Specialist Landscape and Visual Impact Assessment

Wildebosch Road extension and upgrade of Trumali Road

Reference: Wildebosch_SLVS

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Definitions

Development	Any proposal that results in a change to the landscape and/ or visual environment.
Elements	Individual parts, which make up the landscape, for example trees and buildings.
Feature	Particularly prominent or eye-catching elements in the landscape such as tree clumps, church towers or wooded skylines.
Greenfields	Land not previously developed or polluted.
Impact (Visual)	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.
Intensity	The severity of the impact on views, scenic or cultural resources.
Issue (visual)	Issues are concerns related to the proposed development on a specified component of the visual, aesthetic, or scenic environment within a defined time and space.
Level 2 assessment	Identification of issues raised in scoping phase, and site visit; Description of the receiving environment and the proposed project; Establishment of view catchment area and receptors; Brief indication of potential visual impacts, and possible mitigation measures
Land cover	The surface cover of the land usually expressed in terms of vegetation cover or the lack of it. Related to but not the same as Land use.
Land use	What land is used for based on broad categories of functional land cover, such as urban and industrial use and the different types of agriculture and forestry.
Landform	The shape and form of the land surface which has resulted from combinations of geology, geomorphology, slope, elevation, and physical processes.
Landscape	An area, as perceived by people, the character of which is the result of the action and interaction, of natural and/ or human factors.
Landscape character	These are distinct types of landscape that are relatively homogeneous in character. They are generic in nature in that they may occur in different areas in different parts of the country, but wherever they occur, they share broadly similar combinations of geology, topography, drainage patterns, vegetation and historical land use and settlement pattern, and perceptual and aesthetic attributes.
Landscape quality	A measure of the physical state of the landscape. It may include the extent to which typical landscape character is represented in individual areas, the intactness of the landscape and the condition of individual elements.
Landscape value	The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a variety of reasons.
Mitigation guidelines	Actions that enhance benefits of a proposed development, or avoid, mitigate, restore or compensate for negative impacts.
Receptors	Individuals, groups, or communities who are subject to the visual influence of a project.
Scenic route	A linear movement route, usually in the form of a scenic drive, but which could also be a railway, hiking trail, horse-riding trail or 4x4 trail.
Sense of place	The unique quality or character of a place, whether natural, rural, or urban allocated to a place or are through cognitive experience by the user. It relates to uniqueness, distinctiveness or strong identity and is sometimes referred to as genius loci meaning “spirit of the place”.
Significance	The significance of impacts can be determined through a synthesis of the aspects produced in terms of their nature, duration, severity, extent, and probability.
Study Area	The geographical area falling under this study (set out as a 1,5km radius around the proposed development area)
Viewpoint	A selected point in the landscape from which views of a project or another feature can be obtained.

Viewshed	The outer boundary defining a view catchment area, usually along crests and ridgelines
Visibility	The geographic area from which the project will be visible.
Visual absorption capacity	The ability of an area to visually absorb development because of screening topography, vegetation, or structures in the landscape.
Visual character	The overall impression of a landscape created by the order of the patterns composing it; the visual elements of these patterns are the form, line, colour and texture of the landscape's components. Their interrelationships are described in terms of dominance, scale, diversity, and continuity. This characteristic is also associated with land use.
Visual exposure	The relative visibility of a project or feature in the landscape. Visual exposure is based on distance from the project to selected viewpoints. Visual exposure or visual impact tends to diminish exponentially with distance.
Visual resource	The visible physical features on a landscape (e.g., land, water, vegetation, animals, structures, and other features).
Landscape and Visual Impact Assessment	A Landscape and Visual Impact is a document which briefly predicts the significance of the visual effects on the landscape.
Visual Intrusion	The level of compatibility or congruence of the project with the qualities of the area, or its sense of place. This is related to context and maintaining the integrity of the landscape or townscape.

Acronyms

ALOS	Advanced Land Observation Satellite
CSIR	Council for Scientific and Industrial Research
DEADP	Department of Environmental Affairs and Development Planning
DEM	Digital Elevation Model
DTM	Digital Terrain Model
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
GIS	Geospatial Information System
GN	General Notice
GPS	Geographical Positioning System
IDP	Integrated Development Plan
KOPs	Key Observation Points
LVIA	Landscape and Visual Impact Assessment
NEMA	National Environmental Management Act
SACLAP	South African Council for the Landscape Architectural Profession
SANLC	South African National Land-Cover
SANS	South African National Standards
SDF	Spatial Development Framework
SEMF	Strategic Environmental Management Framework
SPLUMA	Spatial Planning and Land Use Management Act
VAC	Visual Absorption Capacity
ZTV	Zone of Theoretical Visibility

Abbreviations

3D	Three dimensional
ºC	Degree Celsius
m.	Meter
km	Kilometer
amsl.	Above mean sea level
Pty	Proprietary
Ltd.	Limited

Document structure

The specialist study will be undertaken in compliance with Appendix 6 of GN 982 of 4 December 2014, as amended by Appendix 6 of GN 326 of 7 April 2017. **Error! Reference source not found.** indicates how Appendix 6 has been fulfilled in this report.

