Visual Compliance Statement for the Proposed KTE Brandvlei Water Pipeline, within the Northern Cape Province

SUBMITTED FOR ENVIRONMENTAL AUTHORISATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) (NEMA) (AS AMENDED).

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LIST OF ABBREVIATIONS

Abbreviation	Description
EIA	Environmental Impact Assessment
EnviroAfrica	EnviroAfrica NC CC
ETC	Eco Thunder Consulting (Pty) Ltd
VAC	Visual Absorption Capacity
VCS	Visual Compliance Statement

GLOSSARY LIST

Glossary Item	Description
Aesthetic Value	Aesthetic value is the emotional response derived from the experience of the environment with its natural and cultural attributes. The response can be either to visual or non-visual elements and can embrace sound, smell and any other factor having a strong impact on human thoughts, feelings, and attitudes (Ramsay, 1993). Thus, aesthetic value encompasses more than the seen view, visual quality, or scenery, and includes atmosphere, landscape character and sense of place (Schapper, 1993).
Aesthetically significant place	A formally designated place visited by recreationists and others for the express purpose of enjoying its beauty. For example, tens of thousands of people visit Table Mountain on an annual basis. They come from around the country and even from around the world. By these measurements, one can make the case that Table Mountain (a designated National Park) is an aesthetic resource of national significance. Similarly, a resource that is visited by large numbers who come from across the region probably has regional significance. A place visited primarily by people whose place of origin is local is generally of local significance. Unvisited places either have no significance or are "no trespass" places. (after New York, Department of Environment 2000).

Glossary Item	Description
Aesthetic impact	Aesthetic impact occurs when there is a detrimental effect on the perceived beauty of a place or structure. Mere visibility, even startling visibility of a Project proposal, should not be a threshold for decision making. Instead, a Project, by its visibility, must clearly interfere with or reduce (i.e. visual impact) the public's enjoyment and/or appreciation of the appearance of a valued resource e.g. cooling tower blocks a view from a National Park overlook (after New York, Department of Environment 2000).\0
Cumulative Effects	The summation of effects that result from changes caused by a development in conjunction with the other past, present, or reasonably foreseeable actions.
Landscape Character	The individual elements that make up the landscape, including prominent or eye-catching features such as hills, valleys, woods, trees, water bodies, buildings, and roads. They are generally quantifiable and can be easily described.
Landscape Impact	Landscape effects derive from changes in the physical landscape, which may give rise to changes in its character and how this is experienced (Institute of Environmental Assessment & The Landscape Institute 1996).
Study area	For the purposes of this report this Project the study area refers to the proposed Project footprint / Project site as well as the 'zone of potential influence' (the area defined as the radius about the centre point of the Project beyond which the visual impact of the most visible features will be insignificant) which is a 5,0km radius surrounding the proposed Project footprint / site.
Project Footprint / Site	For the purposes of this report the Project site / footprint refers to the actual layout of the Project as described.
Sense of Place (Genius loci)	Sense of place is the unique value that is allocated to a specific place or area through the cognitive experience of the user or viewer. A genius locus literally means 'spirit of the place'.
Sensitive Receptors	Sensitivity of visual receptors (viewers) to a proposed development.
Visibility	The area from which Project components would potentially be visible. Visibility depends upon general topography, aspect, tree cover or other visual obstruction, elevation, and distance.
Visual Exposure	Visibility and visual intrusion qualified with a distance rating to indicate the degree of intrusion and visual acuity, which is also influenced by weather and light conditions.
Visual Impact	Visual effects relate to the changes that arise in the composition of available views because of changes to the landscape, to people's responses to the changes, and to the overall effects with respect to visual amenity available views because of changes to the landscape, to people's responses to the changes, and to the overall effects with respect to visual amenity.

Glossary Item	Description
Visual Intrusion	The nature of intrusion of an object on the visual quality of the environment resulting in its compatibility (absorbed into the landscape elements) or discord (contrasts with the landscape elements) with the landscape and surrounding land uses.
VAC	VAC is defined as the landscape's ability to absorb physical changes without transformation in its visual character and quality. The landscape's ability to absorb change ranges from low-capacity areas, in which the location of an activity is likely to cause visual change in the character of the area, to high-capacity areas, in which the visual impact of development will be minimal (Amir & Gidalizon 1990).
Worst-case Scenario	Principle applied where the environmental effects may vary, for example, seasonally or collectively to ensure the most severe potential effect is assessed.
Zone of Potential Visual Influence	By determining the zone of potential visual influence, it is possible to identify the extent of potential visibility and views which could be affected by the proposed development. Its maximum extent is the radius around an object beyond which the visual impact of its most visible features will be insignificant primarily due to distance.

