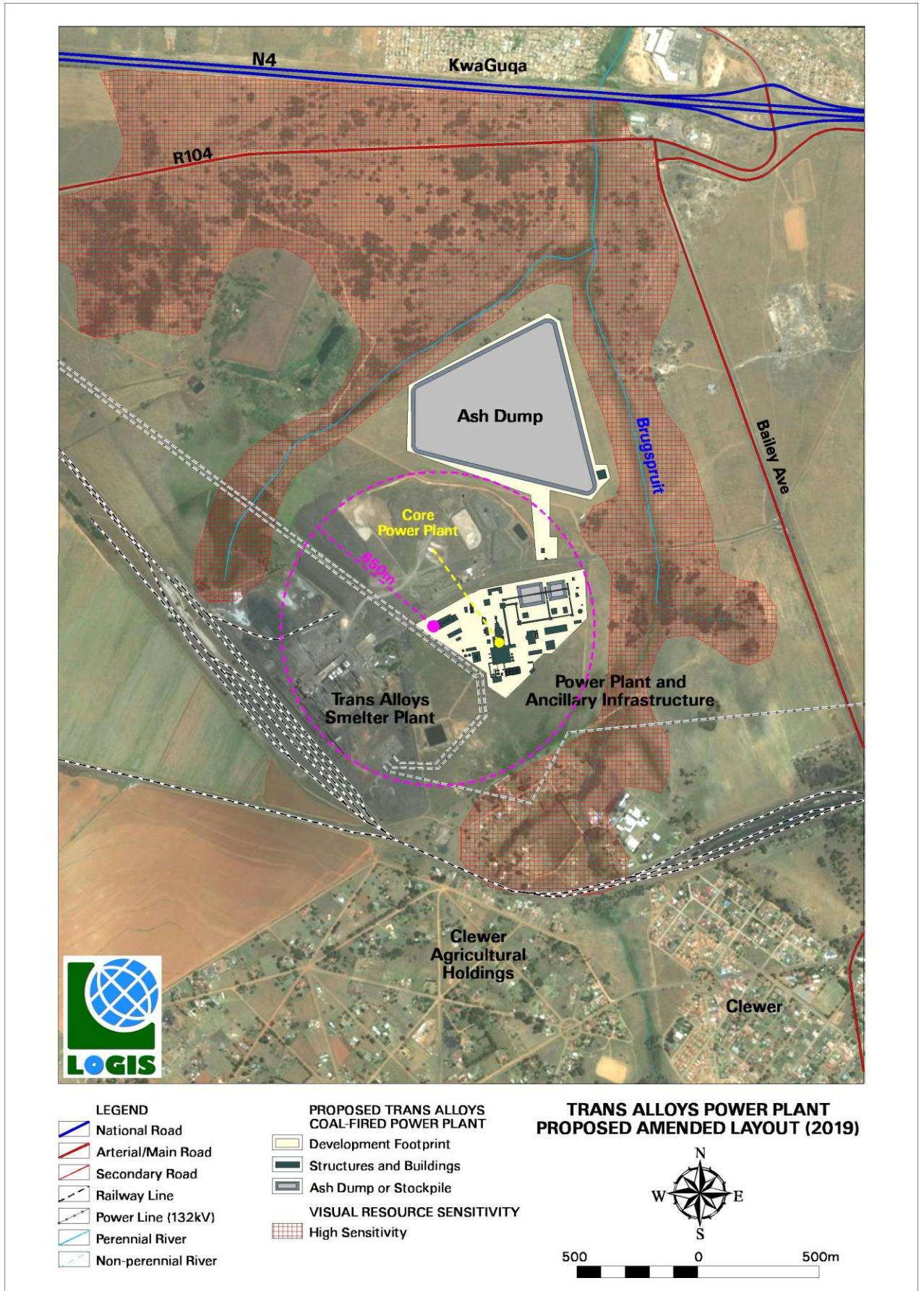
The following components or characteristics won't change:

- The power generation technology will remain Circulating Fluidised Bed (CFB) boiler technology.
- The overall visual exposure is not expected to change drastically.
- The amendment (change of site) won't encroach on sensitive visual resources (i.e. the suggested visual buffer area) as identified in the VIA report.

The primary concern in terms of visual impact is the fact that the power plant will be located in closer proximity to dwellings located within the Clewer agricultural holdings, especially those north of the railway line.