Table 1: Indication of compliance with Appendix 6 of 2014 EIA Regulations, as amended

NEMA Regulations (2017) Appendix 6	Relevant sections
(1) A specialist report prepared in terms of these Regulations must contain -	
(a) details of -	
(i) the specialist who prepared the report; and	Appendix C
(ii) the expertise of that specialist to compile a specialist report, including a curriculum vitae;	Appendix C
(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Appendix D
(c) an indication of the scope of, and the purpose for which, the report was prepared;	Section 1.3 and 1.4
(cA) an indication of the quality and age of base data used for the specialist report;	Section 6.2.2
(cB) a description of existing impacts on site, cumulative impacts of the proposed development and levels of acceptable change;	Section 7
(d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 6.2.3
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 6
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying alternative;	Section 5 and 7
(g) an identification of any areas to be avoided, including buffers;	N/A
(h) a map superimposing the activity, including the associated structures and infrastructure on the environmental sensitivities of the site, including areas to be avoided, including buffers;	Figure 17
(i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 3
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives, on the environment or activities;	Section 8
(k) any mitigation measures for inclusion in the EMPr;	Section 8
(l) any conditions for inclusion in the environmental authorisation;	Section 8
(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	N/A
(n) a reasoned opinion -	
(i) as to whether the proposed activity, activities or portions thereof should be authorised;	Section 9
(iA) regarding the acceptability of the proposed activity or activities; and	Section 9
(ii) if the opinion is that the proposed activity, activities, or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr.	Section 8
(o) a description of any consultation process that was undertaken during the course of preparing the specialist report	N/A
(p) a summary and copies, if any, comments received during any consultation process and, where applicable all responses thereto; and	N/A
(q) any other information requested by the competent authority.	No other information requested

1 Introduction

1.1 Project background

Stellenbosch Municipality Department of Roads and Stormwater appointed Zutari (Pty) Ltd. to undertake professional services relating to the Wildebosch Road extension from Paradyskloof to Trumali Road. CREATE Landscape Architecture and Consulting has been appointed to undertake the specialist Landscape and Visual Impact Assessment (LVIA). The phased implementation of the Paradyskloof-Trumali Road portion would have immediate benefits due to access restrictions on the R44 and proposed residential developments in the area.

1.2 Location

Stellenbosch Municipality is located about 50km east of Cape Town and at the foot of the Stellenbosch Mountain Range. The Municipality is nestled between Cape Town, Drakenstein, Theewaterskloof and Breede Valley Municipalities, covering roughly 900km^2 area.

It is a local municipality that forms part of the Cape Winelands District Municipality. Stellenbosch is divided into 23 wards, which are largely rural due to the land use being predominantly agricultural. Paradyskloof falls within Ward 21 of the Stellenbosch Municipal District and gains access from the R44.

The Wildebosch extension forms part of the Provincial Proclaimed Main Road 169. The extension of Wildebosch commences at Paradyskloof Road where a small portion of road reserve exists and traverses the farmland in a north-easterly direction to meet the existing Trumali Road, which are currently a surfaced narrow access road for the Paradyskloof Water Treatment Works.

The proposed road upgrades are east of the R44, between the neighbourhoods of Paradyskloof (to the south) and greater Dalsig (to the north) and approximately 1km from the Stellenbosch Golf Course which are located to the west. Paradyskloof Nature Area which includes the Eden Forest Hiking Trails (a mountain bike and hiking mecca for locals) are located 1km to the east. Reference can be made to Figure 1 which illustrates the proposed infrastructure within the above-mentioned context.

1.3 Purpose of and need for the study

As per the Stellenbosch Environmental Management Framework (SEMF) all future buildings, roads and infrastructure must be sited and designed according to the relevant SPCs and guidelines and are subject to heritage, environmental and visual impact analyses.

During the preliminary assessment of the proposed development, it was confirmed that a possible number of listed activities could be triggered which will result in a Basic Assessment process of which the LVIA will form part of.

High level layouts were made available in Google Earth which indicates the infrastructure within the existing context, this report relates specially to these layouts. The purpose of the report is:

- To establish the Zone of Theoretical Visibility (ZTV) through the viewshed analysis;
- To briefly summarise the landscape baseline of the Study Area in terms of physical influences, land cover, the influence of human activity, aesthetic, and perceptual aspects as well as an overall sense of place and landscape value;

- To briefly summarise the visual baseline in terms of the areas in which the project will be visible, the different groups of people (visual receptors) who may experience views of the proposed development, the places where they will be affected identified as Key Observation Points (KOPs);
- To assess the landscape impacts (effects) which deals with the effects of change and development on the landscape as a resource by means of:
    - High level identification of components (individual elements or key features) of the landscape that are likely to be affected by the proposed development;
    - High level identification of interactions between the landscape receptors and the different components of the development.
- To assess visual impacts (effects) which deals with the effects of change and development on the views available to people and their visual amenity by means of:
    - High level identification of interactions between the visual receptors and the different components of the development.
- Summary of potential mitigation measures and/or guidelines.