1 Background

1.1 Scope and Objective of the Specialist Study

Eco-Thunder Consulting (Pty) Ltd (ETC) was commissioned by EnviroAfrica NC CC (EnviroAfrica) as the lead consultant to manage the Visual Compliance Statement (VCS) for the establishment of the proposed Kotulo Tsatsi Energy (KTE) Brandvlei Water Pipeline Project. The VCS Statement focuses on the potential impact of the physical aspects of the proposed development (i.e., form, scale, and bulk), and their potential impact within the local landscape and receptor context.

The establishment of the 72km water pipeline aims to enhance the water supply infrastructure between the existing KTE Rising Main and the Brandvlei Reservoir. The Visual Compliance study considers the following:

- **Construction of a 72km long pipeline with a 250mm diameter**, primarily following the R27 road within the western part of the existing road reserve, thus minimising new land disturbances.
- **Installation of necessary support infrastructure** such as pump stations and valve chambers along the route, designed to integrate discreetly with the local environment.

1.2 Specialist Details

ETC is a privately owned company fully owned by women. We specialise in a wide range of specialised studies, including visual impact assessments, air quality impact assessments, noise impact assessments, socio-economic impact assessments, socio-economic research, economic development planning, development program design and implementation, as well as community trust management. Our expertise extends to conducting VIAs across Africa and optimising projects in the environmental sector. Our work encompasses landscape characterisation studies, end-use studies for quarries, and computer modelling and visualisation.

Based across South Africa, Eco Thunder has built a reputation as a leading authority on the conditions, needs, and assets of communities associated with independent power generation facilities. Additionally, ETC actively implements development programs in energy communities, ensuring a comprehensive understanding of how to drive positive social impact.

