Eskom Romansrivier – Ceres 132/66kV Powerline:

Visual Impact Assessment

Report Prepared for

Eskom Holdings SOC Limited

Report Prepared by

srk consulting

Report Number 509264/42A

August 2017

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Profile and Expertise of Specialists

SRK Consulting (South Africa) (Pty) Ltd (SRK) has been appointed by Eskom Holdings SOC Limited, Western Operating Unit: Distribution Division (Eskom) to undertake the Basic Assessment (BA) process required in terms of the National Environmental Management Act 107 of 1998 (NEMA). SRK has appointed a team of professionals to conduct the Visual Impact Assessment (VIA) specialist study as part of the BA process.

SRK Consulting comprises over 1 300 professional staff worldwide, offering expertise in a wide range of environmental and engineering disciplines. SRK's Cape Town environmental department has a distinguished track record of managing large environmental and engineering projects, extending back to 1979. SRK has rigorous quality assurance standards and is ISO 9001 accredited.

In accordance with the Department of Environmental Affairs and Development Planning Environmental Impact Assessment (EIA) guidelines for specialists (Brownlie, 2005) and NEMA, the qualifications and experience of the key individual specialists involved in the study are detailed below.

Project Review: Christopher Dalgliesh, BBusSc (Hons); MPhil (EnvSci)

Certified with the Interim Board for Environmental Assessment Practitioners South Africa (CEAPSA)

Chris Dalgliesh is a Partner and Principal Environmental Consultant with over 24 years' experience, primarily in South Africa, Southern Africa, West Africa and South America (Suriname). Chris has worked on a wide range of projects, notably in the natural resources, Oil & Gas, waste, infrastructure (including rail and ports) and industrial sectors. He has directed and managed numerous Environmental and Social Impact Assessments (ESIAs) and associated management plans, in accordance with international standards. He regularly provides high level review of ESIAs, frequently directs Environmental and Social Due Diligence studies for lenders, and also has a depth of experience in Strategic Environmental Assessment (SEA), State of Environment Reporting and Resource Economics. He holds a BBusSci (Hons) and M Phil (Env) and is a Certified Environmental Practitioner of South Africa (CEAPSA).

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Scott Masson is an Environmental Consultant and has been involved in the environmental and landscape architectural field for the past 9 years. His expertise includes Visual Impact Assessments, Environmental Impact Assessment, Environmental Management Plans and Environmental Control Officer work, Integrated Water and Waste Management Plans, environmental planning and sensitivity studies; and landscape architectural planning and design. Scott holds a BSc (Hons) in Environmental Management, a MLA in Landscape Architecture, is a Certified Environmental Practitioner of South Africa and is a registered Professional Landscape Architect with the South African Council of the Landscape Architecture Profession.

Statement of SRK Independence

Neither SRK nor any of the authors of this Report have any material present or contingent interest in the outcome of this Report, nor do they have any pecuniary or other interest that could be reasonably regarded as being capable of affecting their independence or that of SRK.

SRK has no beneficial interest in the outcome of the assessment which is capable of affecting its independence.

Disclaimer

The opinions expressed in this report have been based on the information supplied to SRK by Eskom. SRK has exercised all due care in reviewing the supplied information, but conclusions from the review are reliant on the accuracy and completeness of the supplied data. SRK does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them. Opinions presented in this report apply to the site conditions and features as they existed at the time of SRK's investigations, and those reasonably foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this Report, about which SRK had no prior knowledge nor had the opportunity to evaluate.

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Acronyms and Abbreviations

BA	Basic Assessment
DR	Divisional Road
EIA	Environmental Impact Assessment
EMP	Environmental Management Programme
Eskom	Eskom Holdings SOC Limited, Western Operating Unit: Distribution Division
GIS	Global Information Systems
GPS	Global Positioning System
ha	hectares
NEMA	National Environmental Management Act 107 of 1998
SRK	SRK Consulting (South Africa) (Pty) Ltd
ToR	Terms of Reference
VAC	Visual Absorption Capacity
VIA	Visual Impact Assessment

Glossary

Aspect	The direction a slope faces with respect to the sun.
Landscape Integrity	The relative intactness of the existing landscape or townscape, whether natural, rural or urban, and with an absence of intrusions or discordant structures (Oberholzer, 2005).
Landscape Unit	Portion of an area with similar morphological characteristics.
Sense of Place	The unique quality or character of a place, whether natural, rural or urban. Relates to uniqueness, distinctiveness or strong identity. Sometimes referred to as genius loci meaning 'spirit of the place' (Oberholzer, 2005).
Viewshed	The topographically defined area from which the project *could* be visible.
Visibility	The area from which the project components would actually be visible and which depends upon topography, vegetation cover, built structures and distance.
Visual Absorption Capacity	The potential for the area to conceal the proposed development.
Visual Character	The elements that make up the landscape including geology, vegetation and land-use of the area.
Visual Exposure	The zone of visual influence or viewshed. Visual exposure tends to diminish exponentially with distance.
Visual Impact	A description of the effect of an aspect of the development on a specified component of the visual, aesthetic or scenic environment within a defined time and space (Oberholzer, 2005).
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.
Visual Quality	The experience of the environment with its particular natural and cultural attributes.
Visual Receptors	Individuals, groups or communities who are subject to the visual influence of a particular project (Oberholzer, 2005).

1 Introduction

1.1 Background

Eskom Holdings SOC Limited, Western Operating Unit: Distribution Division (Eskom) proposes to build a new double circuit (132/66 kV) powerline (~ 20 km) from the existing Romansrivier Substation to the existing Ceres Substation, within the Western Cape ("the project") (Figure 2-1).

SRK Consulting (South Africa) (Pty) Ltd (SRK) has been appointed by Eskom to undertake the Basic Assessment (BA) process required in terms of the National Environmental Management Act 107 of 1998 (NEMA), and the Environmental Impact Assessment (EIA) Regulations, 2014. A Visual Impact Assessment (VIA) of the project is one of the investigations commissioned for the BA process.

The VIA will consider both the magnitude of the visual impact (rated according to visual assessment criteria) and the significance of the visual impact (rated according to standard EIA rating methodology, as prescribed in the Terms of Reference [ToR]).

1.2 Terms of Reference

The primary aims of the VIA are to describe the visual baseline, assess the visual impacts of the project and identify effective and practicable mitigation measures. More specifically, the ToR for the VIA are as follows:

- Collect and review required data, including project information and data on topography, vegetation cover, land-use and other background information;
- Conduct fieldwork, comprising an extensive reconnaissance of the study area, particularly any powerline route alternatives and viewpoints. The objectives of the fieldwork are to:
    - Familiarise the specialist with the study area;
    - Identify key viewpoints / corridors; and
    - Determine and groundtruth the existing visual character and quality in order to understand the sensitivity of the landscape;
- Undertake visual 'sampling' using photography from various viewpoints to illustrate the likely zones of influence and visibility;
- Undertake a mapping exercise to define the visual character of the study area and identify sensitive areas, opportunities and constraints.
- Determine the zone of influence using:
    - A GIS model to calculate the viewshed based on the dimensions, particularly the elevations, of project components;
    - Field observations at key viewpoints to determine the likely distance at which visual impacts will become indistinguishable;
- Undertake a site walk-down with other specialists, SRK and Eskom to determine the final location of infrastructure based on ecological, visual and cultural (archaeological and palaeontological) sensitivity of the study area;
- Identify potential impacts of the project on visual resources;
- Assess the direct, indirect and cumulative impacts (pre- and post-mitigation) of the final location of infrastructure (and alternatives, if applicable) on visual resources in the study area using the prescribed impact assessment methodology;
- Recommend practicable mitigation measures to avoid and/or minimise/reduce impacts and enhance benefits; and

- Recommend and draft a monitoring campaign to ensure the correct implementation and adequacy of recommenced mitigation and management measures, if applicable.

2 Approach and Method

Given the subjective nature of visual issues, assessing the visual impacts of a development/site in absolute and objective terms is not achievable. Thus, qualitative as well as quantitative techniques are required. In this VIA, emphasis has therefore been placed on ensuring that the methodology and rating criteria are clearly stated and transparent. The focus of the baseline study is to determine the character and sensitivity of the visual environment, the visual catchment area and identify visual receptors and viewing corridors. For impact assessment, all ratings are motivated and, where possible, assessed against explicitly stated and objective criteria.

There are very few guidelines that provide direction for visual assessment; the most relevant are the Landscape Institute's "Guideline for Landscape and Visual Impact Assessments" and the Department of Environmental Affairs and Development Planning's "Guideline for Involving Visual and Aesthetic Specialists in EIA Processes" (2005), both of which have been considered in this VIA.

2.1 Approach

The approach to the VIA was selected to be as accurate and thorough as possible. Analytical techniques are selected so as to endorse the reliability and credibility of the assessment.

The approach to and reporting of the VIA study comprises three major, phased elements (as summarised in Figure 2-1 below):

1. A description of the visual context;
2. The identification and discussion of the potential visual impacts; and
3. An assessment of those potential impacts.

Visual impacts are assessed as one of many interrelated effects on people (i.e. the viewers and the impact of an introduced object into a particular view or scene) (Young, 2010). In order to assess the visual impact the project has on the affected environment, the visual context (baseline) in which the project is located must be described. The inherent value of the visual landscape to viewers is informed by geology/topography, vegetation and land-use and is expressed *as Visual Character* (overall impression of the landscape), *Visual Quality* (how the landscape is experienced) and *Sense of Place* (uniqueness and identity).

Visual impact is measured as the change to the existing visual environment caused by the project as perceived by the viewers (Young, 2010). The visual impact(s) may be negative, positive or neutral (i.e. the visual quality is maintained). The magnitude or intensity of the visual impacts is determined through analysis and synthesis of the visual absorption capacity (VAC) of the landscape (potential of the landscape to absorb the project), viewshed (zone of visual influence or exposure), visibility (viewing distances), compatibility of the project with landscape integrity (congruence), and the sensitivity of the viewers (receptors).

Sources of visual impacts are identified for the construction, operational and decommissioning[1] phases of the project. The significance of those visual impacts is then assessed using the prescribed impact rating methodology, which includes the rating of:

- Impact consequence, determined by extent, duration and magnitude/intensity of impact (see above);

[1] For this project, the decommissioning phase refers to the removal of the old 66 kV powerline affected by the fire.

- Impact probability;
- Impact significance, determined by combining the ratings for consequence and probability; and
- Confidence in the significance rating.

Mitigation measures recommended to avoid and/or reduce the significance of negative impacts, or to optimise positive impacts, are identified for the project. Impact significance is re-assessed assuming the effective implementation of mitigation measures.

2.2 Method

The following method was used to assess the visual baseline for the project:

1. Collect and review visual data, including data on topography, vegetation cover and land-use;
2. Conduct fieldwork (conducted in May 2017), comprising an extensive reconnaissance of the study area. The objectives of the fieldwork are to:
    - Familiarise the specialist with the study area and its surroundings;
    - Identify key viewpoints / view corridors; and
    - Determine and groundtruth the existing visual character and quality in order to understand the sensitivity of the landscape.

    Visual 'sampling' using photography was undertaken from viewpoints within approximately 5 km of the powerline route to illustrate the likely zone of influence and visibility. The location of the viewpoints was recorded with a GPS; and
3. Undertake a mapping exercise to identify potential receptors to the proposed project.

The following method was used to assess the visual impact of the project:

1. Determine the visual zone of influence using a GIS model to calculate the viewshed based on the dimensions, particularly the elevations, of the pylons;
2. Determine the likely distance at which visual impacts will become indistinguishable using photographs from key viewpoints;
3. Rate impacts on the visual environment and sense of place based on a professional opinion and the prescribed impact rating methodology; and
4. Recommend practicable mitigation measures to avoid and/or minimise impacts and/or optimise benefits).