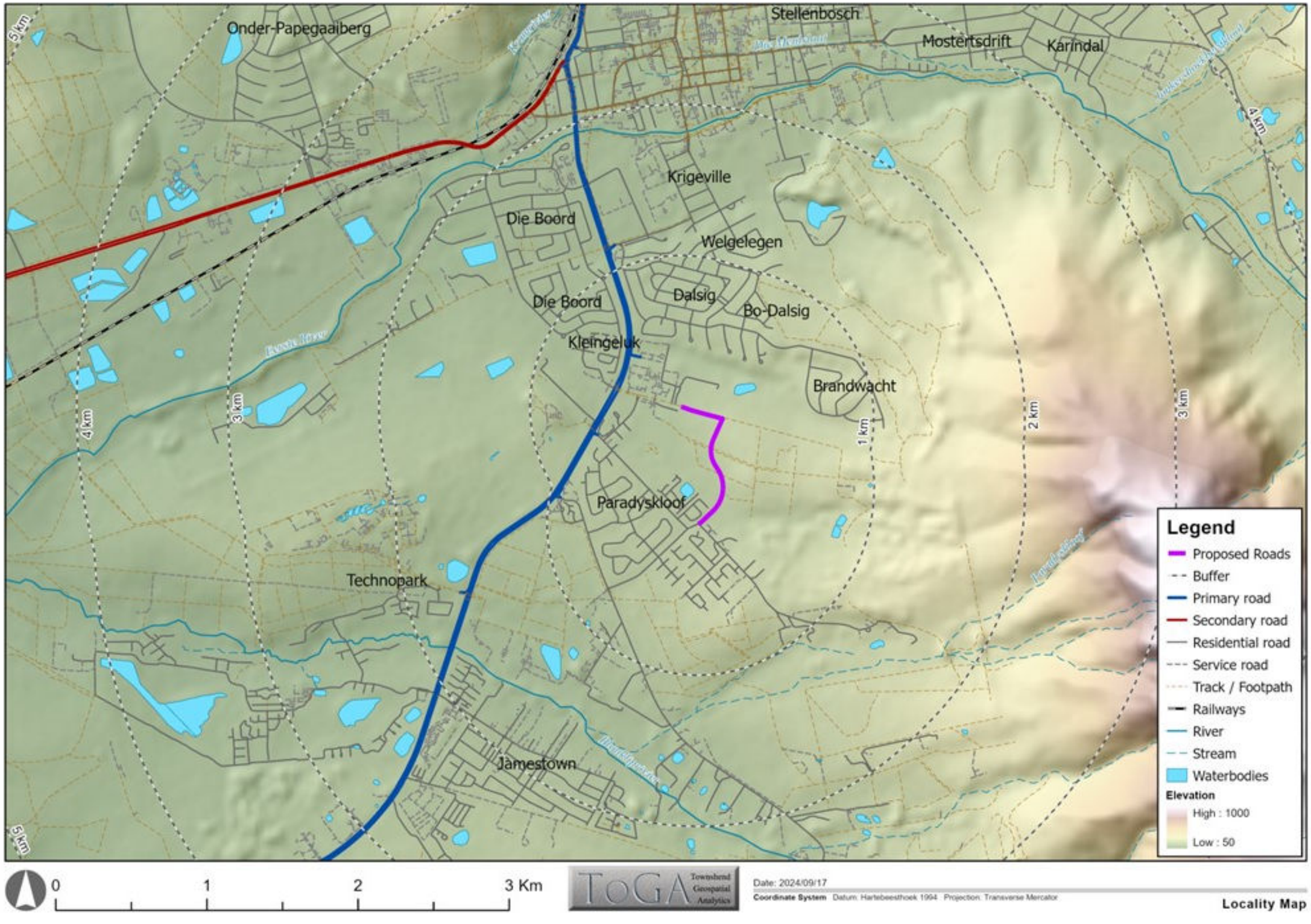

Figure 1: Locality Map

1.4 Level of assessment and scope of work

In terms of the Guideline for Involving Visual and Aesthetic Specialists on EIA Processes (Oberholzer, B. 2005) the depth and scope of an LVIA should be based on a combination of the sensitivity of the existing environment (from the most visually sensitive to the least sensitive) and the nature of the development (from the least intensive to the most intensive). The type of environment and type of development are both divided into five categories, which are indicated in the matrix below.

Table 2 - Table 5 includes the methods of assessment for determining the level of detail of the assessment which were utilised in this report (Oberholzer, 2005):

Table 2: Categories of development and impact severity

CATEGORIES OF DEVELOPMENT AND IMPACT SEVERITY					
Type of environment	**Category 1 development**	**Category 2 development**	**Category 3 development**	**Category 4 development**	**Category 5 development**
Protected/wild areas of international, national or regional significance	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected	Very high visual impact expected
Areas or routes of high scenic, cultural, historical significance	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected
Areas or routes of moderate scenic, cultural, historical significance	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	High visual impact expected
Areas or routes of low scenic, cultural, historical significance/disturbed	Little or no visual impact expected, possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected
Disturbed or degraded sites/run-down areas/ wasteland	Little or no visual impact expected, possible benefits	Little or no visual impact expected, possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected

The following key provides an explanation to the categories of development:

Table 3: Key categories of development

Category 1 development:
e.g., nature reserves, nature-related recreation, camping, picnicking, trails, and minimal visitor facilities.

Category 2 development:
e.g., low-key recreation / resort / residential type development, small-scale agriculture / nurseries, narrow roads and small-scale infrastructure.

Category 3 development:
e.g., low-density resort / residential type development, golf or polo estates, low to medium-scale infrastructure.

Category 4 development:
e.g., medium density residential development, sports facilities, small-scale commercial facilities/office parks, one-stop petrol stations, light industry, medium-scale infrastructure.

Category 5 development:
e.g., high-density township / residential development, retail and office complexes, industrial facilities, refineries, treatment plants, power stations, wind energy farms, power lines, freeways, toll roads, large scale

infrastructure generally. Large-scale development of agricultural land and commercial tree plantations. Quarrying and mining activities with related infrastructure.

Table 4: Key categories of issues

Very high visual impact expected:
Potentially significant effect on wilderness quality or scenic resources;
Fundamental change in the visual character of the area;
Establishes a major precedent for development in the area.

High visual impact expected:
Potential intrusion on protected landscapes or scenic resources;
Noticeable change in visual character of the area;
Establishes a new precedent for development in the area.

Moderate visual impact expected:
Potentially some effect on protected landscapes or scenic resources;
Some change in the visual character of the area;
Introduces new development or adds to existing development in the area.

Minimal visual impact expected:
Potentially low level of intrusion on landscapes or scenic resources;
Limited change in the visual character of the area;
Low-key development, similar in nature to existing development.