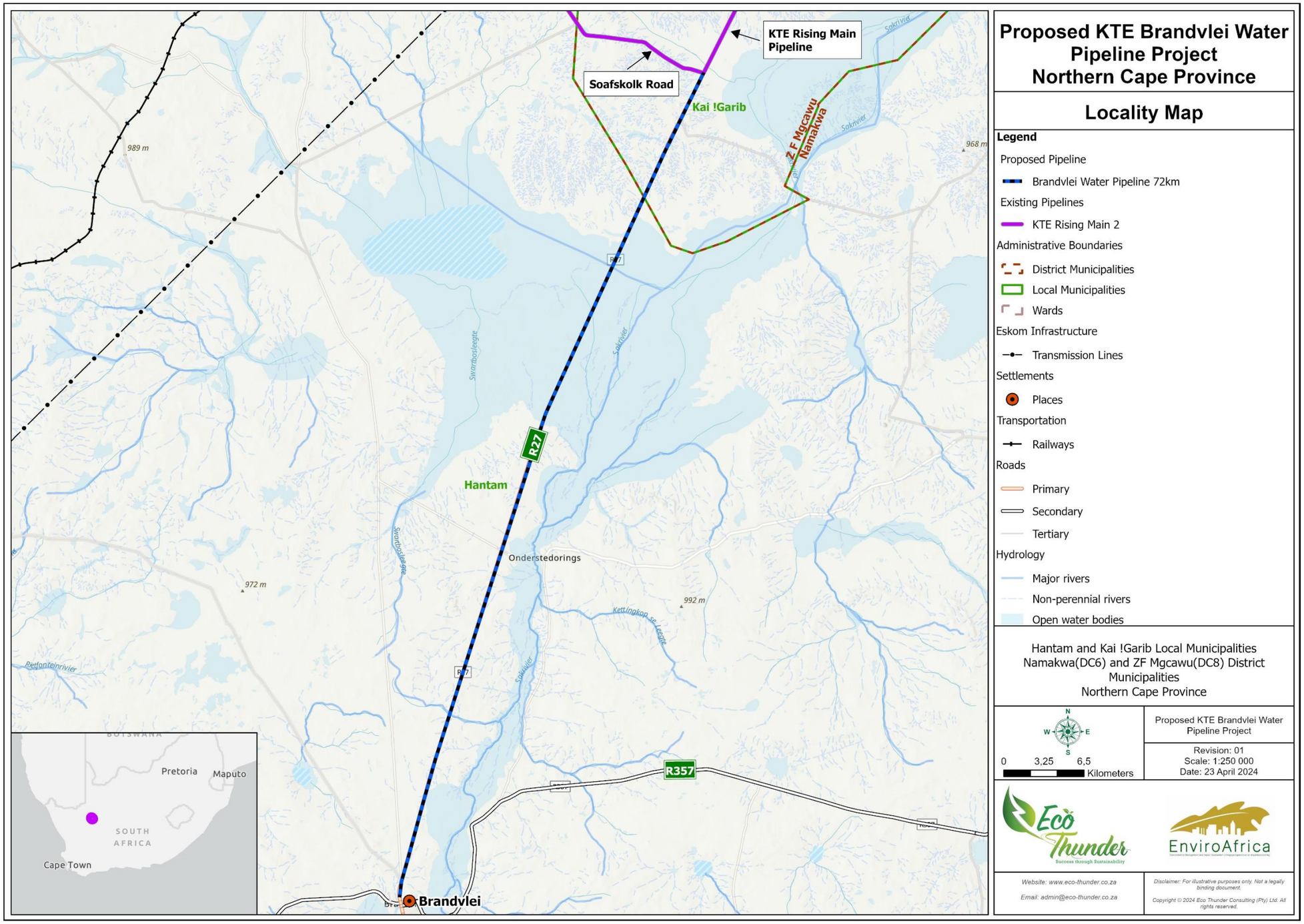


Figure 1: Locality Map: Overview

2 Project Information

2.1 Project Description

EnviroAfrica has engaged ETC as the principal consultant to oversee the VCS for the establishment of the KTE Brandvlei Water Pipeline Project. This significant infrastructure development is designed to span approximately 72km, extending from the intersection of R27 and Soafskolk Road to the existing water storage reservoir in Brandvlei, Northern Cape. The pipeline will be instrumental in supplying roughly 500m^3 of potable water per day to the Brandvlei area, significantly enhancing the local water distribution capacity.

The primary goal of this project is to facilitate the provision of stable water resources in the region while adhering to stringent environmental management practices. The scope of the project includes:

- **Constructing the 72km 250mm pipeline** primarily within the road reserve of the R27.
- **Integrating advanced infrastructure components** such as automated valve chambers and pump stations.

2.2 Project Site and Study Area

The proposed route of the KTE Brandvlei Water Pipeline runs from the existing KTE Rising Main Pipeline at the R27 and Soafskolk Road intersection, extending southeast to the Brandvlei reservoir. This route lies within the jurisdiction of the Namakwa District Municipality (NDM) and ZF Mgcawu District Municipality (ZFDM), under the local governance of the Hantam Local Municipality (HLM) and Kai !Garib Local Municipality (KGLM) in the Northern Cape, specifically falling under Ward 3 of the HLM and Wards 5 and 9 of the KGLM.

Characterised by its sparse vegetation and expansive vistas, the semi-arid environment of this region plays a critical role in the logistics of construction and the operational efficiency of water transportation. The pipeline's strategic location is pivotal not only for its infrastructural significance but also for its impact on local communities such as Brandvlei, Onderste Doorns, and Vendors Puts. The project spans 72km along the R27, a major route that connects several key locations within the district. These areas contribute to the broader visual and cultural context within which the project operates.

Figure 2 provides the details of the project, including the main infrastructure components and services that will be required during the project life cycle.