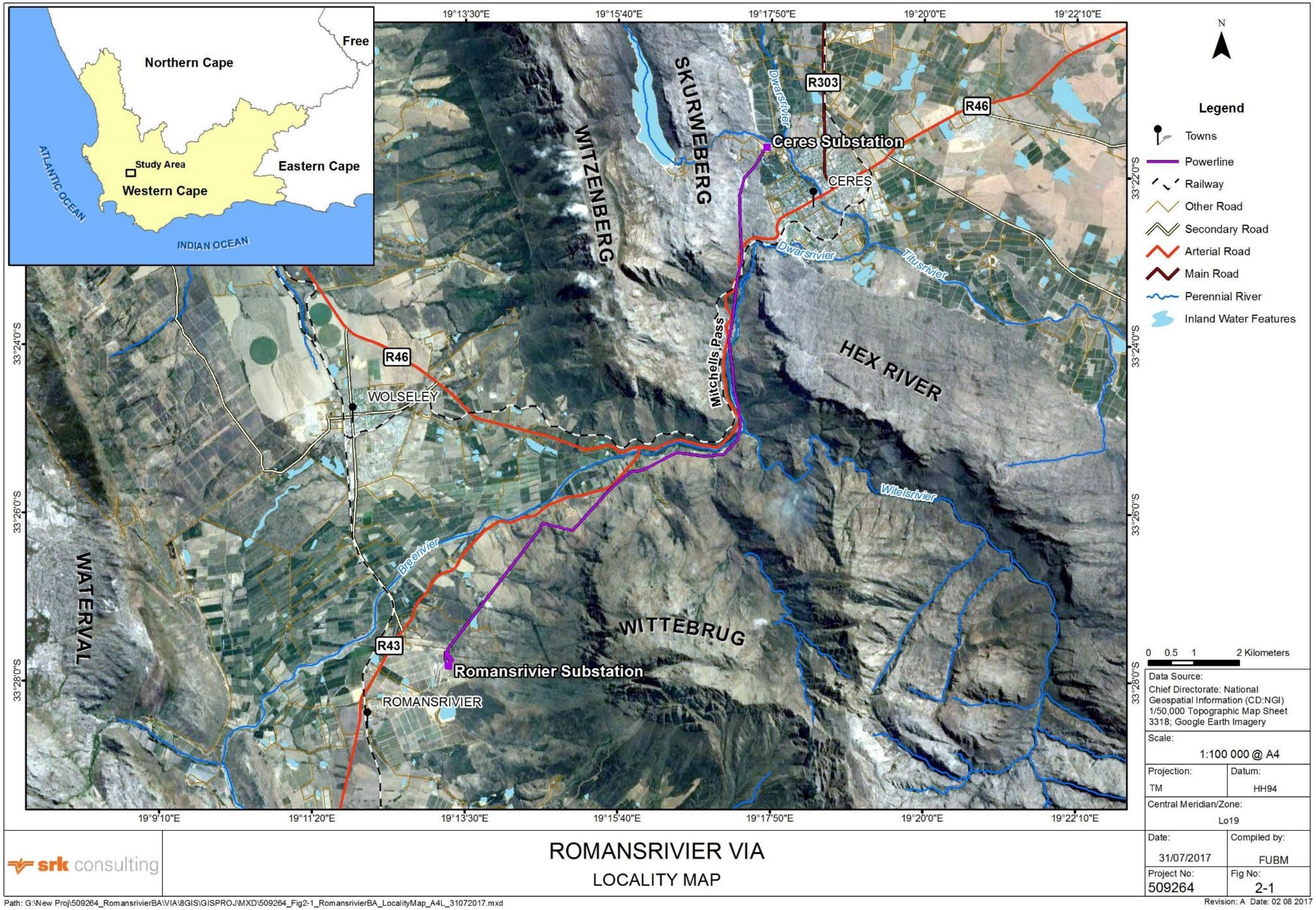


Figure 2-1: Location of the project

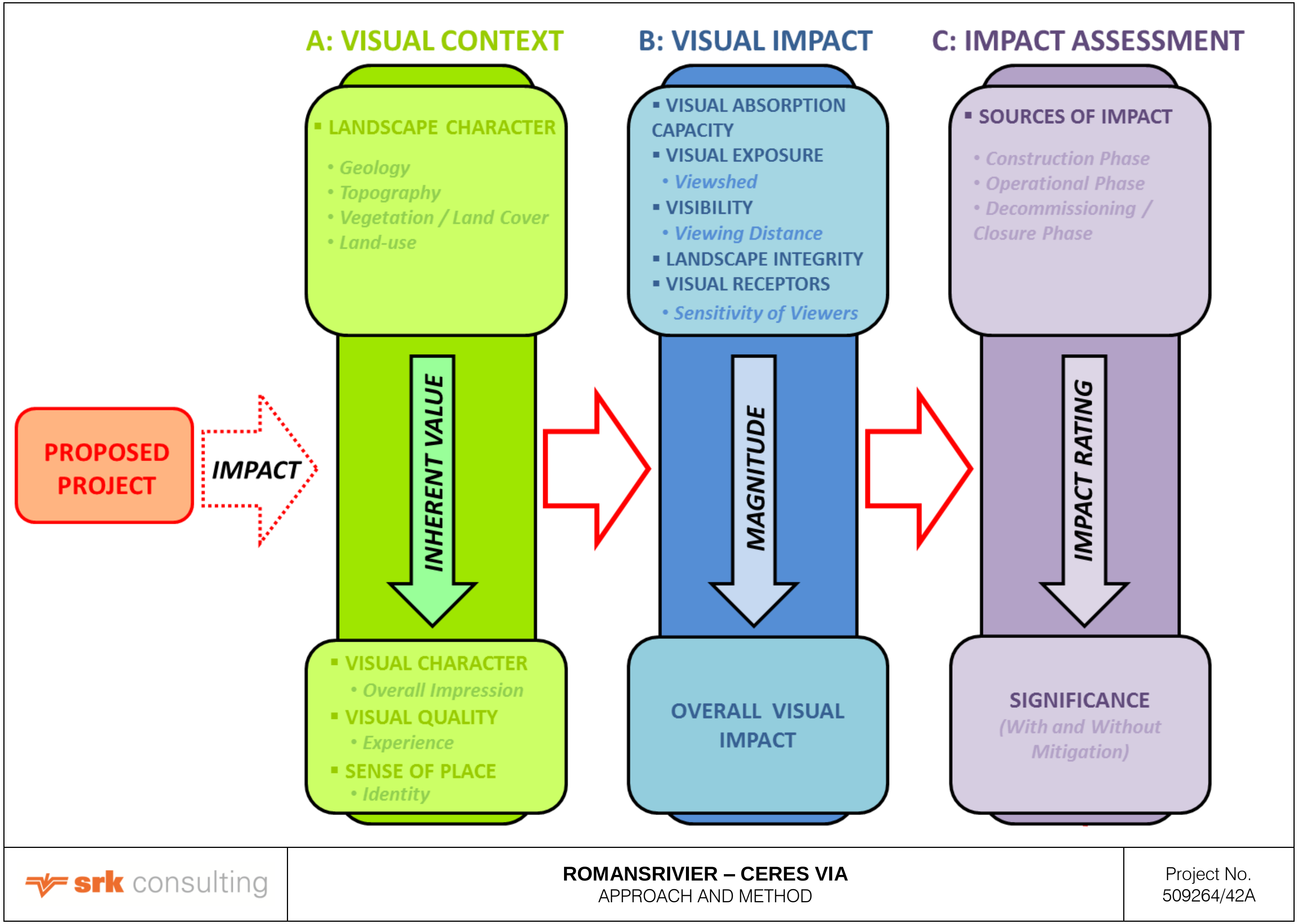


Figure 2-2: Approach and method of the VIA

2.3 Assumptions and Limitations

As is standard practice, the VIA is based on a number of assumptions and is subject to certain limitations, which should be borne in mind when considering information presented in this report. These assumptions and limitations include:

- VIA is not, by nature, a purely objective, quantitative process, and depends to some extent on subjective judgments. Where subjective judgments are required, appropriate criteria and motivations for these are clearly stated;
- The assessment is based on technical information supplied to SRK, which is assumed to be accurate. This includes the proposed locations, dimensions and layouts of the project components;
- The viewshed calculations were undertaken using 20 m contour intervals. The viewsheds depict the area from which the project might be visible. The viewsheds do not take localised undulations, vegetation and existing man-made structures - which may obscure views - into account. This means that the project is not necessarily visible from everywhere within the viewsheds, i.e. from some places the project may be obscured by existing structures, vegetation or local variations in topography. They therefore indicate a “maximum exposure” or “worst case” scenario;
- The viewsheds are based on the heights of the pylons above ground level which range from 10.6 - 43.35 m. The average height of the pylons is 29 m.
- This study does not provide motivation for or against the project, but rather seeks to give insight into the visual character and quality of the area, its VAC and the potential visual impacts of the project.

The findings of the VIA are not expected to be affected by these assumptions and limitations.

3 Project Description

Eskom proposes to construct a ~20 km double circuit (132/66 kV) powerline from the existing Romansrivier Substation near Wolseley to the existing Ceres Substation. The project is required to supplement the electrical power supply in the region. Key aspects of the project include:

- Installation of an 80MVA 132/66/11 kV transformer at the Romansrivier substation to supply the new 132 kV line to Ceres;
- Construction of a double circuit distribution powerline (132kV and 66kV) between Romansrivier and Ceres substations;
- Installation of 132 kV and 66 kV feeder bays at the Romansriver substation and a 66 kV feeder bay at the Ceres Substation;
- Construction of new access roads;
- Upgrading of various existing roads; and
- Decommissioning of the existing 66 kV line between the Romansriver and Ceres substations.

Steel monopole and lattice structures are being considered as options for the powerline pylons (Figure 3-1).

Figure 3-1: Indicative representation of the pylon types considered for the project - steel monopole (left) or steel lattice (right) pylons

3.1.1 The No-Go Alternative

The No-Go Alternative will retain the *status quo* and involve no construction of a powerline. No new visual impacts will occur.

4 Visual Context (Affected Environment)

The following description of the affected environment focuses on the *Visual Character* of the area surrounding and including the project (the study area) and discusses the *Visual Quality* and *Sense of Place*[2]. This baseline information provides the context for the visual analysis.

4.1 Landscape Character

Landscape character is the description of the pattern of the landscape, resulting from particular combinations of natural (physical and biological) and cultural (land use) characteristics. It focuses on the inherent nature of the land rather than the response of a viewer (Young, 2000).

Refer to Figure 4-4 for visual representations of landscape character.

Three distinct landscape units occur in the study area:

1. The Tulbagh-Wolseley Valley;
2. The Michell’s Pass (Bree River) Valley; and
3. The Ceres Valley.

Each of the key characteristics is discussed below in the context of these landscape units.

4.1.1 Geology and Topography

The geology and topography of the area, together with the Mediterranean climate, provide the framework for the basic landscape features and visual elements of the study area.

[2] These terms are explained in the relevant sections below.

The north-south aligned Tulbagh-Wolseley Valley is enclosed by the Witzenberg Mountains to the east, the Waterval and Obiekwaberg Mountains to the west and the Groot Winterhoek Mountains at the northern head of the valley. The town of Wolseley is situated on a natural watershed that divides the Berg River flowing north-west, and the Bree River flowing south into the Breede River. The Wittebrug Mountain juts out at this point, splitting the valley into two distinct areas.

Michell's Pass (R46) is a spectacular scenic route from Tulbagh and Wolseley through the Witzenberg Mountains to Ceres. Michell's Pass follows the narrow valley of the Bree River. From the southern entrance near Wolseley, the pass ascends 190 metres to the summit at an elevation of 490 m before descending a short distance into Ceres (Wikipedia, 2017).

The Ceres Valley (also known as the Warm Bokkeveld Valley) is enclosed by the Skurweberg Mountains to the west, the Hex River Mountains to the south and the Gydoberg Mountains and Waboomberg Mountains to the north. The landscape rises gently across the western and central portions of the valley (town of Ceres at approximately 460 m above sea level), but then rises sharply at the foothills in the east. Gydo Pass (R303) in the north of Ceres Valley connects the Warm Bokkeveld with the higher altitude Koue Bokkeveld.

The study area is surrounded by dramatic mountains of the Cape Fold Belt underlain by geological formations of the Bokkeveld Group and Table Mountain Group. Shale and sandstone form low rolling hills across the wider Tulbagh-Wolseley and Ceres Valley bottoms. The weather-resistant quartzitic sandstone, mainly of the Skurweberg Formation, forms steep rocky mountains such as the north-south trending Witzenberg and Skurweberg Mountains.

4.1.2 Vegetation

The study area is located within the Cape Floristic Kingdom and the Fynbos Biome and in the original extent of the following vegetation types:

- Breede Alluvium Fynbos and Breede Shale Renosterveld on the Tulbagh-Wolseley Valley plain;
- Breede Shale Fynbos on the lower slopes of the Winterhoek and Wittebrug Mountains;
- Winterhoek Sandstone Fynbos on the steep, rugged slopes of the Witzenberg and Skurweberg Mountains;
- North Hex Sandstone Fynbos on the steep, rugged slopes of the Hex River Mountains;
- Ceres Shale Renosterveld on the wide Ceres Valley plain; and
- Kouebokkeveld Shale Fynbos on the foothills to the north and east of the Ceres Valley.

The natural vegetation of the area is predominantly low to moderately tall shrubland. However, much of the natural vegetation in the valleys has been lost to agriculture. Natural vegetation cover on the steeper slopes of the mountains and through Michell's Pass has mostly remained intact because it is not suitable for development, in addition to which some areas are proclaimed nature reserves.

Isolated stands of alien trees (e.g. *Eucalyptus* and pine*)* occur around farmsteads and along access roads to the farms, and other alien trees such as beefwoods are used as windrows between crop fields.

Although there are many drainage lines crossing the valleys, these watercourses have been severely affected by agricultural activities.