Little or no visual impact expected:
Potentially little influence on scenic resources or visual character of the area;
Generally compatible with existing development in the area;
Possible scope for enhancement of the area.

From the above, the severity of the impact determines the level of the assessment:

Table 5: Categorisation of approaches used for visual assessment

Approach	**Little or no visual impact expected**	**Minimal visual impact expected**	**Moderate visual impact expected**	**High visual impact expected**	**Very high visual impact expected**
Level of visual input required	Level 1	Level 2	Level 3	Level 4	

Through the application of the LVIA methods of assessment as presented above, the proposed project is defined as a Category 2 development, which includes roads of this specific scale. The type of environment includes areas of high scenic quality which were confirmed during the site visit. According to Oberholzer (2005), a minimal - moderate visual impact is therefore expected as there is existing infrastructure (urban context) of similar character which could potentially result to low-level intrusion on scenic resources and limited change in the visual character of the area. In line with the above, a Level 2 Assessment is therefore required. The following box explains the inputs/ scope of works required for each level of assessment.

Level 1 input:

Identification of issues, and site visit;

Brief comment on visual influence of the project and an indication of the expected impacts/benefits.

Level 2 input:

Identification of issues raised in scoping phase (where applicable), and site visit;

Description of the receiving environment and the proposed project;

Establishment of receptor site area and receptors;

Brief indication of potential visual impacts, and possible mitigation measures.

Level 3 assessment:

Identification of issues raised in scoping phase, and site visit;

Description of the receiving environment and the proposed project;

Establishment of receptor site area, view corridors, viewpoints and receptors;

Indication of potential visual impacts using established criteria;

Inclusion of potential lighting impacts at night;

Description of alternatives, mitigation measures and monitoring programmes;

Review by independent, experienced visual specialist (if required).

Level 4 assessment:

As per Level 3 assessment, plus complete 3D modelling and simulations (if applicable) with and without mitigation;

Review by independent, experienced visual specialist (if required).

2 Legislation and Institutional Framework

2.1 Policies and plans

Oberholzer, B. (2005) indicates that current South African environmental legislation governing the EIA process (which may include consideration of visual impacts if this is identified as a key issue of concern) is the NEMA (Act 107 of 1998). This includes the 2014 NEMA EIA regulations as amended (published in General Notice (GN) No. R.982 as well as R 983 Listing Notice 1, R 984 Listing Notice 2, and R 985 Listing Notice 3). In addition, the following acts and guidelines are applicable to LVIA's (Oberholzer, 2005):

- National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003). This act is intended to identify and protect natural landscapes.
- National Heritage Resources Act, 1999 (Act No. 25 of 1999). This Act provides legal protection for listed or proclaimed sites, such as urban conservation areas, nature reserves and proclaimed scenic routes.
- Advertising on Roads and Ribbons Act (Act 21 of 1940): This Act controls visual pollution to a limited extent, as it deals with signage on public roads.
- The Spatial Planning and Land Use Management Act, 2013 (Act No. 16 of 2013) (SPLUMA) provides a framework for spatial planning and land use management in South Africa and specifies the relationship between the spatial planning and the land use management system and other kinds of planning. It provides a framework for the monitoring, coordination and review of the spatial planning and land use management system.

2.1.1 Stellenbosch Integrated Development Plan (IDP) 2017 – 2022

It is compulsory for all municipalities to initiate an Integrated Development Plan (IDP) every 5 years. IDPs provide a strategic plan for the area under a municipality's control. The IDP process, specifically the spatial component, is based in certain areas and provinces on a bioregional planning approach to achieve continuity in the landscape and to maintain important natural areas and ecological processes.

The IDP encourages integration of projects, programmes and activities between municipal departments and directorates, and with organs of state and traditional authorities. It hereby facilitates integrated service delivery, providing cross-sectoral services to communities. As a key strategic plan of the municipality, the priorities identified in the IDP must inform all financial planning and budgeting undertaken by the municipality.

Priority projects for the various wards have been identified, this specific project (falling under ward 21) are not mentioned, however the continuous upgrade of the R44 (to manage traffic congestion) is listed under legacy projects. The implementation of the proposed project (running parallel to the R44) will have a direct effect on the lowering of traffic along this section of the R44.

2.1.2 Stellenbosch Integrated Spatial Development Framework (SDF) 2019

There are various key principles described in the SDF document (not all of them are directly applicable to this project), they are given in Table 6 below:

Table 6: Principles of the Stellenbosch SDF

Principle	Applicable
Maintain and grow the assets of the Stellenbosch Municipality's natural environment and farming areas.	No
Respect and grow our cultural heritage, the legacy of physical artefacts and intangible attributes of society inherited from past generations maintained in the present and preserved for the benefit of future generations.	No
Within developable areas – areas not set aside for limited development owing to its natural or cultural significance – allow future opportunity to build on existing infrastructure investment, on the opportunity inherent in these systems when reconfigured, augmented or expanded.	Yes, from spatial perspective movement systems are particularly significant. Elements of the movement system, and how they interconnect, have a fundamental impact on accessibility, and therefore economic and social opportunity.
Clarify and respect the different roles and potentials of existing settlements.	No
Address human needs – for housing, infrastructure, and facilities – clearly in terms of the constraints and opportunity related to natural assets, cultural assets, infrastructure, and the role of settlements.	Yes, the proposed road will assist to alleviate traffic congestion and provide better access for residents.
Pursue balanced communities.	Yes, NMT facilities are provided for.
Focus energy on a few catalytic areas that offer extensive opportunity and address present risk.	Yes, a significant number of people will benefit from the development.