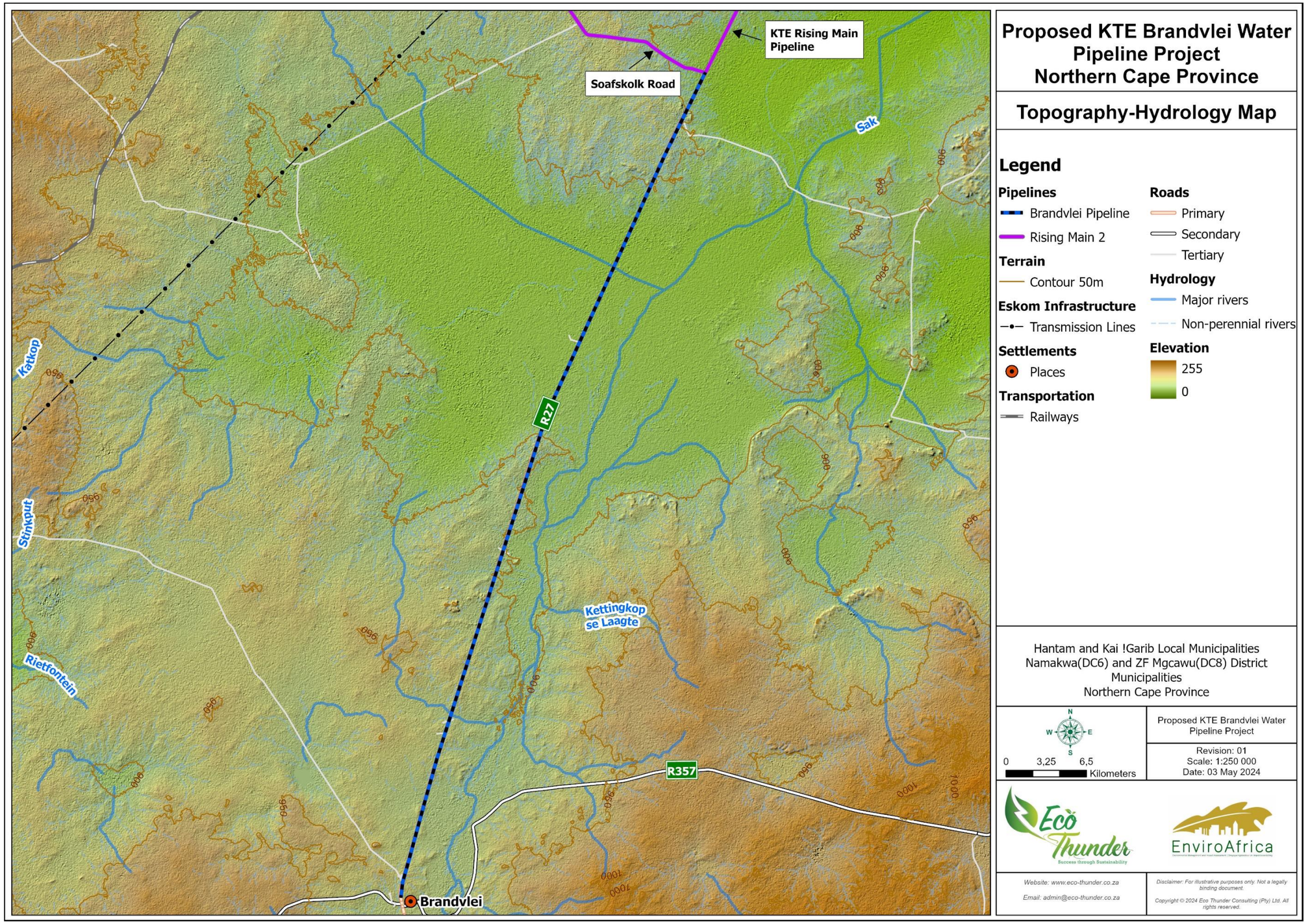


Figure 2: Topographical-Hydrological Map

3 Identification of Potential Issues

On 13 March 2024, a comprehensive site visit was conducted by ETC, along with representatives from EnviroAfrica and other environmental specialists. This visit was pivotal in assessing the proposed route for the KTE Brandvlei Water Pipeline Project, which extends from the intersection of R27 and Soafskolk Road to the Brandvlei Reservoir in the Northern Cape. The primary goal was to closely examine the visual aspects of the route, ensuring a thorough understanding of the landscape's characteristics and potential challenges. This hands-on evaluation allowed the team to directly observe the route's topography, existing vegetation, proximity to existing infrastructure, and general land use. The findings from this visit are crucial for identifying specific issues that could influence the visual integrity of the development.

3.1 Visual Observations from Site Visit

The site visit provided essential insights into the visual aspects along the proposed route of the KTE Brandvlei Water Pipeline.