4.1.3 Land Use

Although the Wolseley and Ceres area is known for its fruit production (apple, pear, stone fruit), particularly south of the Wolseley entrance to Michell's Pass and at the base of the Hex River and Skurweberg Mountains, the predominant crops in the central parts of the valleys are wheat and lucerne. Isolated farmsteads and farm dams are scattered throughout the area. An extensive network of gravel roads connects farms and settlements.

The town of Wolseley is located in the flat bottom of the Tulbagh-Wolseley Valley, approximately 6 km west of the southern entrance to Michell's Pass.

The R43, south from Worcester, hugs the base of Wittebrug Mountain before connecting to the R46 at the entrance to Michell's Pass. Access to Wolseley from the R43 is from Voortrekker Street.

The R46 (a provincial road from Tulbagh) passes east of Wolseley and through Michell's Pass to Ceres. Michell's Pass is a scenic route that winds its way through the mountains along the Bree River providing attractive scenery. The Pass is also rich in heritage - portions of the Pass have been declared a heritage site including original sections of Bain's pass and the Toll House ("Die Tolhuis"). After descending into Ceres, the R46 traverses the Ceres Valley towards the north-east.

The Ceres Rail Company has reinstated the Ceres rail line through Michell's Pass and offers scenic train trips between Cape Town and Ceres.

The town of Ceres serves as a regional centre in the Witzenberg Local Municipality. Ceres is located in the south-west of the Ceres Valley nestled at the base of the Skurweberg Mountains to the west and the Hex River Mountains to the south.

Tourism is important in the area with protected areas proclaimed in the surrounding mountains (such as the Winterhoek Mountain Catchment Area, Matroosberg Mountain Catchment Area and Koue Bokkeveld Mountain Catchment Area).

The Romansrivier Substation is located on the lower west-facing slopes of Wittebrug Mountain above the R46 and agricultural fields.

The proposed powerline route generally follows the alignment of an existing 66 kV powerline from the Romansrivier Substation to the Ceres Substation although portions of the powerline have been damaged by fire (and pylons subsequently removed).

The proposed powerline traverses the lower slopes of the Wittebrug Mountain until it converges with the R46 in Michell's Pass. The powerline follows the Bree River to the east of the R46 before crossing to the western side of the R46 and up the steep mountain side through a saddle between Ceres Peak and a lower peak to the east. The proposed powerline then descends to the Ceres Substation located north of the Ceres campsite on the western side of town.

4.2 Visual Character

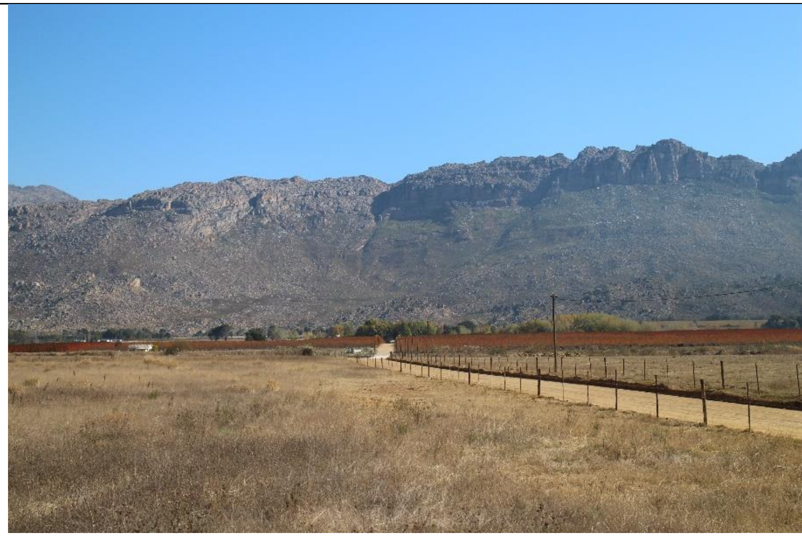
Visual character is descriptive and non-evaluative, which implies that it is based on defined attributes that are neither positive nor negative. A change in visual character cannot be described as having positive or negative attributes until the viewer's response to that change has been taken into consideration. The probable change caused by the project is assessed against the existing degree of change caused by previous development.

Typical character attributes, used to describe the visual character of the affected area and to give an indication of potential value to the viewer, are provided in Table 4-1.

Lower slopes of Wittebrug Mountain

Southern extent of Michell's Pass

Northern extent of Michell's Pass



Farmland in the Ceres Valley

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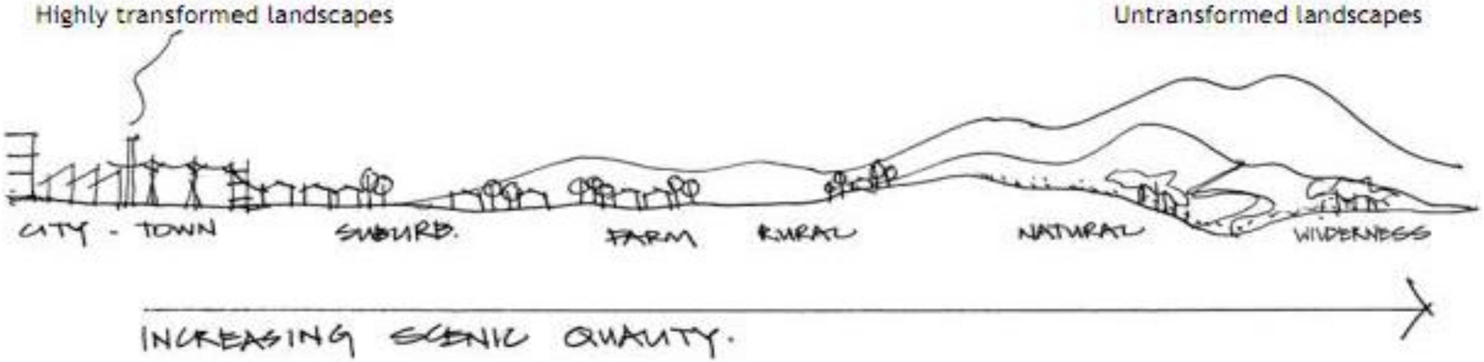
Figure 4-4: Visual character

Table 4-1: Typical Visual Character Attributes

Highly Transformed Landscape – Urban/Industrial	Transition Landscape	Modified Rural Landscape	Natural Transition Landscape	Untransformed Landscape – Natural
Substantially developed landscape. High levels of visual impact associated with buildings, factories, roads and other related infrastructure (e.g. powerlines).	Transitional landscape associated with the interface between, rural, agricultural area and more developed suburban or urban zones.	Typical character is rural landscape, defined by field patterns, forestry plantations and agricultural areas and associated small-scale roads and buildings.	A changing landscape character associated with the interface between natural areas and modified rural / pastoral or agricultural zones.	No / minimal impact associated with the actions of man. National parks, coastlines, pristine forest areas.



Source: CNDV, 2006

http://www.shandinglu.org

http://www.nightjartravel.com

http://www.boschkloof.com

4.3 Visual Quality

Aesthetic value is an emotional response derived from our experience and perceptions. As such, it is subjective and difficult to quantify in absolute terms. Studies in perceptual psychology have shown that humans prefer landscapes with higher complexity (Crawford, 1994). Landscape quality can be said to increase when:

- Topographic ruggedness and relative relief increases;
- Water forms are present;
- Diverse patterns of grasslands, shrubs and trees occur;
- Natural landscape increases and man-made landscape decreases; and
- Where land use compatibility increases.

The visual quality of the overall area is largely ascribable to the rural patterns across the valleys nestled in the spectacular and rugged mountains covered in natural vegetation.

The visual quality of the area can be experienced through a number of views (Figure 4-5). These views include:

- Complex rolling views from and across the valleys towards the mountains;
- Extended closed views from vantage points looking out across the valley towards the mountains; and
- Short closed views to nearby mountains and within Michell's Pass Valley.

Some elements detract from the visual quality in the study area, notably vertical elements traversing the landscape including powerlines (notably the existing 132 kV powerline from Romansrivier Substation to Tulbagh and the remnants of the 66 kV powerline through Michell's Pass). Nevertheless the visual quality of the study area is considered to be ***moderate to high***.

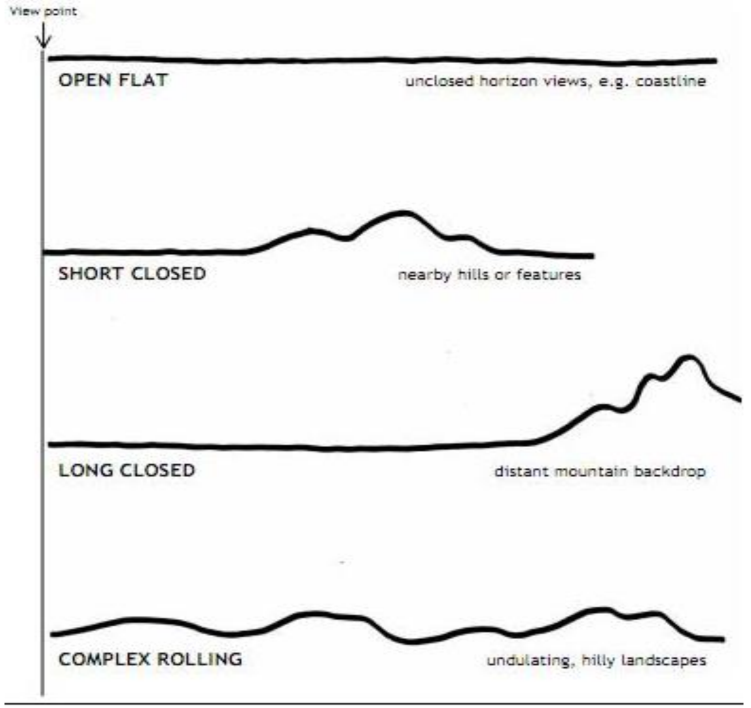


Figure 4-5: Types of views in the landscape
Source: (CNDV, 2006)

4.4 Sense of Place

Our sense of a place depends not only on spatial form and quality, but also on culture, temperament, status, experience and the current purpose of the observer (Lynch, 1992). Central to the idea of 'sense of place' or *Genius Loci* is identity. An area will have a stronger sense of place if it can easily be identified, that is to say if it is unique and distinct from other places. Lynch defines 'sense of place' as "the extent to which a person can recognise or recall a place as being distinct from other places – as having a vivid or unique, or at least a particular, character of its own" (Lynch, 1992:131).

It is often the case that sense of place is linked directly to visual quality and that areas/spaces with high visual quality have a strong sense of place. However, this is not an inviolate relationship and it is plausible that areas of low visual quality may have a strong sense of place or – more commonly – that areas of high visual quality have a weak sense of place. The defining feature of sense of place is uniqueness, generally real or biophysical (e.g. trees in an otherwise treeless expanse), but sometimes perceived (e.g. visible but unspectacular sacred sites and places which evoke defined responses in receptors). Tourism can sometimes serve as an indicator of sense of place insofar as it is often the uniqueness (and accessibility) of a space/place which attracts tourists.

The region has scenic value in terms of the rural setting and sense of nature invoked by the spectacular mountainous backdrop. The region has attractive visual-spatial qualities and residents and tourists are attracted to the area because of its scenery and location in the landscape. The visual-spatial qualities are influenced by the rural patterns created by rolling wheatfields, patchwork of fruit orchards and vineyards in a mountainous setting. Views across the valley and from and within the scenic mountain pass add to the sense of place of the area. Tourists are also attracted to the area during the winter months when the surrounding mountains are often covered in snow.

One's connection or relationship to a place when defining sense of place is also important. Cross (2011) defines six categories of relationships with place (Table 4-2): biographical, spiritual, ideological, narrative, cognitive and dependent.

The relationship of receptors in the study area (refer to Section 5.3) to place is likely to be predominantly biographical or cognitive. A farmer in the Tulbagh-Wolseley Valley, for example, whose farm has been in the family for generations will have an emotional attachment to the area. Visitors to the area may have decided to visit the Ceres Valley and take the scenic route through Michell's Pass because they were enticed by the scenic characteristics of the area (steep, rugged mountains and rural patterns across the valleys).

Table 4-2: Relationship to place

Type of Relationship	Process
Biographical (historical and familial)	Being born in and living in a place. Develops over time.
Spiritual (emotional, intangible)	Feeling a sense of belonging.
Ideological (moral and ethical)	Living according to moral guidelines for human responsibility to place. Guidelines may be religious or secular.
Narrative	Learning about a place through stories, family histories, political accounts and fictional accounts.
Cognitive (based on choice and desirability)	Choosing a place based on a list of desirable traits and lifestyle preferences.
Dependent	Constrained by lack of choice, dependency on another person or economic opportunity.

Source: Adapted from Cross, 2011

5 Analysis of the Magnitude of the Visual Impact

The following section outlines the analysis that was undertaken to determine the **magnitude or intensity** of the overall visual impact of the project. Various factors were considered in the assessment, including:

- Visual exposure;
- Visual absorption capacity;
- Potential visual receptors;
- Visibility and viewing distance; and
- Compatibility with the existing landscape / townscape integrity.