The SDF doesn't make any specific mention to the proposed Trumali Road upgrade and Wildebosch Road extension, however it does make mention of the upgrade to various regional mobility roads such as the R44 which will likely improve regional mobility. "*The impact of these at a local level are likely to be minimal without targeted interventions to resolve local congestion*" (GAPP Architects & Infinity Environmental. (2019). It is believed that the upgrade of Trumali Road and the expansion of Wildebosch Road is a "targeted local intervention" as per the term stated in the SDF. The proposed development is also aligned with the applicable principles of the SDF.

3 Assumptions and limitations

- Determining a visual resource in absolute terms is not achievable. It is a complex procedure since it is determined through a combination of quantitative (visibility) and qualitative (aesthetic value) criteria. Therefore, a visual assessment cannot be entirely objective in this sense. Individuals will evaluate a landscape differently, based on experience, cultural, and social background;
- Various factors can enhance or reduce the visual impact of the proposed project, for instance, vegetation near a receptor's view of the proposed project. Other factors include weather, climatic conditions, and seasonal change. Therefore, it is difficult to determine the visual impact of the proposed project from the viewpoint of each receptor;
- No specific national legislation for visual assessments currently exists in South Africa. However, the assessment of visual impacts is required by implication when the provisions of relevant acts governing environmental management are considered and when certain characteristics of either the receiving environment or the proposed project indicate that visibility and aesthetics are likely to be significant issues and that visual input is required (Oberholzer, 2005);
- Access for the specialist was restricted at gated communities, however this did not influence the outcome and level of confidence for this study;
- The layouts, locations and technical specifications as received by the specialist are assumed to be correct;
- Both the viewshed and site survey assumed that the visual receptor's eye height is between 1.5 m-1.7 m above ground level, based on the average heights for men and women and;
- The viewsheds resulting from the Digital Elevation Model (DEM) and as illustrated in this report, indicate the areas from which the proposed project is likely to be visible and do not take local vegetation cover (land cover) and anthropogenic structures (buildings and infrastructure) into account as these factors are too variable. Potential sensitive receptor points have therefore been ground-truthed during the site assessment.

4 Existing Roads

4.1 Trumali Road

Trumali Road west of Ben du Toit Road has recently been upgraded as part of the Skilplaats Road extension and Trumali Road/R44 Intersection upgrade. Trumali Road to the east of Ben du Toit Road narrows down to a 3m wide surfaced access road that provides thoroughfare to the Paradyskloof Water Treatment Works.

Figure 2: Existing section of Trumali Road which provides access to Paradyskloof Water Treatment Works

4.2 Wildebosch Extension

Wildebosch extension will be a greenfields road extension over Erf RE/369.

Figure 3: Typical terrain (greenfields) for the extension of Wildebosch Road

4.3 Drainage structures

4.3.1 Culverts and side drains

As part of the Skilplaats Road extension a box culvert was constructed to cater for runoff from the above catchment. An open concrete stormwater channel runs the length of Trumali Road.

4.4 Road fencing

As depicted in Figure 2 portions of the existing road have been fenced.

5 Proposed Development

5.1 Proposed Wildebosch extension

5.1.1 Horizontal and vertical alignment

Three options have been explored as part of this assessment for the Wildebosch extension, the preferred alignment is illustrated below.

Figure 4: Preferred alignment (Zutari, 2024)

5.1.2 Road cross section

According to the Roads Master Plan, the proposed Wildebosch extension should contain a surfaced 4m wide in each direction between kerbs with a separated 3m wide NMT facility. Side slopes and drainage elements should be implemented as best suited for the terrain.

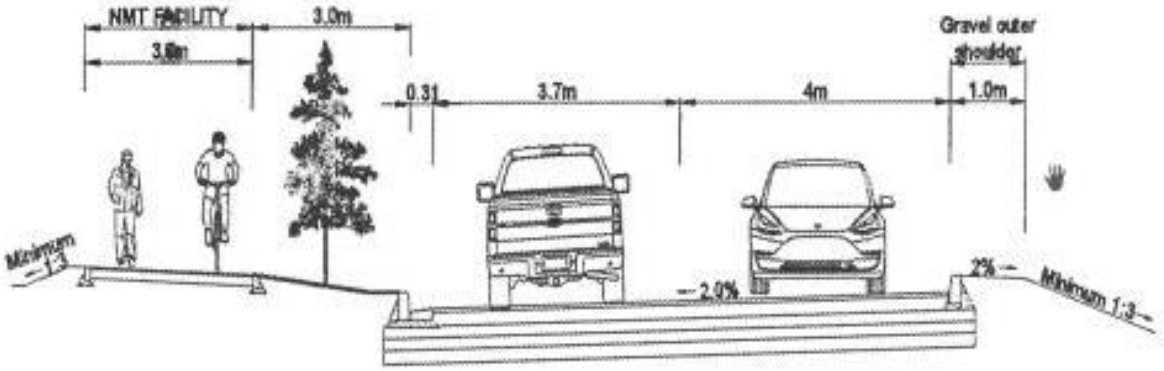

Figure 5: Typical section of Wildebosch extension (RMP, 2023)

5.1.3 Cut and fill slopes

It is envisaged that high fill situations along this section of the road may develop which may require the adjustment of fill slope angles to limit the construction footprint. This will be considered as part of the design of the proposed road.

5.2 Proposed Trumali Road

5.2.1 Horizontal and vertical alignment

It is envisaged that the upgrade of Trumali Road will closely match the existing horizontal and vertical alignment.

5.2.2 Road cross section

A similar cross section to the Wildebosch extension has been adopted for this assessment.

5.2.3 Cut and fill slopes

With the vertical and horizontal grades of the existing Trumali Road being closely matched, this should limit the footprint of the road prism, minimising large cut and fill slopes.