**Map 1:** Transalloys Power Plant – Original Authorised Layout for 55MW (2015).



**Map 2:** Transalloys Power Plant – Proposed Amended Layout for 120MW–150MW (2019).

## 2. DISCUSSION

The primary advantage of the amended position of the power plant is that the core power plant infrastructure is more contained and in closer proximity to the Transalloys Smelter Plant, aiding in consolidating the power plant and smelter infrastructure to a large degree. **Maps 1** and **2** indicate the calculated proximity radius of respectively the Transalloys Plant and the authorised power plant's consolidation (900m), and the Transalloys Plant and the proposed amended layout's containment (650m).

Notwithstanding the above, both layout options are expected to be visible within the study area. A comparative viewshed analysis carried out from the respective layouts' plant infrastructure provides an indication of the potential visual exposure within this relatively flat landscape (refer to **Map 3**). There is a negligible difference in the areas of visual exposure, especially within closer proximity to the plant infrastructure.

The proposed amended layout will however place the power plant structures in closer proximity to potential sensitive visual receptors at the Clewer agricultural holdings (refer to **Figure 1** below), especially those located north of the railway line. The line of sight distance from the closest homestead/dwelling to the closest power plant structure is measured at 360m. This has the potential to aggravate the visual impact of the power plant on observers residing at these homesteads, potentially culminating in a visual impact of **high** significance.

The above visual impact could however be mitigated to **moderate** (as indicated in the original VIA) by establishing vegetation barriers or landscaped berms along the southern boundary of the development footprint (shown on **Map 3**). It is expected that the vegetation screening in question would be highly effective in shielding the bulk of the power plant structures from these receptors, except possibly the 120m tall smoke stack that may protrude above the vegetation.

**Figure 2** below indicates how existing planted vegetation may shield the receptors from the power plant structures. The effectiveness of the vegetation screening will ultimately be determined by the density and height of the plant cover selected. Also refer to **Map 3** for the photograph position.

The residents of this area (Clewer agricultural holdings north of the railway line) should be consulted and where sensitive visual receptors are likely to be affected, it is recommended that the developer enter into negotiations regarding the potential screening of visual impacts, either at the receptor site or along the southern perimeter of the facility.