The analysis of the magnitude or intensity of the visual impact, as described in this section, is summarized and integrated in Table 5-6 and forms the basis for the assessment and rating of the impact as documented in the next section (Section 6).

5.1 Visual Exposure

Visual exposure is determined by the zone of visual influence or viewshed. The viewshed is the topographically defined area that includes all the major observation sites from which the project *could* be visible. The boundary of the viewshed connects high points in the landscape and demarcates the zone of visual influence.

For the purposes of this study, the viewsheds for the powerline are based on the heights of the pylons above ground level. Viewsheds were generated for the powerline in the Tulbagh-Wolseley Valley (Viewshed 1: pylon numbers 1 to 35, Figure 5-1), in the Michell's Pass Valley (Viewshed 2: pylon numbers 36 to 59, Figure 5-2) and in the Ceres Valley (Viewshed 3: pylon numbers 60 to 68, Figure 5-3).

The method used to determine the zones of influence included GIS modelling based on 20 m contours.

The viewshed analysis assumes maximum visibility of the project in an environment stripped bare of vegetation and structures. It is therefore important to remember that the project is ***not necessarily visible from all points within the viewshed*** as views may be obstructed by elements such as trees, dense scrub, built structures and/or localised variations or irregularities in topography (see visibility from specific viewpoints in Section 5.4).

Analysis of the viewsheds of the proposed powerline is instructive and leads to the following observations:

- Viewshed 1 indicates that the powerline is exposed and will be visible from much of the Tulbagh-Wolseley Valley, including from the town of Wolseley, the R46 and the R43. However, Wolseley is located over 3 km from the proposed powerline route and the viewshed does not account for the effective screening provided by the windrows at the foot of Wittebrug Mountain.
- Viewshed 2 - as the powerline will be located in the narrow Michell's Pass Valley, the powerline is exposed throughout the valley and therefore to users of the Pass (road and rail). The viewshed shows that the pylons at the southern and northern ends of the Pass will be visible to receptors in the Tulbagh-Wolseley Valley and Ceres valley, respectively.
- Viewshed 3 indicates that the powerline is exposed and will be visible from much of the Ceres Valley, including from the town of Ceres, the R46 and the R303. The viewshed does not account for the screening provided by the urban fabric in Ceres and minor variations in topography (20 m contours were used to generate the viewsheds).

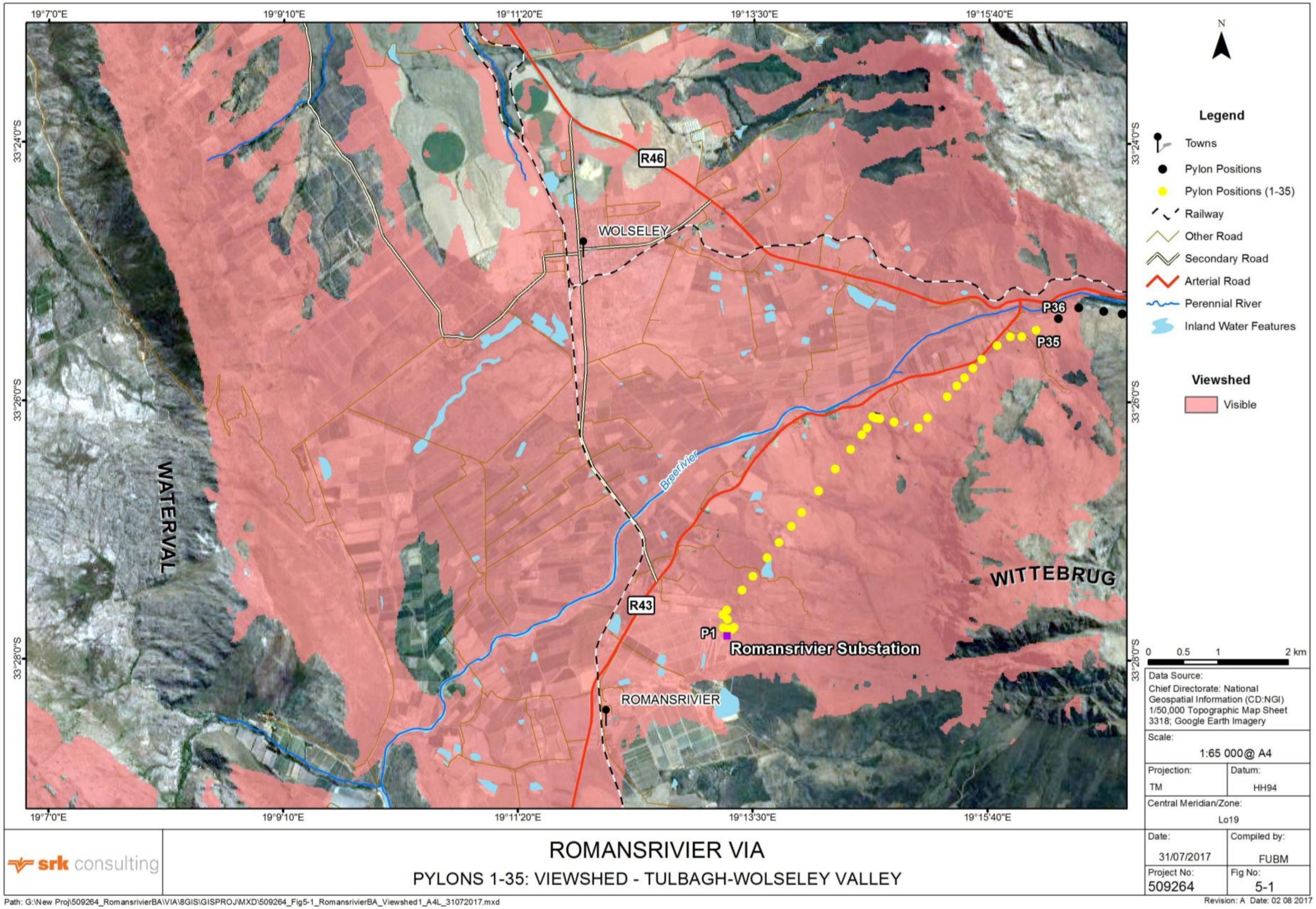


Figure 5-1: Viewshed 1 – Tulbagh-Wolseley Valley

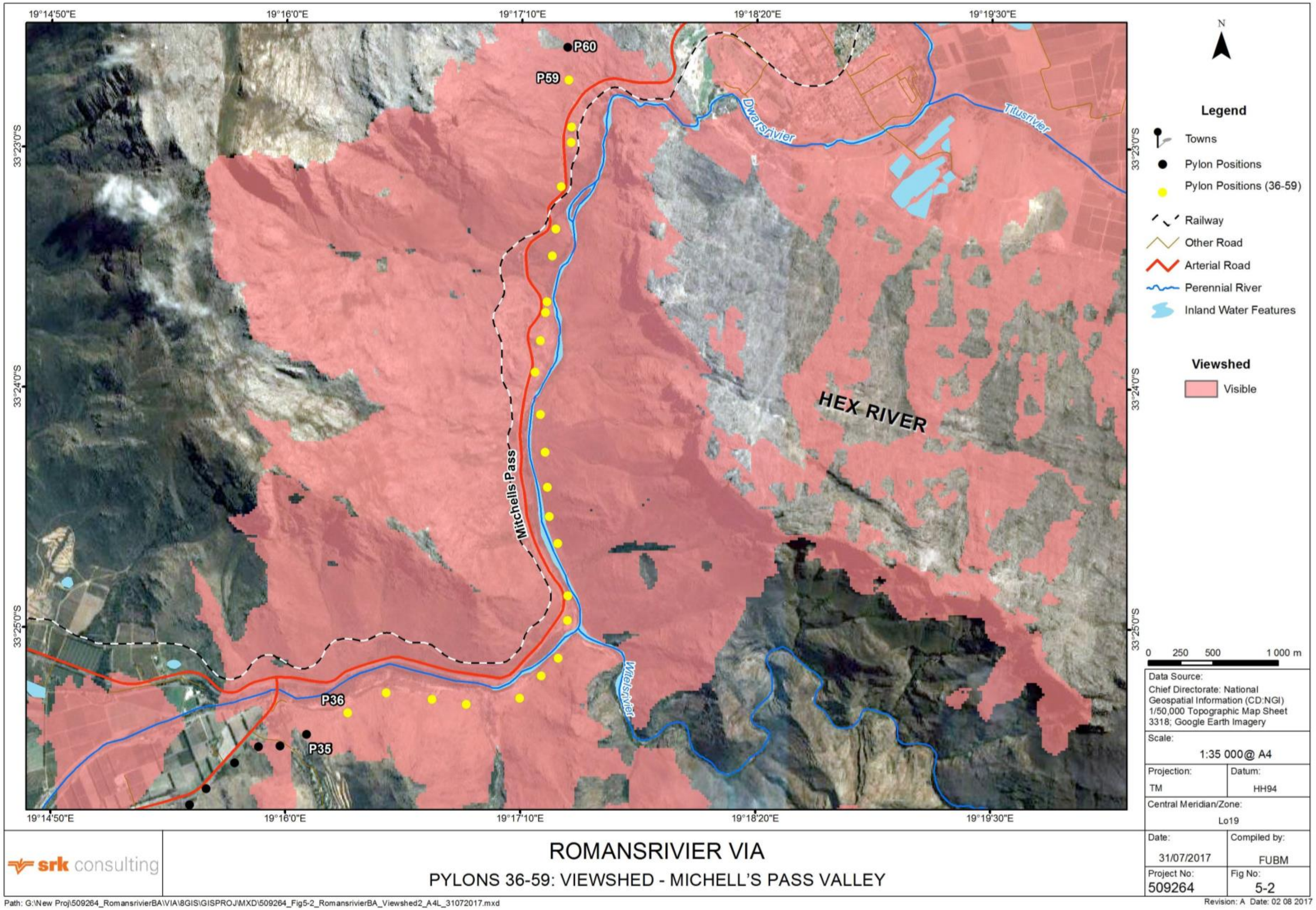


Figure 5-2: Viewshed 2 – Michell's Pass Valley

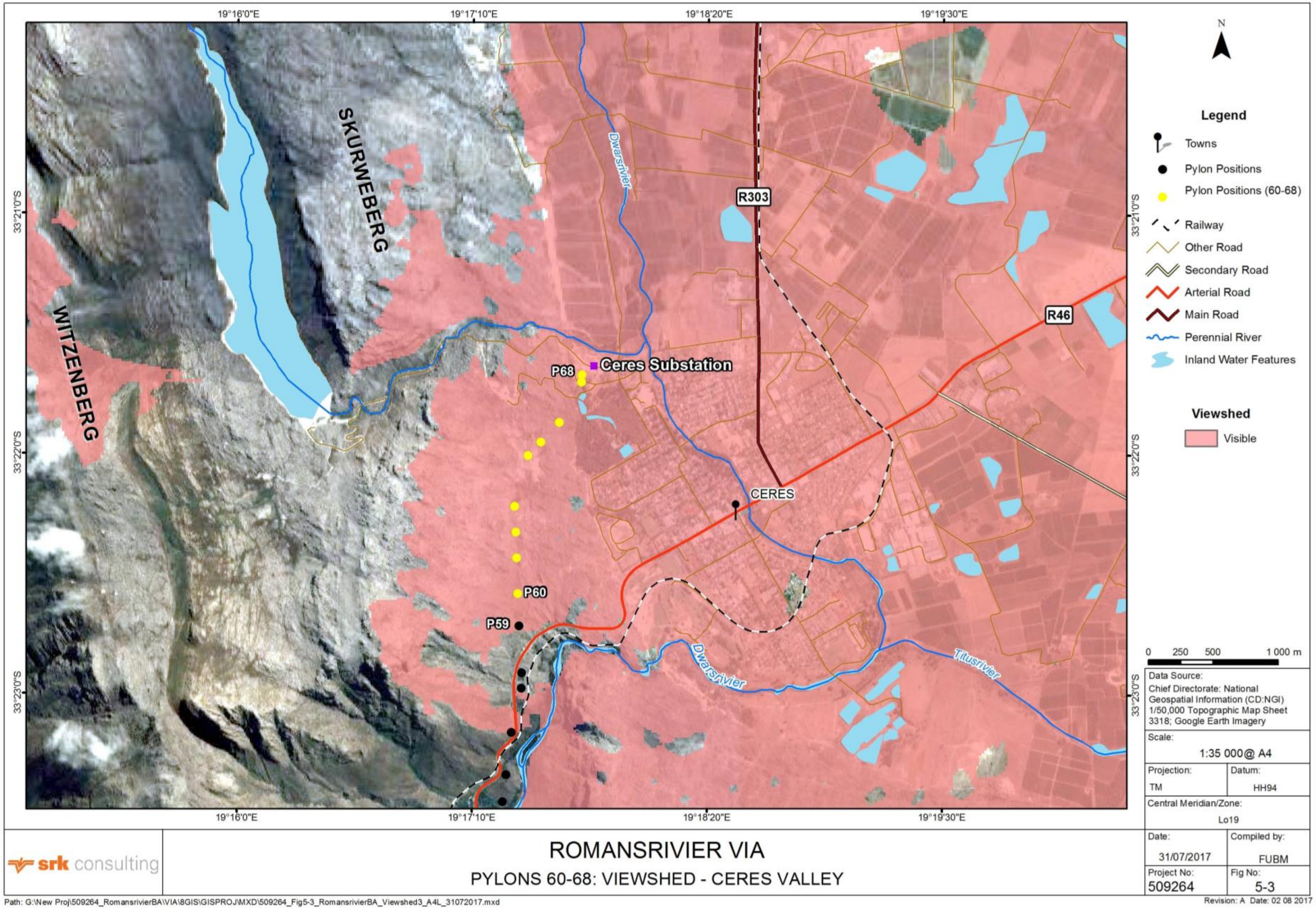


Figure 5-3: Viewshed 3 – Ceres Valley

5.2 Visual Absorption Capacity

The VAC is the potential for the area to conceal the proposed project. Factors contributing to the VAC include:

- Topography and vegetation that is able to provide screening and increase the VAC of a landscape;
- The degree of urbanisation compared to open space. A highly urbanised landscape is better able to absorb the visual impacts of similar developments, whereas an undeveloped rural landscape will have a lower VAC; and
- The scale and density of surrounding development.