- **Visual Absorption Capacity (VAC):** Given that the pipeline will be underground, the VAC along the proposed route is assessed as High. This favourable assessment is primarily due to the minimal visual obstruction that an underground installation offers. The terrain's flat and mildly undulating sections play a less critical role in visual obstruction when infrastructure is subterranean. Similarly, the sparse and low vegetation typical of the semi-arid Northern Cape, while offering minimal natural screening, is less of a concern for an underground pipeline. The semi-arid conditions, which imply slower site recoverability, are mitigated by the reduced surface disturbance of underground construction.
- **Visual Intrusion:** The visual intrusion of the KTE Brandvlei Water Pipeline project is rated as Low, given the underground nature of the installation. Existing roads and the utilitarian nature of the area indicate that the region already accommodates various elements of industrial and transportation-related development. However, because the pipeline will be installed below ground, its presence is not expected to alter the landscape visibly. This setup significantly reduces the potential for visual disruption, allowing the natural visual harmony of the semi-arid environment to remain largely intact. Effective restoration strategies post-construction will be crucial to ensure that any temporary disturbances during the construction phase are adequately addressed to restore the landscape to its original state.

3.2 Identified Issues

During the site assessment for the proposed KTE Brandvlei Water Pipeline Project, a few issues were identified that could potentially impact the visual harmony of the pipeline installation:

- **Natural Vegetation:** The region is characterised by sparse natural vegetation typical of the semi-arid Northern Cape, which offers limited visual screening. The preservation

and enhancement of this existing vegetation around key construction access points and above-ground infrastructure are critical for mitigating visual impacts and enhancing the site's natural aesthetic appeal.

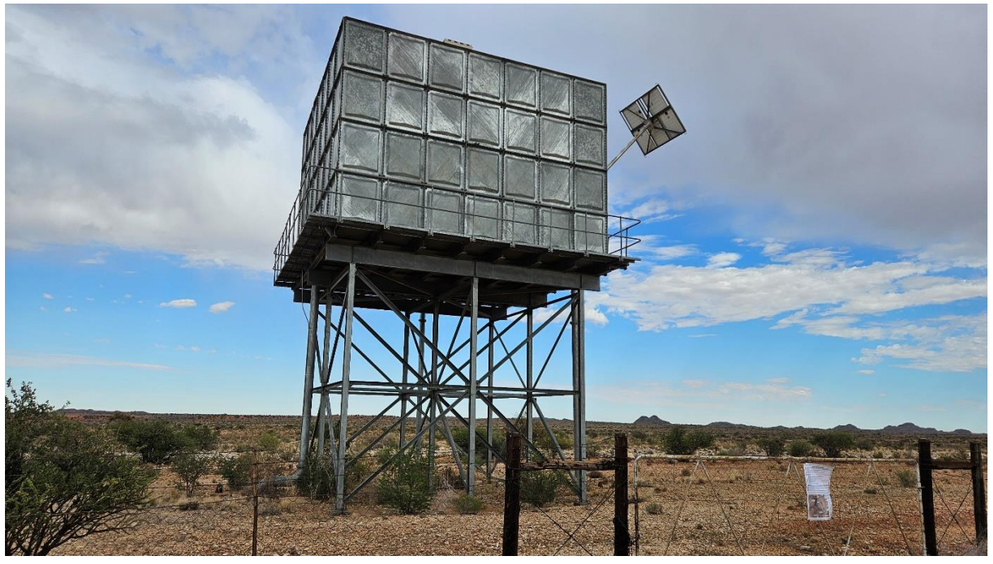
- **Topography:** The route's flat to mildly undulating terrain does not significantly obstruct views but will be disturbed during construction. Utilising the natural depressions and contours of the land to minimise visibility during construction activities and facilitate quicker recovery post-construction will help reduce the visual footprint of the development.
- **Existing Infrastructure:** The pipeline's proximity to the R27 and other utility lines emphasises the need for strategic placement and thoughtful design to integrate seamlessly with existing elements. Special consideration is required to ensure that construction activities and any temporary above-ground installations do not disrupt the current usage patterns and visual aesthetics of these infrastructures.

By proactively addressing each identified challenge, the project can be tailored to respect the local landscape, ensuring that visual impacts are minimised.

3.3 Site Photos

Photograph 1: Access Road along the Proposed Development Area

Photograph 2: Landscape View of the Proposed Development Site.



Photograph 3: Brandvlei Reservoir along the Proposed Development Site.

Photograph 4: Acess Roads surrounding the Proposed Development Site.

Figure 3: Proposed Development Site Photos

4 Visual Compliance Statement and Conclusion

Building on the observations outlined in the previous sections, this section addresses the visual influence and expected visual impacts of the proposed KTE Brandvlei Water Pipeline Project.

4.1 Visual Influence

The proposed KTE Brandvlei Water Pipeline, designed to be a mostly underground installation stretching approximately 72km from the R27 and Soafskolk Road intersection to the Brandvlei Reservoir, is crafted with the primary aim of minimising visual impacts. This design ensures effective integration with the semi-arid landscape and existing infrastructural elements of the Northern Cape, thereby promoting a harmonious blend with the regional landscape character.