6 Landscape and visual assessment methodology

6.1 Impact assessment methodology

To allow for sufficient consideration, impacts were assessed using a common, defensible method of assessing significance that will enable comparisons to be made between risks/impacts and will enable authorities, stakeholders, and the client to understand the process and rationale upon which risks/impacts have been assessed. The method to be used for assessing risks/impacts is outlined in Appendix A and is the standard Zutari rating system.

6.2 Landscape and visual assessment methodology

6.2.1 Description of the affected environment

6.2.1.1 Receiving environment

6.2.1.1.1 Establishing the landscape baseline

The landscape baseline aims to provide an understanding of the landscape that may be affected and was established through a desktop study and a site visit (as indicated in the sections above) which identifies and records the character of the landscape, the elements, features, aesthetic, and perceptual factors as well as the value attached to it. The landscape baseline will be established through the landscape character, landscape value, landscape quality, Visual Absorption Capacity (VAC), visual intrusion, and sense of place.

6.2.1.1.2 Establishing the visual baseline

The aim of the visual baseline is to establish the area in which the development may be visible, the different groups of people who may experience views of the proposed development, the places where they will be affected, the nature of the views and the visual amenity at these points. The visual baseline was established through identifying the visibility and visual exposure, the visual receptors and the KOPs (which were confirmed during the site visit).

6.2.1.2 Impact Assessment

6.2.1.2.1 Assessment of landscape impacts

An assessment of landscape effects deals with the effects of change and development on the landscape as a resource. The Study Area was considered and includes the site itself and the full extent of the wider landscape around it, which the proposed development will influence in a significant manner. This was based on the maximum extent of the area from which the development is potentially visible, defined as the viewshed or ZTV as described earlier.

6.2.1.2.2 Predicting landscape impacts (effects)

Once the baseline information regarding the landscape is established and confirmed this can be combined with understanding of the details of the proposed development to identify and describe landscape impacts (effects), the initial step was to:

- Identify the components (individual elements or key features) of the landscape that are likely to be affected by the scheme (landscape receptors).

The second step was to:

- Identify interactions between the landscape receptors and the different components of the development during all the different project stages; and
- Direct as well as cumulative impacts (effects) will be included.

6.2.1.2.3 Assessing landscape impacts (effects)

The identified landscape impacts (effects) will be assessed to determine their significance.

Assessment was based on:

- Sensitivity of landscape receptors (determined through the VAC and overall susceptibility to the type of change);
- Value of the landscape receptor (landscape character type/s and individual elements and features contributing to landscape character); and
- Severity (magnitude) of landscape impacts (effects) related to size, scale, geographic extent, duration, and reversibility of landscape effects.

6.2.1.2.4 Assessment of visual impacts

The assessment of visual impacts (effects) deals with the effects of change and development on the views available to people and their visual amenity.

6.2.1.2.5 Predicting visual impacts (effects)

Likely impacts (effects) on potential visual receptors were identified, to determine these impacts, the following was considered:

- The nature of the view (full or partial);
- The proportion of the infrastructure which will be visible;
- The distance of the viewpoint to the proposed development; and
- Whether the view is stationary or transient

6.2.1.2.6 Assessing visual impacts (effects)

The identified visual impacts (effects) were assessed to determine their significance. The assessment was based on:

- The sensitivity of visual receptors (susceptibility of visual receptors to change, mainly based on the occupation or activity at a specific viewpoint and the extent to which their attention may be focused on the view);
- Value attached to the views; and
- Severity (magnitude) of the visual effects related to size/scale, geographical extent, duration, and reversibility of visual effects.

6.2.1.2.7 Assessing cumulative landscape and visual impacts

Cumulative landscape effects can affect either the physical fabric or character of the landscape. Cumulative visual impacts can be caused by combined visibility, which occurs where the receptor is able to see two or more developments from one viewpoint and/or sequential effects which occur when the receptor must move to another viewpoint to see different developments. Types of cumulative landscape and visual effects includes:

- Extension to an existing development;
- Filling of an area with similar types of development;
- Interactions with different types of development;
- Incremental change because of successive individual developments; and
- Landscape and visual impacts (effects) resulting from future actions;

6.2.1.3 Mitigation of landscape and visual impacts

Possible impacts (effects) were identified which include siting, access, layout, and structures.

General forms of visual mitigation include:

- Prevention/avoidance;
- Reduction by means of:
  - Adjustment of site levels;
  - Use of appropriate form, detail design, materials and finishes where it is not desirable or practical to screen;
- Alterations to landform together with structured planting;
- Avoiding or reducing obtrusive lighting, consideration was given to different ways of minimising light pollution; and
- Offset, remedy, or compensate.

6.2.2 Desktop study

The desktop investigation served as a planning basis for the site visit by identifying preliminary areas of importance (focus areas) in terms of potential landscape and visual impacts. The current context was understood prior to conducting the site visit, which involved a study of the existing environment in terms of topography and land cover. The viewshed analysis (the outer boundary showing the view catchment) formed the basis for the site visit. Potential sensitive receptors (mostly associated with neighbourhoods, adjacent streets and places used for local recreation) were identified and mapped.

The terrain information was derived from the Advanced Land Observation Satellite (ALOS) 30 m data which became available to the general public in 2015/16. The base topographic data is from MapIT South Africa, 2015. Both these data sets are of very good quality. The desktop study included a study of the existing environment in terms of topography and land cover data information from the South African National Land-Cover (SANLC) 2018 raster dataset is based primarily on the newly gazetted land-cover classification standard (SANS 19144-2) with 73 classes of information and is available on an open license agreement. It is of excellent quality.