These factors frequently apply at different scales, by influencing the VAC in the foreground (e.g. dense bush, small structures), middleground and background (e.g. tall forests, hills, cityscapes). Criteria used to determine the VAC of the affected area are defined in Table 5-1.

The VAC of the Tulbagh-Wolseley Valley area is increased by topography as the area is surrounded by mountains thereby limiting the viewshed, particularly to the east and west. Very effective screening is provided by a series of windrows at the foot of Wittebrug Mountain. Stands of trees surrounding farmsteads will provide partial screening to isolated farmsteads.

The VAC of the Michell's Pass Valley is increased by the steep mountains limiting the viewshed to the narrow valley. Local variations in topography and bends along the road / railway line will provide partial (but intermittent) screening of individual pylons. The low growing natural vegetation will not increase the VAC of the valley.

The VAC of the Ceres Valley, particularly the south-western corner where the town is situated, is increased by the steep slopes of the Skurweberg Mountains, the urban fabric of Ceres and planted trees in the town. Beyond Ceres, the VAC is increased by the undulating nature of the valley and the planted orchards and windrows at the foot of the Skurweberg Mountains.

The overall study area is rated as having a ***moderate*** VAC as topographical variations in the landscape and the windrows (and other planted trees) will provide effective screening, though the powerline will still be visible from viewpoints in the immediate surroundings (particularly in Michell's Pass).

5.3 Visual Receptors

Receptors are important insofar as they inform visual sensitivity. The sensitivity of viewers is determined by the number of viewers and by how likely they are to be impacted upon. Potential viewers include the following:

- **Residents of Wolseley and Ceres**: Visibility from residences in Wolseley and Ceres is likely to be low, since the urban fabric obtrudes views beyond the very immediate foreground.
- **Motorists**: The provincial roads (e.g. R43 and R46) traversing the valleys are used daily by the local farming community, local residents and by visitors / tourists. Motorists using Michell's Pass, a scenic route, will be more sensitive to the powerline because of the proximity of the powerline to the road (within 200 m) and the attractive scenery in the valley.
- **Farmers and farm labourers**: The powerline may be visible to the numerous farmsteads in the Tulbagh-Wolseley Valley and Ceres Valley. Many of the farmers and labourers are already exposed to existing powerlines (some of which are located along the proposed route) and telephone lines in the area.
- **Visitors/Tourists**: Visitors to the area are particularly sensitive receptors and are likely to us the R43 and R46 roads to reach the Ceres Valley (via Michell's Pass). The Ceres Rail Company offers scenic train trips between Cape Town and Ceres. Hikers in the surrounding mountains will also be exposed to the powerline.

The sensitivity of viewers or visual receptors potentially affected by the visual impact of the project is considered to be ***moderate*** because many receptors are exposed to existing powerlines in the study area, including powerlines along the same route, but visitors / tourists travelling through Michell's Pass are particularly sensitive receptors.

Table 5-1: Visual Absorption Capacity Criteria

High	Moderate	Low
The area is able to absorb the visual impact as it has: • Undulating topography and relief • Good screening vegetation (high and dense) • Is highly urbanised in character (existing development is of a scale and density to absorb the visual impact).	The area is moderately able to absorb the visual impact, as it has: • Moderately undulating topography and relief • Some or partial screening vegetation • A relatively urbanised character (existing development is of a scale and density to absorb the visual impact to some extent.	The area is not able to absorb the visual impact as it has: • Flat topography • Low growing or sparse vegetation • Is not urbanised (existing development is not of a scale and density to absorb the visual impact to some extent.)
 *http://www.franschhoek.co.za*	 *http://wikipedia.org*	 *http://www.butbn.cas.cz*
 *http://commons.wikimedia.org*	 *http://blogs.agu.org*	 *http://fortheinterim.com*

5.4 Viewing Distance and Visibility

The distance of a viewer from an object (in this case the powerline) is an important determinant of the magnitude of the visual impact. This is because the visual impact of an object diminishes/attenuates as the distance between the viewer and the object increases. Thus the visual impact at 1 000 m would, nominally, be 25% of the impact as viewed from 500 m. At 2 000 m it would be 10% of the impact at 500 m (Hull and Bishop, 1988 in Young, 2000).

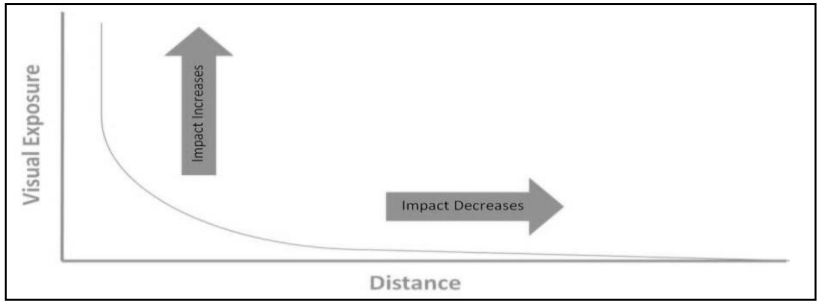


Figure 5-4: Visual Exposure vs Distance

Source: Adapted from Hull and Bishop, 1998

Three basic distance categories can be defined for a project of this scale (as discussed and represented in Table 5-2):

- Foreground;
- Middleground; and
- Background.

A range of viewpoints were selected in the study area in order to identify potential receptors and to provide an indication of the likely visibility of the project. The viewpoints were not randomly selected but were chosen because they are likely to best represent the visibility of the powerline to receptors.

The selected viewpoints are shown in Figure 5-8, and views from these viewpoints are shown in photographs included as Appendix A[3]. The criteria used to determine the visibility of the proposed project are set out in Table 5-3 and the visibility from each viewpoint is summarised in Table 5-4.

Although the focus of the visibility analysis is on the very visible pylons, the overhead cables are likely to be very visible in the foreground and potentially visible in the middleground (refer to Table 5-3).

Table 5-2: Distance Categories

FOREGROUND (0 – 500 m)	The zone where the proposed project will dominate the frame of view. The project will be *highly visible* unless obscured.
MIDDLEGROUND (500 m – 3 km)	The zone where colour and line are still readily discernible. The project will be *moderately visible* but will still be easily recognisable.
BACKGROUND (> 3 km)	This zone stretches from 3 km to the point from where the project can no longer be seen. Objects in this zone can be classified as *marginally visible* to *not visible*.

Overall, the powerline will be marginally visible to receptors in the Tulbagh-Wolseley Valley due to its alignment along an existing powerline (up to pylon 23) with a low number of sensitive receptors in the foreground. A series of windrows at the base of Wittebrug Mountain provides highly effective visual screening to receptors in the middle- and background. As the powerline converges with the R43 (between pylons 27 and 34), visibility will increase for users of the R43 (powerline presents in the foreground) and a number of residents / businesses are located within 100 m of a pylon (e.g. pylons 27 and 33) (Figure 5-5).

[3] Simulated views from each of the viewpoints are also provided in Appendix A using 3D imagery imported into Google Earth. These images are only intended to indicate the position of the powerline in the landscape.

The powerline will be highly visible to a high number of sensitive receptors using Michell's Pass (road and rail), although individual pylons may be screened by local variations in topography and bends in the road / railway line. Visibility is also reduced if the pylon is located below the road. Pylons located on the eastern side of the Bree River will be less visible as the pylons may blend into the grey background of the west-facing mountain slopes. Visibility will be greatest when the powerline "silhouettes" against the skyline (e.g. pylon 56 when viewed from the north or south) or when the powerline crosses the road at pylon 56 and pylon 58 (Figure 5-6). A number of pylons will also be highly visible to motorists using the rest areas, particularly the rest areas near pylons 53 and 58 (both within 20 m of the rest areas) and pylon 58 (within 18 m of the rest area).

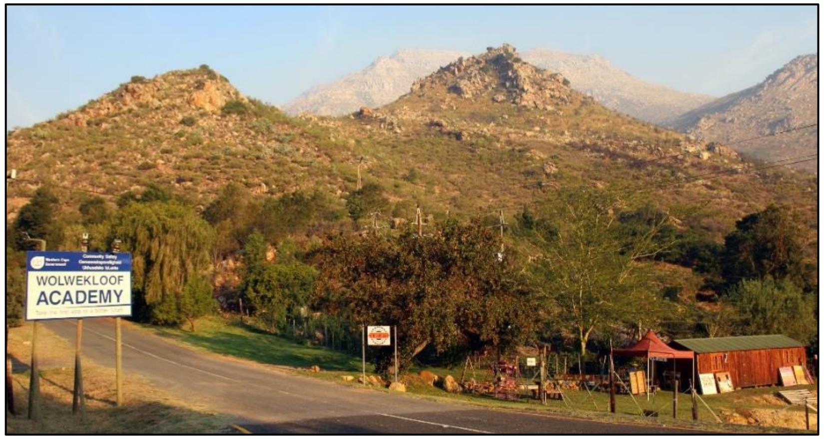


Figure 5-5: Proposed location of pylon 33 on the north-facing slope behind a receptor

Buildings and trees in the town will screen the powerline from many receptors in Ceres. The location of the town at the base of the mountain, the angle of the mountain slope and the alignment of the powerline behind a minor crest (Figure 5-7), will reduce the visibility of the powerline from Ceres. Where the powerline is visible to receptors (likely to be further than 500 m), the distance from the powerline and the grey palette of the mountainous backdrop, will reduce the visibility of the pylons.

Although the visibility of the powerline will be lower in the Tulbagh-Wolseley Valley and Ceres Valley landscape units, the overall visibility of the powerline is rated as ***moderate*** due to the high visibility of the powerline in the Michell's Pass Valley.