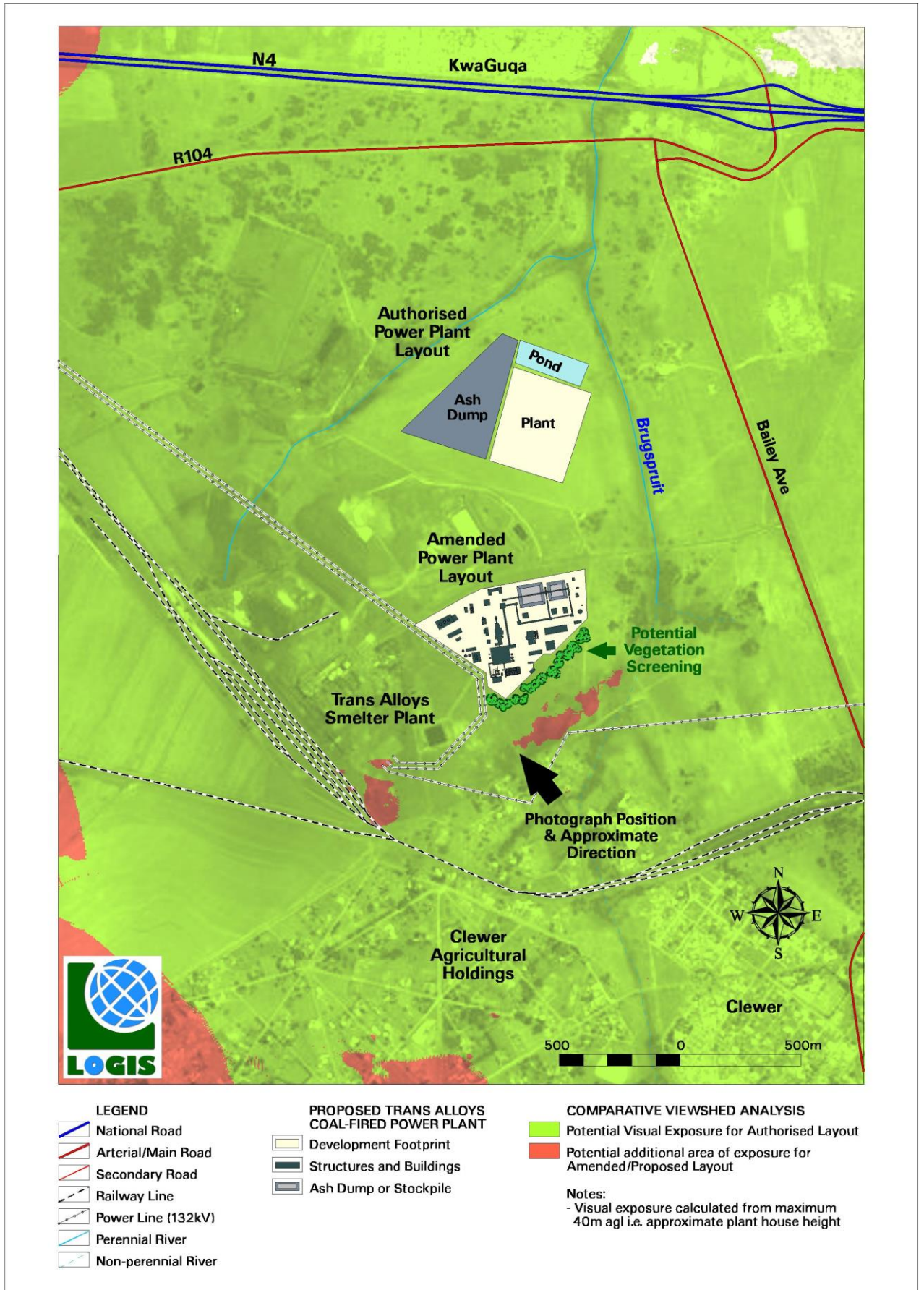


**Figure 1:** General environment within the Clewer Agricultural Holdings.



**Figure 2:** View from Clewer Agricultural Holdings (north) to the Transalloys Smelter Plant. *(Note the potential effectiveness of planted vegetation cover in shielding the power plant structures).*





**Map 3:** Comparative Viewshed Analysis.

### 3. CONCLUSION AND RECOMMENDATIONS

The proposed amendment to the Transalloys Power Plant location and the associated modifications to the plant layout and ancillary infrastructure is **not expected to significantly alter** the influence of the plant on *areas of higher viewer incidence* (observers traveling along major roads within the region) or *potential sensitive visual receptors* (residents of homesteads in close proximity to the power plant).

The proposed amendment is consequently **not expected to significantly influence** the anticipated visual impact, as stated in the original VIA report (i.e. the visual impact is expected to occur regardless of the amendment). This statement relates specifically to the assessment of the visual impact within a 2.5km radius of the power plant structures and ancillary infrastructure (potentially **high** significance that may be mitigated to **moderate**), but also generally apply to potentially **moderate** to **low** visual impacts at distances exceeding 2.5km.

The proposed power plant will also be located in closer proximity to the Transalloys Smelter Plant, an existing visual disturbance, thereby effectively consolidating the industrial infrastructure in this locality. Overall it should be borne in mind that this area already has a significant amount of visual clutter (e.g. the Highveld Steel Plant, the Smelter Plant, overhead power lines and railway line infrastructure) that has set the trend for industrial development within the region.

From a visual perspective, the proposed amendment will therefore require no (zero) changes to the significance rating within the original visual impact assessment report that was used to inform the approved power plant layout. In addition to this, no new mitigation measures are required. However, strong emphasis is placed on the implementation of mitigation measures (in the form of vegetation screening along the southern perimeter of the power plant), in order to shield residents located in the Clewer Agricultural Holdings from the infrastructure. Failing this, the significance of this potential impact will remain **high**.

It is suggested that the proposed amendment to the power plant layout be supported, subject to the conditions and recommendations as stipulated in the original Environmental Authorisation, and according to the Environmental Management Programme and suggested mitigation measures, as provided in the original Visual Impact Assessment report.

### 4. REFERENCES

Chief Directorate National Geo-Spatial Information, varying dates. *1:50 000 Topo-cadastral Maps and Data*.

MetroGIS (Pty) Ltd, 2014. *Proposed Transalloys Coal-fired Power Plant and Related Infrastructure, Mpumalanga Province. Visual Impact Assessment Report*.