- **Existing Visual Context:** A thorough review of the area's existing visual context, which comprises natural landscapes and intermittent infrastructural features, has confirmed the project's capacity to harmonise with the regional aesthetic. The strategic underground installation minimises physical visibility, thereby enhancing visual integration and reducing potential disruptions.
- **Visibility and Exposure:** Special emphasis has been placed on reducing visibility from multiple viewpoints along the route. The underground positioning of the pipeline, combined with the sparse natural vegetation, ensures minimal visual intrusion, allowing the infrastructure to integrate seamlessly into its surroundings.

Strategic visual integration involves employing restoration strategies that mimic the natural environment and using landscaping to enhance visual buffering. These efforts leverage the area's semi-arid characteristics and sparse vegetation, providing a backdrop that supports the subtle integration of infrastructure elements like the pipeline.

4.2 Expected Visual Impacts

The proposed KTE Brandvlei Water Pipeline Project, principal negative impacts include:

- **Alteration of Landscape Character:** Although the pipeline is primarily underground, the temporary construction activities could alter the visual character of the natural and open vistas typically found in the region.
- **Local Land Use:** Construction sites, necessary for the pipeline's installation, may temporarily change the visual and functional character of land use in the immediate vicinity.
- **Dust and Construction Impact:** As with most construction projects, activities are expected to generate dust and debris, which could temporarily affect the local visual environment.

- **Nighttime Lighting:** The use of lighting for security and operational purposes during the construction phase may introduce temporary light pollution. This could impact wildlife and diminish the local community's enjoyment of naturally dark night skies.

To mitigate the visual impacts identified, the proposed KTE Brandvlei Water Pipeline Project will need to employ a comprehensive set of strategies. These include detailed restoration plans that utilise native vegetation to rehabilitate the landscape post-construction and strategic siting and underground placement of the pipeline to minimise visibility. Rigorous construction management practices are in place, featuring effective dust suppression techniques and restricting operations to daylight hours to reduce disturbances. Controlled lighting is carefully designed to minimise light pollution, ensuring minimal disruption to the natural nighttime environment. Additionally, ongoing community engagement is prioritised to ensure the project aligns with local values. All temporary structures and debris are promptly removed after construction to restore the site's visual integrity, maintaining the visual aesthetic of the Northern Cape landscape.

4.3 Conclusion

It can be concluded that the proposed KTE Brandvlei Water Pipeline Project can be authorised provided it is integrated effectively within the Northern Cape region with minimal visual intrusions. The use of the land's inherent VAC enhances the project's ability to minimise visual impacts substantially.

The cumulative visual impact of the project is minimal, given its scope and nature, and must be continually managed through best practice methods throughout the project's lifecycle. This comprehensive approach respects the aesthetic values of the local community, ensuring responsible advancement of South Africa's environmental and infrastructural goals.

The report has assessed the existing visual conditions and the project's compatibility with the landscape. The potential visual impacts, while inherently minimal due to the project's underground nature, can be effectively mitigated through careful planning, strategic placement, and conscientious ongoing management.

5 References

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

CSIR, 2015. *The Strategic Environmental Assessment for wind and solar photovoltaic energy in South Africa.*

DFFE, 2018. *National Land-cover Database 2018 (NLC2018).*

DFFE, 2021. *South African Protected Areas Database (SAPAD_OR_2021_Q1).*

DFFE, 2021. *South African Renewable Energy EIA Application Database (REEA_OR_2021_Q1).*

DEA&DP, 2011. Provincial Government of the Western Cape. *Guideline on Generic Terms of Reference for EAPS and Project Schedules.*

Department of Environmental Affairs and Tourism (DEA&T), 2001. *Environmental Potential Atlas (ENPAT) for the Gauteng Province.*

JAXA, 2021. Earth Observation Research Centre. *ALOS Global Digital Surface Model (AW3D30).*

National Botanical Institute (NBI), 2004. *Vegetation Map of South Africa, Lesotho and Swaziland (Unpublished Beta Version 3.0)*

Oberholzer, B. (2005). *Guideline for involving visual and aesthetic specialists in EIA processes: Edition 1.*

The EIA Amendment Regulations. In Government Gazette Nr. 33306, 18 June 2010.