Figure 5-6: Proposed location of the powerline as it crosses the R46 between pylon 58 and pylon 59

Figure 5-7: The powerline will be located behind the crest of a steep mountain slope

Table 5-3: Visibility Criteria

NOT VISIBLE	Project cannot be seen	
MARGINALLY VISIBLE	Project is only just visible / partially visible (usually in background zone)	
VISIBLE	Project is visible although parts may be partially obscured (usually in middleground zone)	
HIGHLY VISIBLE	Project is clearly visible (usually in foreground or middleground zone)	

Table 5-4: Visibility from Viewpoints

Land-scape Unit	Viewpoint #	Location	Co-ordinates	Direction of view from the viewpoint	Time Photograph Taken	Potential Significant Receptors and Visibility
TULBAGH-WOLSELEY VALLEY	VP1	Romansrivier Substation	33°27'40.04"S; 19°13'15.14"E	West	15h30	• Residents of Wolseley and farmsteads in the valley – not visible to marginally visible as the windrows provide a high level of screening and Wolseley is over 3 km from the Romansrivier Substation and powerline; and • Users of R43 – visible although visibility is reduced by the distance of the substation and powerline from the road (over 1 km) and partial screening provided by trees along the road.
	VP2	Pylon 11 on lower slopes of Wittebrug Mountain	33°27'12.26"S; 19°13'41.26"E	West	15h46	
	VP3	Wolseley	33°25'40.71"S; 19°12'4.27"E	South-east	17h13	• Residents of Wolseley – not visible to marginally visible as the windrows provide a high level of screening and Wolseley is over 3 km from the substation and powerline.
	VP4	R43	33°26'19.74"S; 19°13'38.88"E	East	17h00	• Users of R43 – visible; and • Residents and businesses along R43 – highly visible as some residents are within 100 – 200 m of the pylons (pylons 23, 24, 32 and 33) although the primary view is out over the Valley and away from the powerline.
	VP5	R43	33°25'51.72"S; 19°14'47.90"E	East	16h56	
	VP6	R43	33°25'26.05"S; 19°15'49.72"E	East	16h42	

Land-scape Unit	Viewpoint #	Location	Co-ordinates	Direction of view from the viewpoint	Time Photograph Taken	Potential Significant Receptors and Visibility
MICHELL'S PASS	VP7	Near R46 / R43 intersection	33°25'14.06"S; 19°16'13.38"E	East	16h46	• Users of Michell's Pass – highly visible (pylon 36 within 260 m).
	VP8a	R46 (Michell's Pass), bottom of Pass	33°24'36.37"S; 19°17'13.62"E	North	15h20	• Users of Michell's Pass – highly visible (pylons 45 and 46 within 200 m).
	VP8b			South		
	VP9a	R46 (Michell's Pass), rest area	33°24'7.00"S; 19°17'10.76"E	South	14h50	• Users of Michell's Pass – highly visible (pylon 49 within 130 m).
	VP9b			North		
	VP10	R46 (Michell's Pass) rest area	33°23'38.45"S; 19°17'16.67"E	North	11h45	• Users of Michell's Pass – highly visible (pylon 53 within 30 m).
	VP11	R46 (Michell's Pass), Die Tolhuis	33°23'26.62"S; 19°17'10.86"E	South-east	11h36	• Users of Michell's Pass – visible as pylon 54 (within 215 m) will be partially visible from Die Tolhius (pylon at a lower elevation), but pylons 53 and 55 (within 300 – 400 m) will be visible.
	VP12a	R46 (Michell's Pass), railway crossing	33°23'19.39"S; 19°17'17.20"E	South	11h22	• Users of Michell's Pass – highly visible (pylon 55 within 80 m).
	VP12b			North		
	VP13a	R46 (Michell's Pass), old toll road	33°22'58.48"S; 19°17'23.55"E	South	11h13	• Users of Michell's Pass – highly visible (pylon 58 within 35 m).
	VP13b			North		
	VP14	R46 (Michell's Pass), rest area	33°22'49.37"S; 19°17'26.36"E	South	11h10	• Users of Michell's Pass – highly visible as the powerline will cross the road close to this viewpoint (pylon 58 to pylon 59).
	VP15a	R46 (Michell's Pass), top of Pass	33°22'42.84"S; 19°17'39.27"E	South	10h57	• Users of Michell's Pass – highly visible.
	VP15b			West		

Land-scape Unit	Viewpoint #	Location	Co-ordinates	Direction of view from the viewpoint	Time Photograph Taken	Potential Significant Receptors and Visibility
CERES VALLEY	VP16	R46, entrance to Ceres	33°22'27.50"S; 19°18'0.44"E	South-west	10h45	• Residents of and visitors to Ceres – not visible as the location of this viewpoint at the base of the steep slope screens the powerline.
	VP17	Residential area of Ceres (c/o Mostertshoek Lane and Carson Street)	33°22'6.95"S; 19°17'45.27"E	West	12h19	• Residents of Ceres – not visible as the location of this viewpoint at the base of the steep slope screens the powerline and the forested area to the north provides additional screening.
	VP18	Residential area of Ceres (Plantation Street)	33°21'38.34"S; 19°17'53.34"E	West	12h23	• Residents of Ceres – not visible to marginally visible as the urban fabric and planted trees provide effective screening.
	VP19	Residential area of Ceres (Plantation Street)	33°21'32.96"S; 19°18'15.52"E	West	12h31	• Residents of Ceres – marginally visible as screening is provided by trees surrounding the Ceres Substation.
	VP20	R46 (Ceres industrial area)	33°21'42.52"S; 19°19'25.86"E	West	10h36	• Residents of Ceres – marginally visible as the powerline is over 3 km away and the pylons will blend into the grey background.

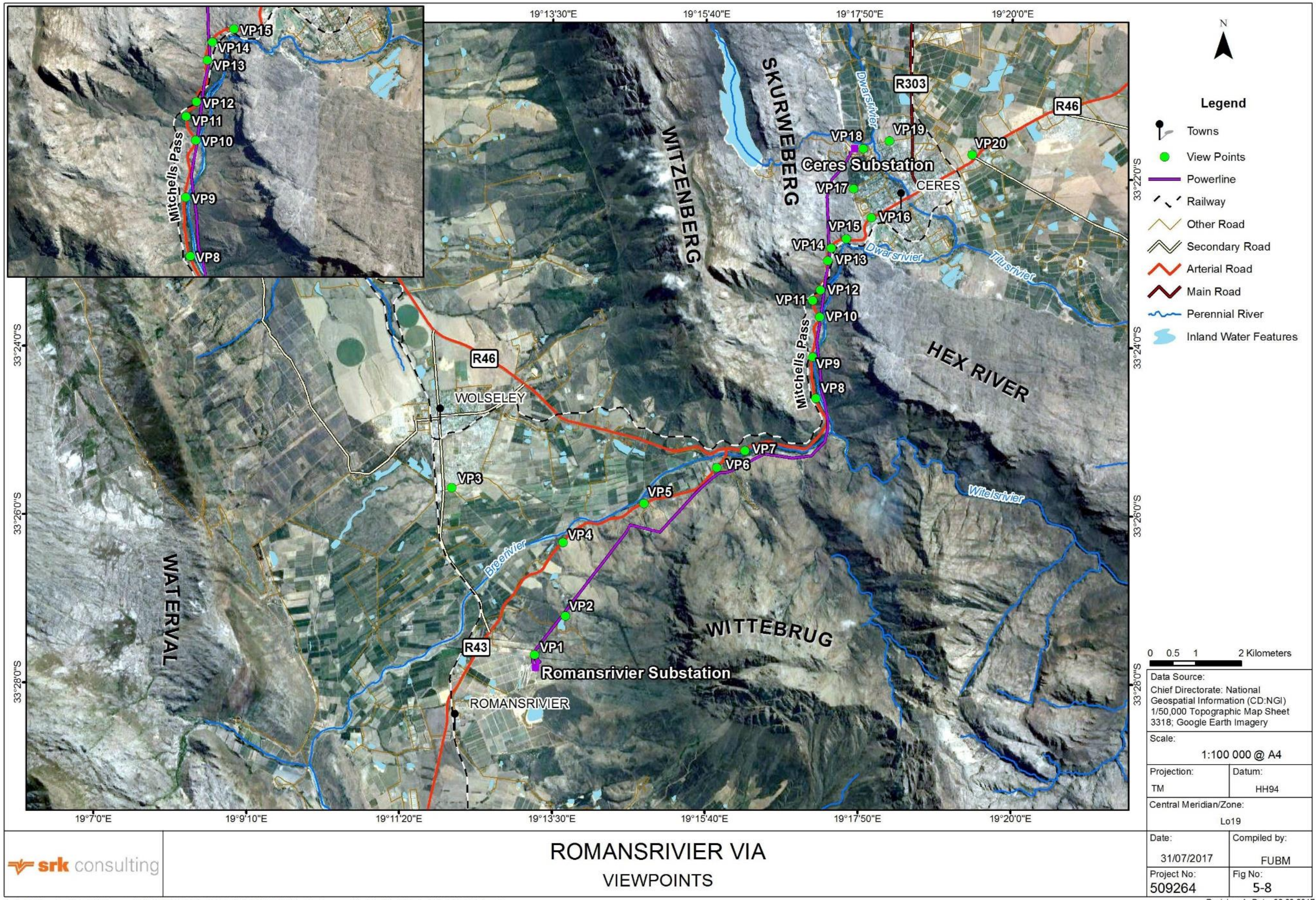


Figure 5-8: Viewpoints

5.5 Compatibility with Landscape Integrity

Landscape (or townscape) integrity refers to the compatibility of the development/visual intrusion with the existing landscape. The landscape integrity of the project is rated based on the relevant criteria listed in Table 5-5.

Table 5-5: Landscape Integrity Criteria

High	Moderate	Low
The project: • Is consistent with the existing land use of the area; • Is highly sensitive to the natural environment; • Is consistent with the urban texture and layout; • The buildings and structures are congruent / sensitive to the existing architecture / buildings; and • The scale and size of the development is similar to nearby existing development.	The project: • Is moderately consistent with the existing land use of the area; • Is moderately sensitive to the natural environment; • Is moderately consistent with the urban texture and layout; • The buildings and structures are moderately congruent / sensitive to the existing architecture / buildings; and • The scale and size of the development is moderately similar to nearby existing development.	The project: • Is not consistent with the existing land use of the area; • Is not sensitive to the natural environment; • Is very different to the urban texture and layout; • The buildings and structures are not congruent / sensitive to the existing architecture / buildings; and • The scale and size of the development is different to nearby existing development.

The powerline is partially compatible with the existing land use of the Tulbagh-Wolseley Valley where it traverses rural areas. As these areas have been altered by agricultural activities, the powerline is moderately sensitive to the natural environment. A section of the proposed powerline will be located in the servitude of an existing 132 kV powerline (pylon 1 to pylon 23). Receptors are familiar with the existing powerline along this alignment, and the proposed powerline replicates the land use along this section.

Beyond pylon 23, the proposed powerline follows the route of an old wooden pole 66 kV powerline until pylon 49 in Michell's Pass, although sections of the old powerline no longer exist due to fire damage.

The powerline through Michell's Pass and down to the Ceres Substation is visually intrusive and not sympathetic to the sensitivity of the natural environment and the powerline is therefore not compatible with the existing landscape. The remaining wooden pylons in the valley, which will ultimately be decommissioned and removed as part of the project only marginally increase the compatibility of the powerline with the existing land use. The compatibility increases nearer the Ceres Substation as the powerline is more consistent with the existing land use on the property.

Overall, the landscape integrity of the powerline is rated as ***low to moderate***.

5.6 Magnitude of the Overall Visual Impact

Based on the above criteria, the expected magnitude or intensity of the overall visual impact of the project has been rated. Table 5-6 provides a summary of the criteria, a descriptor summarizing the status of the criteria and projected impact magnitude ratings.

The overall expected magnitude of the visual impact of the powerline is rated as ***moderate*** as a large portion of the powerline traverses a mountainous region and a scenic mountain pass.

Table 5-6: Magnitude of Overall Visual Impact

Criteria	Rating	Comments
Visual Exposure (Viewshed)	Moderate	The powerline will be exposed and will be visible throughout the study area. However, the viewsheds do not take into consideration the screening provided by minor variations in topography, planted trees nor the built fabric in Wolseley and Ceres.
Visual Absorption Capacity	Moderate	Topographical variations in the landscape and the windrows (and other planted trees) will provide effective screening, but the powerline will still be visible from the immediate surroundings (particularly through Michell's Pass).
Viewer Sensitivity (Receptors)	Moderate	Many residents in the study area are exposed to powerlines, including along the same route, but visitors/tourists travelling through Michell's Pass are particularly sensitive receptors
Viewing Distance and Visibility	Moderate	Due to the high visibility of the powerline to users of Michell's Pass (road and rail), but low visibility in Tulbagh-Wolseley Valley and Ceres Valley.
Compatibility with Landscape Integrity	Low to Moderate	The powerline is moderately compatible with existing land use in the Tulbagh-Wolseley Valley but is not sensitive to the natural environment in Michell's Pass and down to the Ceres Substation.

6 Impact Assessment and Mitigation Measures

The following section describes the visual impacts during the construction, operational and decommissioning phases and assesses them utilising SRK's impact rating methodology.

Direct visual and aesthetic impacts are likely to result from a number of project interventions and/or activities:

- Earthworks, resultant scarring and construction activities (including clearing of vegetation and dust); and
- Change in character of the site caused by the new powerline and access roads.

The visual and aesthetic impacts generated by the project are likely to be associated with changes to sense of place and visual intrusion.

6.1 Construction Phase

6.1.1 Altered Sense of Place and Visual Intrusion from Construction Activities

Visual impacts will be generated by construction activities such as vegetation stripping and earthworks (which can cause scarring), and from construction infrastructure, plant and materials on site (e.g. site camp, cranes and stockpiles). Dust generated at the site will be visually unappealing and may further detract from the visual quality of the area. Such impacts are typically limited to the immediate area surrounding the construction site and the construction period.

Loss of sense of place in the Tulbagh-Wolseley Valley is limited as construction activities will be marginally congruent with the current nature of the surrounding area (*viz*. agricultural activities) and the construction footprints will be visible from only a limited number of viewpoints.

Loss of sense of place is expected during installation of the pylons along the natural and more spectacular sections of the powerline route (through Michell's Pass and over into the Ceres Substation) since construction and the change in the state of the site (scarring, construction equipment and dust generation) is incongruent with the current natural state of the surrounding area and the construction footprints will be visible to highly sensitive receptors.

Vegetation clearance (for pylon foundations, access roads) on the steeper vegetated mountain slopes will be particularly visible to receptors as the resultant scarring will be incongruent with the existing character of these natural areas.