6.2.3 Site visit

A site visit was undertaken on the 2nd of October 2023. The study included a drive around the surrounds to determine the visual context within which the proposed infrastructure is to be developed. Areas of potential important observation points were assessed and recorded by making use of Global Positioning System (GPS) to confirm these potential aesthetically sensitive viewpoints and sensitive receptors. High resolution, geo-referenced photos was taken from

KOPs within the study area towards the proposed infrastructure. Other photos, which represent the unique sense of place, land use and specific landscape character types were also captured during the site visit. The site visit was after the winter rainfall season, however, during this specific year heavy rainfall was still ongoing well into spring which resulted in natural lush, green vegetation and could therefore possibly provide more natural screening compared to drier summer seasons. Based on a visual perspective, seasonal variation will not influence the outcome of the report as there is no seasonal preference for carrying out a site visit in the given context.

6.2.4 Approach

The figure below provides a typical diagrammatic assessment approach of the LVIA.

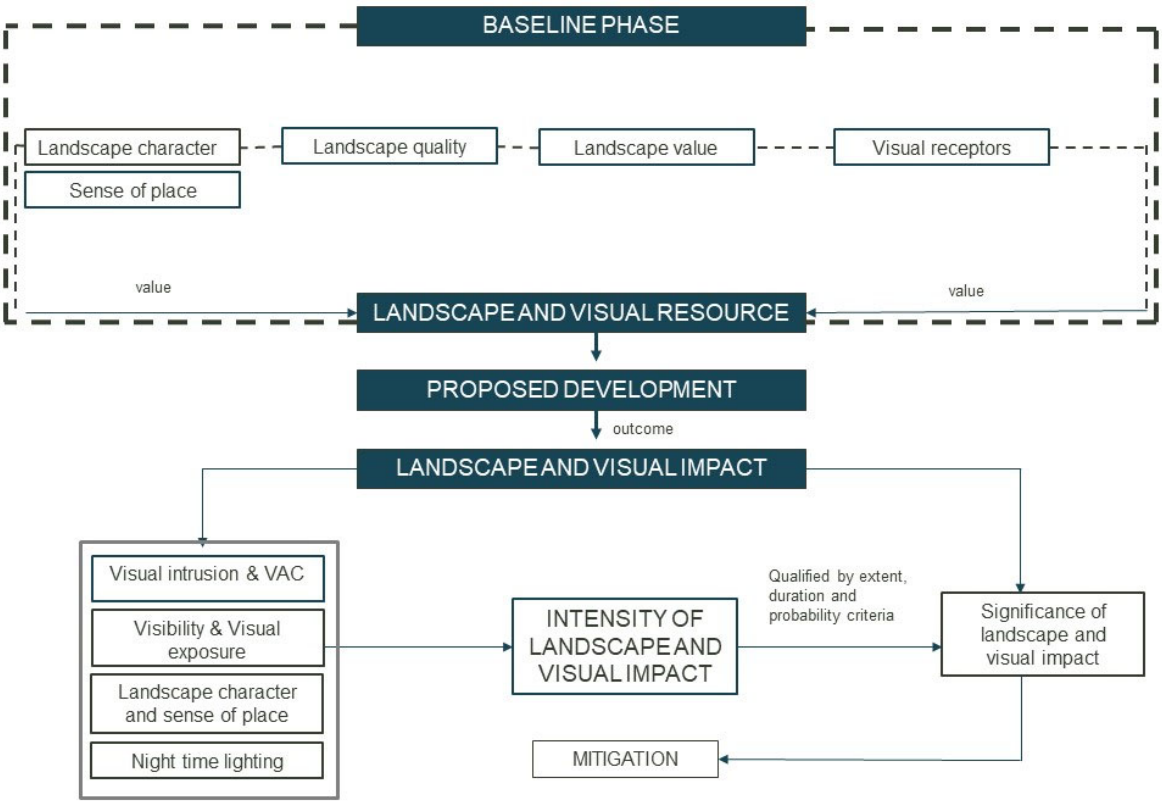

Figure 6: Typical LVIA assessment approach

7 Receiving environment

This section of the report aims to briefly analyse and describe the intrinsic value of the receiving landscape baseline, including the natural, cultural, and scenic features as well as the visual baseline which focuses on the receptors, overall visibility, and visual exposure. This analysis assists the reader by describing the landscape and visual resources before the development. This is essential as the existing environment must be understood before assessing the impacts that will bring about potential change.

7.1 Landscape baseline

7.1.1 Landscape character

Landscape character can be defined as the distinct, recognisable, and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse. Landscape character includes the natural and man-made attributes of the study area, including geology, topography, land cover and vegetation. The overall landscape character is influenced negatively by incompatible activities, or positively by the presence of natural and/or man-made features, such as steep gradients, presence of rocky ridges, natural vegetation, pans, and floodplains.

7.1.1.1 Climate and geology

The Cape Winelands landscape in the greater study area has a strong correlation with the underlying geology (predominantly the occurrence of granites), the unique combination of soils and the climate which have made this region the centre of viticulture and fruit farming (Oberholzer, B. 2014). The region has a mild Mediterranean climate influenced by the warm Indian Ocean currents. Summers (December to March) are dry and hot, with February and March being the hottest months, with temperatures rising over 40 °C. Winters (May – August) are cool, rainy and sometimes windy, with average temperatures of 11 °C. Snow is usually seen a couple of times in the winter on the surrounding mountains which result in temperatures dropping to below 0°C. The rainfall in this region averages 787mm per year and falls mainly during winter.

7.1.1.2 Topography

The greater study area is dominated by the striking Hottentots-Holland sandstone mountains of the Table Mountain Group, represented by the rugged mountain peaks of the Stellenbosch Mountains forming a visually striking backdrop east of the proposed site.