Construction activities will have a greater impact within the foreground (< 500 m) as sensitive receptors in close proximity to these activities (e.g. users of Michell's Pass) will be particularly exposed to these visual impacts[4]. However, construction impacts will be of comparatively short duration.

The impact is assessed to be of ***low*** significance with and without the implementation of mitigation measures (Table 6-1: Altered sense of place and visual intrusion during construction

	Extent	***Intensity***	***Duration***	***Consequence***	***Probability***	***Significance***	***Status***	***Confidence***
Without mitigation	Regional	Medium	Short-term	Low	Definite	**LOW**	-ve	High
	2	2	1	5				

Essential Mitigation Measures:

- Limit and phase vegetation clearance and the footprint of construction activities to what is absolutely essential.
- Utilise existing access roads as far as possible. If new roads are required, then avoid clearing natural vegetation to facilitate access to the final pylon positions. If access across natural vegetation is required, then prune/remove large trees and shrubs rather than clearing vegetation completely.
- Avoid excavation, handling and transport of materials which may generate dust under high wind conditions.
- Consolidate the footprint of the construction camp(s) to a functional minimum. Screen the yard with materials that blend into the surrounding area.
- Keep construction sites tidy and confine all activities, material and machinery to as small an area as possible.
- Rehabilitate disturbed areas incrementally and as soon as possible, not necessarily waiting until completion of the Construction Phase.

With mitigation	Regional	Medium	Short-term	Low	Definite	**LOW**	-ve	High
	2	2	1	5				

[4] All the proposed pylons in the Michell's Pass Valley (pylons 36 to 58) will be within 500 m of the road.

).

Table 6-1: Altered sense of place and visual intrusion during construction

	Extent	***Intensity***	***Duration***	***Consequence***	***Probability***	***Significance***	***Status***	***Confidence***
Without mitigation	Regional	Medium	Short-term	Low	Definite	**LOW**	-ve	High
	2	2	1	5				

Essential Mitigation Measures:

- Limit and phase vegetation clearance and the footprint of construction activities to what is absolutely essential.
- Utilise existing access roads as far as possible. If new roads are required, then avoid clearing natural vegetation to facilitate access to the final pylon positions. If access across natural vegetation is required, then prune/remove large trees and shrubs rather than clearing vegetation completely.
- Avoid excavation, handling and transport of materials which may generate dust under high wind conditions.
- Consolidate the footprint of the construction camp(s) to a functional minimum. Screen the yard with materials that blend into the surrounding area.
- Keep construction sites tidy and confine all activities, material and machinery to as small an area as possible.
- Rehabilitate disturbed areas incrementally and as soon as possible, not necessarily waiting until completion of the Construction Phase.

With mitigation	Regional	Medium	Short-term	Low	Definite	**LOW**	-ve	High
	2	2	1	5				

6.2 Operational Phase

6.2.1 Altered Sense of Place and Visual Intrusion from the Proposed Powerline and Access Roads

The region has scenic value in terms of the rural setting influenced by the rural patterns created by rolling wheatfields, patchwork of fruit orchards and vineyards, and the sense of nature invoked by the spectacular mountainous backdrop. Residents and tourists are attracted to the area because of its scenery and location in the landscape. The landscape has, however, been modified by vertical elements in the landscape including powerlines, sections of which are located along the proposed powerline route.

Although the powerline will not be visible from much of the Tulbagh-Wolseley Valley or Ceres Valley, the proposed powerline will be highly visible to sensitive receptors in the Michell's Pass Valley. The powerline will present in the foreground (i.e. within 500 m) and is highly likely to alter the visual quality of the scenic Michell's Pass and, therefore, alter the sense of place to receptors moving through this space (by road / rail).

Although the powerline is moderately compatible with the existing land use of the Tulbagh-Wolseley Valley where it traverses rural areas, the powerline will be considerably less compatible with the natural environment of the Michell's Pass Valley and mountainous area above Ceres, reducing the overall landscape integrity of the powerline.

New access roads will be consistent with the existing land use in rural areas in the Tulbagh-Wolseley Valley. Access roads in the Michell's Pass Valley will present as scars in the landscape and will be incongruent with the current natural state of the surrounding area.

The impact of the **powerline and access roads** is assessed to be of ***high*** significance with and without the implementation of mitigation (Table 6-2).

Figure 6-1: Steel lattice pylon blends into the mountainous grey backdrop

Table 6-2: Altered sense of place and visual intrusion from the proposed powerline and access roads

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Regional	Medium	Long-term	High	Definite	**HIGH**	-ve	High
	2	2	3	7				
Essential Mitigation Measures: ▪ Remove the remnants of the old 66 kV powerline. ▪ Install lattice structure pylons (as the preferred pylon structure) as far as possible (Figure 6-1). ▪ Do not install or affix lights on pylons. ▪ Rehabilitate areas affected by scarring and implement measures to prevent erosion. ▪ Design access roads so that the surface of the access road faces away from receptors, where possible. ▪ Avoid clearing natural vegetation from access roads completely, rather prune vegetation as required. ▪ Do not prune vegetation adjacent to the roads. ▪ Construct terrace / foundation walls using materials that blend in with the surroundings (e.g. sandstone stone-packing, riverstone gabions).								
With mitigation	Regional	Medium	Long-term	High	Definite	**HIGH**	-ve	High
	2	2	3	7				

6.3 Decommissioning Phase

6.3.1 Altered Sense of Place and Visual Intrusion from Decommissioning Activities

Visual impacts will be generated by decommissioning activities such as from decommissioning infrastructure, plant and materials on site (e.g. site camp, cranes and stockpiles). Dust generated at the site will be visually unappealing and may further detract from the visual quality of the area. Such impacts are typically limited to the immediate area surrounding the site and the decommissioning period (short-term).

Loss of sense of place in the Tulbagh-Wolseley Valley is limited as decommissioning activities will be marginally congruent with the current nature of the surrounding area (*viz*. agricultural activities).

Loss of sense of place is expected during decommissioning (removal) of the pylons along the natural and more spectacular sections of the powerline route (through Michell's Pass and over into the Ceres Substation) since the change in the state of the site (decommissioning equipment and dust generation) is incongruent with the current natural state of the surrounding area.

The impact is assessed to be of ***very low*** significance with and without the implementation of mitigation measures (Table 6-3).

Table 6-3: Altered sense of place and visual intrusion during decommissioning

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Regional	Low	Short-term	Very Low	Definite	**VERY LOW**	-ve	High
	2	1	1	4				
Essential Mitigation Measures: ▪ Utilise existing access roads. ▪ Avoid excavation, handling and transport of materials that may generate dust under high wind conditions. ▪ Consolidate the footprint of the site camp(s) to a functional minimum. Screen the yard with materials that blend into the surrounding area. ▪ Keep sites tidy and confine all activities, material and machinery to as small an area as possible. ▪ Rehabilitate disturbed areas incrementally and as soon as possible, not necessarily waiting until completion of the Decommissioning Phase.								
With mitigation	Regional	Low	Short-term	Low	Definite	**VERY LOW**	-ve	High
	2	1	1	4				

6.4 Cumulative Impact

Figure 6-2 presents the matrix used to evaluate the cumulative visual impacts of the project on the sense of place of the study area. This matrix presents the relationship between two quantities; severity of impacts (importance and magnitude) and extent of impact (geographic size).

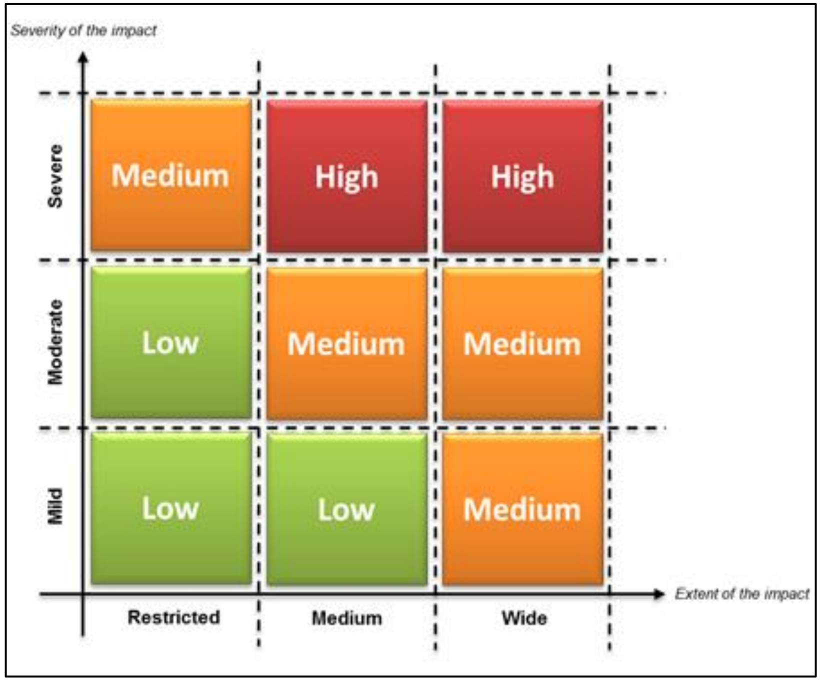


Figure 6-2: Cumulative impact evaluation matrix

The study area has scenic value in terms of the rural setting and sense of nature invoked by the spectacular mountainous backdrop. Residents and tourists are attracted to the area because of its scenery location in the landscape and visual-spatial qualities (rural patterns in a mountainous setting). The landscape has, however, been modified by vertical elements in the landscape including powerlines.

There are numerous large powerlines in the project's area of influence notably the existing 400 kV and 765 kV overhead powerlines traversing the Witzenberg Mountains and Ceres Valley, the existing 132 kV powerline from Romansrivier Substation to Tulbagh and the remnants of the 66 kV powerline through Michell's Pass.

The proposed powerline will add to the cumulative visual impact of powerlines – the powerline will further alter the sense of place to receptors in the Tulbagh-Wolseley Valley, Michell's Pass Valley and Ceres Valley.

The *severity* of the impact on the visual landscape and sense of place is rated as moderate, and is assessed to be of a medium *extent*. The cumulative impact is thus assessed to be of ***medium*** significance.

It must also be noted that the Western Cape has many impressive mountain passes and more and more of them appear to be regarded as convenient corridors for powerlines, which reduces the scenic beauty of these passes.

7 Findings and Recommendations

The VIA describes and interprets the visual context or affected environment in which the project is located: this provides a visual baseline or template and aims to ascertain the aesthetic uniqueness of the project area. To better understand the *magnitude* or *intensity* of visual and sense of place impacts, the capacity of the project area and receptors to accommodate, attenuate and absorb impacts was analysed in considerable detail. To assess impact significance, the powerline and substation were "introduced" into the baseline, taking account of the attenuating capacity of the project area.

7.1 Findings

The following findings are pertinent:

- Eskom proposes to build a new double circuit (132/66 kV) powerline (~ 20 km) from the existing Romansrivier substation to the existing Ceres substation.
- The basis for the **visual character** of the area is provided by the geology, vegetation and land use of the area. The Tulbagh-Wolseley Valley and Ceres Valley landscape units can be

described as *modified rural landscapes*. The Michell's Pass Valley landscape unit can be described as a *natural transition landscape.*

- The **visual quality** of the overall area is largely ascribable to the to the rural patterns across the valleys nestled in the spectacular and rugged mountains covered in natural vegetation. Some elements detract from the visual quality in the study area, notably vertical elements traversing the landscape including powerlines (notably the existing 132 kV powerline from Romansrivier Substation to Tulbagh and the remnants of the 66 kV powerline through Michell's Pass).
- The region has scenic value in terms of the rural setting and sense of nature invoked by the steep mountainous backdrop. The region has attractive visual-spatial qualities and residents and tourists are attracted to the area because of its scenery and location in the landscape. The sense of place is influenced by the rural patterns created by rolling wheatfields, patchwork of fruit orchards and vineyards in a mountainous setting. Views across the valleys and from and within the scenic mountain pass add to the **sense of place** of the area. Tourists are also attracted to the area during the winter months when the surrounding mountains are often covered in snow.
- The **visual exposure** analysis indicates that the powerline will be exposed and will be visible throughout the study area. The viewsheds do not, however, take into consideration the screening provided by minor variations in topography, planted trees nor the built fabric in Wolseley and Ceres.
- The **VAC** of the area is increased by topographical variations in the landscape and the windrows (and other planted trees) providing effective screening, though the powerline will still be visible from viewpoints in the immediate surroundings (particularly in Michell's Pass).
- **Receptors** include residents of Wolseley and Ceres, motorists on the provincial roads (R43 and R46), farmers and farm labourers, and visitors/tourists to the area. Many receptors are exposed to existing powerlines in the study area, including powerlines along the same route, but visitors / tourists travelling through Michell's Pass are particularly sensitive receptors.
- **Visibility** of the powerline is lower in the Tulbagh-Wolseley Valley and Ceres Valley landscape units, but visibility is high in the Michell's Pass Valley.
- **Landscape integrity** refers to the compatibility of the development with the existing landscape The powerline is moderately compatible with the existing land use of the Tulbagh-Wolseley Valley in rural areas. A section of the proposed powerline will be located in the servitude of an existing 132 kV powerline and therefore replicates the land use along this section. The powerline through Michell's Pass and down to the Ceres Substation is visually intrusive and not sympathetic to the sensitivity of the natural environment and the powerline is therefore not compatible with the existing landscape.
- **During construction**, loss of sense of place in the Tulbagh-Wolseley Valley is limited as construction activities will be partially congruent with the current nature of the surrounding area (viz. agricultural activities) and the construction footprints will be visible from a limited number of viewpoints. Loss of sense of place is expected during installation of the pylons along the natural sections of the powerline route (through Michell's Pass and over into the Ceres Substation) since construction and the change in the state of the site (scarring, construction equipment and dust generation) is incongruent with the current natural state of the surrounding area and the construction footprints will be visible to highly sensitive receptors. Construction activities will have a greater impact within the foreground as sensitive receptors in close proximity to these

activities (e.g. users of Michell's Pass) will be particularly exposed to these visual impacts. However, construction impacts will be of comparatively short duration. The impact is assessed to be of ***low*** significance with and without the implementation of mitigation measures.

- The visual impact generated during **decommissioning** is assessed to be of ***very low*** significance with and without the implementation of mitigation.
- Although the powerline is not visible from much of the Tulbagh-Wolseley Valley or Ceres Valley, the proposed powerline will be particularly visible to sensitive receptors in the Michell's Pass Valley. The powerline will present in the foreground to these receptors (i.e. within 500 m) and is highly likely to alter the visual quality of the scenic Michell's Pass and therefore alter the sense of place to receptors moving through the space (by road / rail). The impact of the **powerline and access roads** is assessed to be of ***high*** significance with and without the implementation of mitigation.

7.2 Conclusion

Overall, the powerline will be marginally visible to receptors in the **Tulbagh-Wolseley Valley** due to its alignment along an existing powerline (up to pylon 23) with a low number of sensitive receptors in the foreground. A series of windrows at the base of Wittebrug Mountain provides highly effective visual screening to receptors in the middle- and background. The powerline is partially compatible with the existing land use of the Tulbagh-Wolseley Valley where it traverses rural areas as these areas have been altered by agricultural activities.

The location of the town at the base of the mountain, the slope of the mountain and the alignment of the powerline behind a minor crest, will reduce the visibility of the powerline from Ceres. Where the powerline is visible to receptors (likely to be further than 500 m), the distance from the powerline and the grey palette of the mountainous backdrop, will reduce the visibility of the powerline. The section of the powerline in the **Ceres Valley** traverses a natural area and is visually intrusive and not sympathetic to the sensitivity of the natural environment. The compatibility increases nearer the Ceres Substation as the powerline is consistent with the existing land use on the property.

The impact of the altered sense of place and visual intrusion from the powerline and access roads in the Tulbagh-Wolseley Valley and the Ceres Valley can be considered to be of ***low*** significance.

The powerline (and access roads) will be particularly visible to sensitive receptors in the **Michell's Pass Valley**, although individual pylons may be screened by local variations in topography and bends in the road / railway line. Visibility is also reduced if the pylon is located below the road. Pylons located on the eastern side of the Bree River will be less visible as the pylons may blend into the grey background of the west-facing mountain slopes. Visibility will be greatest when the powerline "silhouettes" against the skyline (e.g. pylon 56 viewed from the north or south) or when the powerline crosses the road at pylon 56 and pylon 58. The powerline is highly likely to alter the visual quality of the scenic Michell's Pass and therefore alter the sense of place. A number of pylons will also be highly visible to motorists using the rest areas, particularly the rest areas near pylons 53 and 58 (both within 20 m of the rest areas).

The impact of the altered sense of place and visual intrusion from the powerline and access roads in the Michell's Pass Valley can be considered to be of ***very high*** significance. As this section of the powerline will have such a significant visual impact on the landscape and receptors, Eskom should provide reasons as to why cabling the proposed powerline (in trenches underground) through at least the Michell's Pass Valley is not a feasible and/or reasonable alternative.

The overall impact of the altered sense of place and visual intrusion from the proposed project in the study area can therefore be considered to be of ***high*** significance.

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Appendices

Appendix A: Viewpoint Photographs

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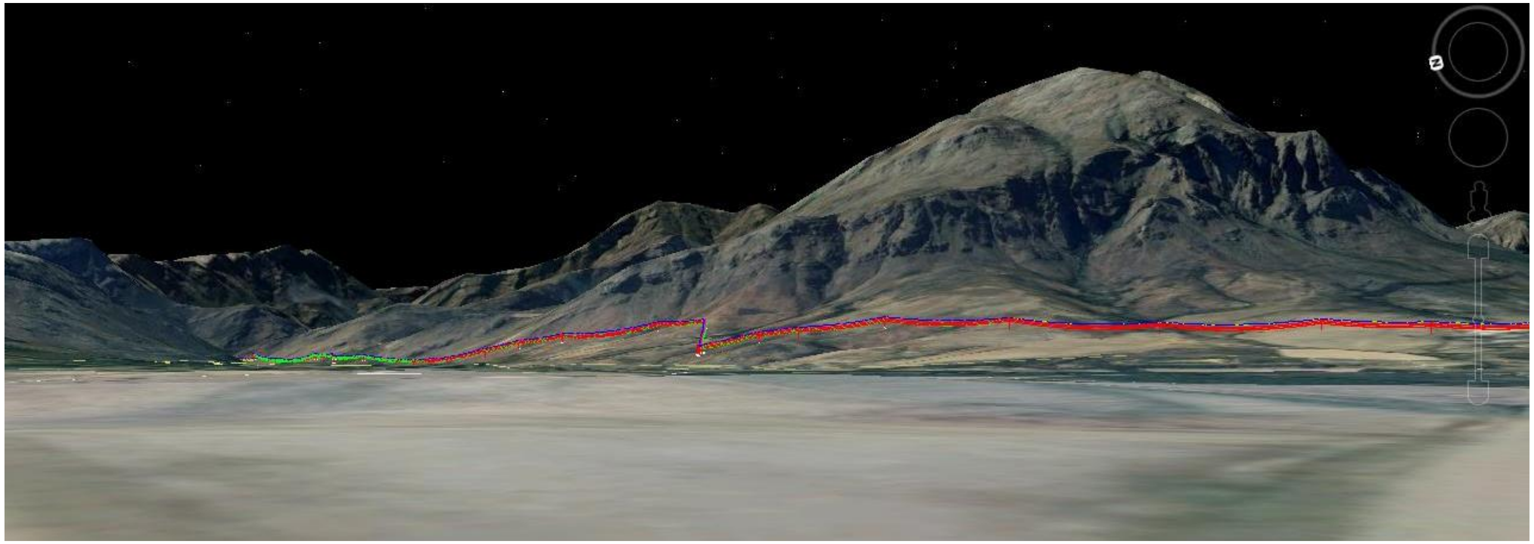
ROMANSRIVIER - CERES VIA
Views from Viewpoint 1 (top) and Viewpoint 2 (bottom)

Project No.
509264/42A



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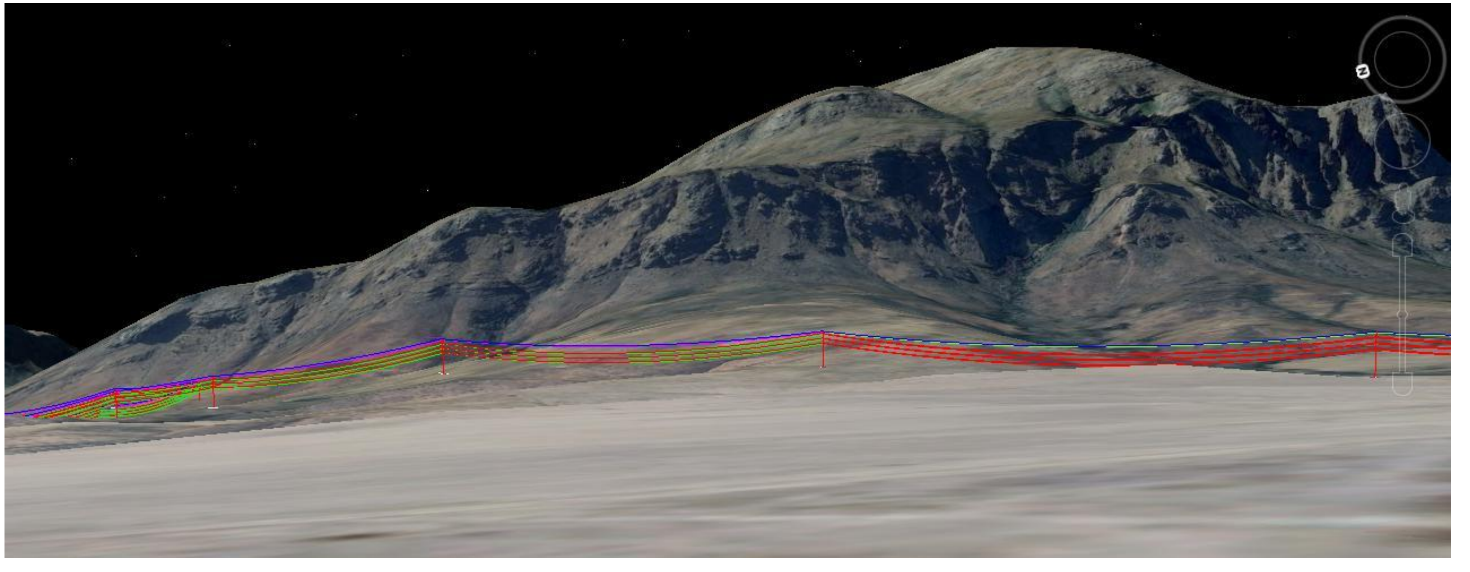
ROMANSRIVIER - CERES VIA
Views from Viewpoint 3 – current view (top) and simulated view (bottom)

Project No.
509264/42A



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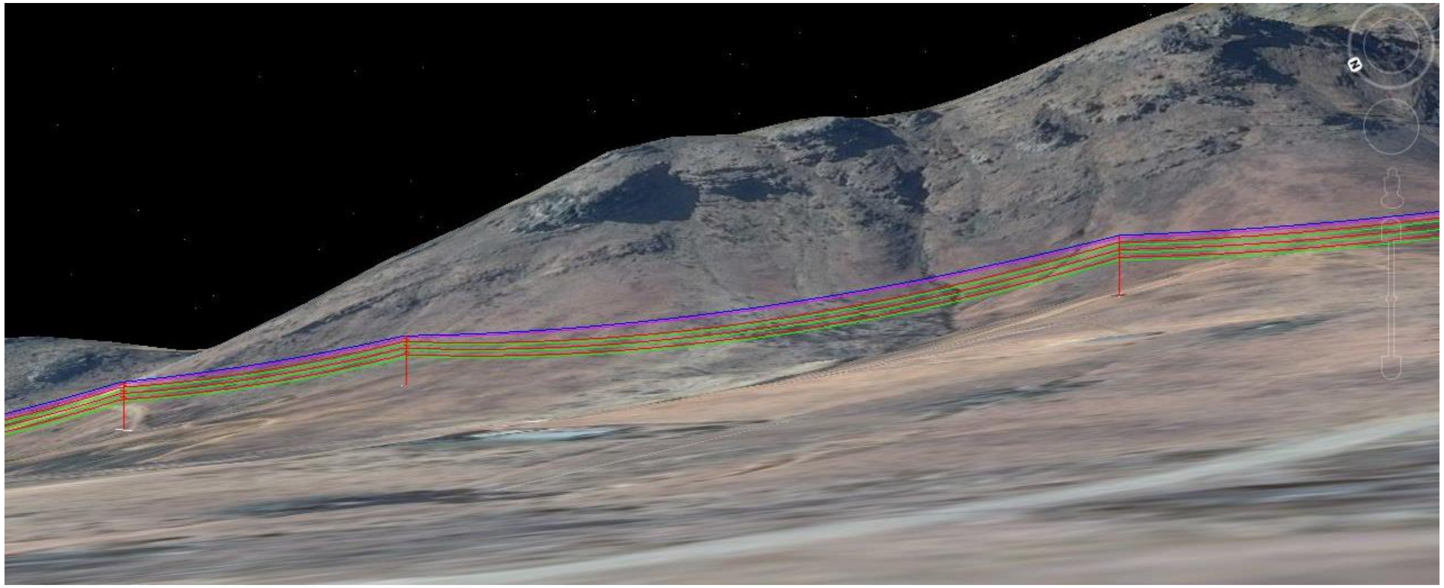
ROMANSRIVIER - CERES VIA

Views from Viewpoint 4 – current view (top) and simulated view (bottom)

Project No.
509264/42A



srk consulting	**ROMANSRIVIER - CERES VIA** Views from Viewpoint 5 – current view (top) and simulated view (bottom)	Project No. 509264/42A