Topographically the site is located in a hilly region of the Cape Winelands. The upgrade to Tumali Street extends from 124 amsl. in the west to 170 amsl. in the east where it ties in with the extension of Wildebosch Road. The height difference is over a horizontal distance of approximately 600m. The extension of Wildebosch Road range from 170 amsl at the tie in with Trumali Road in the north where it falls to 155 amsl. tying in with the existing Wildebosch road section.

7.1.1.3 Vegetation

The natural vegetation of the area would be better described in the project's ecological report. From a visual assessment perspective, the most important features of the vegetation of the study area are its height and density. According to Musina and Rutherford (2006), the prominent vegetation types within the study area is Swartland Granite Renosterveld (critically endangered), with some Swartland Shale Renosterveld and Cape Winelands Shale Fynbos in the surrounding area. However, the proposed construction footprint and immediate surrounds have been transformed to build up residential areas with parcels of agricultural land. (the proposed new extension to Wildebosch Road traverse an existing vineyard and an open parcel of land located directly north of Trumali Street currently used for cattle grazing). It is assumed that pockets of the above-mentioned natural vegetation types would still be present in the Paradyskloof Nature Reserve, its western boundary located approximately 1,5km to the east of the proposed infrastructure.

The symmetry of the planted rows of vines, their russet orange colouring in the autumn and green in the summer is visually pleasing and typical of the Cape Winelands area. Bodies of water and marshy areas are largely dominated by grassy species and bulrushes (*Typha Capensis*). As a result of the urban context, wetland vegetation is most likely not pristine, however it offers habitat for bird and animal life and is visually pleasing.

Colours of the vegetation display in various shades of green, with grasses particularly vivid in the winter months. The vineyards are of moderate height and offer little screening, but clusters and avenues of trees (associated with surrounding streets) provide vertical interest and screening. A large section of mature pine trees associated with the Eden Forest (which stand in visual contrast to the existing natural vegetation and vineyards) provides sufficient screening if the infrastructure is viewed from the south east.

7.1.1.4 Land cover

The study area is represented by a variety of different land cover types of which the main types consist out of cultivated land, open forest, formal residential, urban recreational, plantations, fynbos and cultivated commercial vineyards. Land cover is visually represented in Figure 7. The proposed alignment will traverse formal residential area, cultivated permanent vines and annual crops.

7.1.1.5 Land use

Land use in the study area includes agricultural land for vineyards and cattle grazing and various upper income neighbourhoods with free standing houses. (Free standing houses vary in architectural style and are single to double storey with a low density). Houses are interspersed with clusters of trees, open spaces and wide tree lined roads. During the site visit it was noticed that various construction activities are underway for higher density, upmarket residential units (gated communities) amongst established houses. New commercial buildings, bordering the R44, such as the Medi Clinic 300m north of the entrance of Trumali Road and Trumali Office Park have recently been completed. Infrastructure, forming part of the Paradyskloof Water Treatment Works, include water reservoirs, a retention dam and a large building which are dispersed within the eastern sections of the study area. As mentioned earlier the Paradyskloof Nature Area which forms part of the comprehensive Stellenbosch Trail System crisscross the lower ranges of the Stellenbosch Mountain, offering well maintained mountain bike trails covering both single and jeep track options. The Stellenbosch golf club is located less than 1km west (on opposite side) of the R44.

7.1.1.6 Summary

The greater Cape Winelands area is a cultural landscape of high scenic value and has been nominated for World Heritage status. Stellenbosch was the second town to be established in South Africa and is a significant tourist attraction known for its rich heritage which includes the Cape Dutch Architecture, broad oak-lined roads, and its close association with the surrounding viticultural landscape (pockets of vineyards are still visible between built infrastructure).

The mixed use of the study area has a typically semi-urban character with many industries and facilities having a strong association with the surrounding agricultural activities. The town is further characterised by a hierarchy of well-developed and used open spaces, forming positive outdoor rooms. Visually the striking mountains, vineyards related to agricultural hinterlands, the large open stretches of landscape earmarked for recreational activities and the mix of old and modern architecture informed by local vernacular regarding scale, materials etc. integrate well and provide a harmonious scenic landscape with minimal visual clutter.

7.1.2 Visual absorption capacity (VAC) and visual intrusion

VAC is an indication of the ability of the landscape to visually conceal the proposed development. Areas with high VAC can accommodate and absorb physical changes in the landscape without transforming its visual character and quality, while a low VAC rating implies a low ability to absorb or conceal visual impacts (Oberholzer, 2005). The factors that contribute to the VAC factor includes topographical diversity, vegetation, soil contrast, visual pattern, and recovery time. VAC is further closely related to visual intrusion, which refers to the physical characteristics and nature of the contrast created by a project on the visual aspects of the receiving environment. It is also, as with VAC, a measure of the compatibility or the conflict of a project with the existing landscape and surrounding land use

The natural topography alone offers moderate – high screening ability, depending on where the receptor is positioned in the landscape. VAC is increased by buildings and large clumps of trees; the natural fynbos vegetation provides moderate VAC whereas pastures and vineyards offer little VAC due to its low height. The abundance of agricultural activity, new developments, established neighbourhoods, larger infrastructure such as the Paradyskloof Water Treatment Plant, all contribute to the visual variety of colours and textures, and discontinuity in terms of lines and forms in the landscape. It is therefore expected that the proposed infrastructure will have a low level of contrast with its surrounds. There is already a high degree of visual intrusion from typical urban infrastructure and the additional presence of the proposed infrastructure will add a small degree of visual intrusion to what is already present.

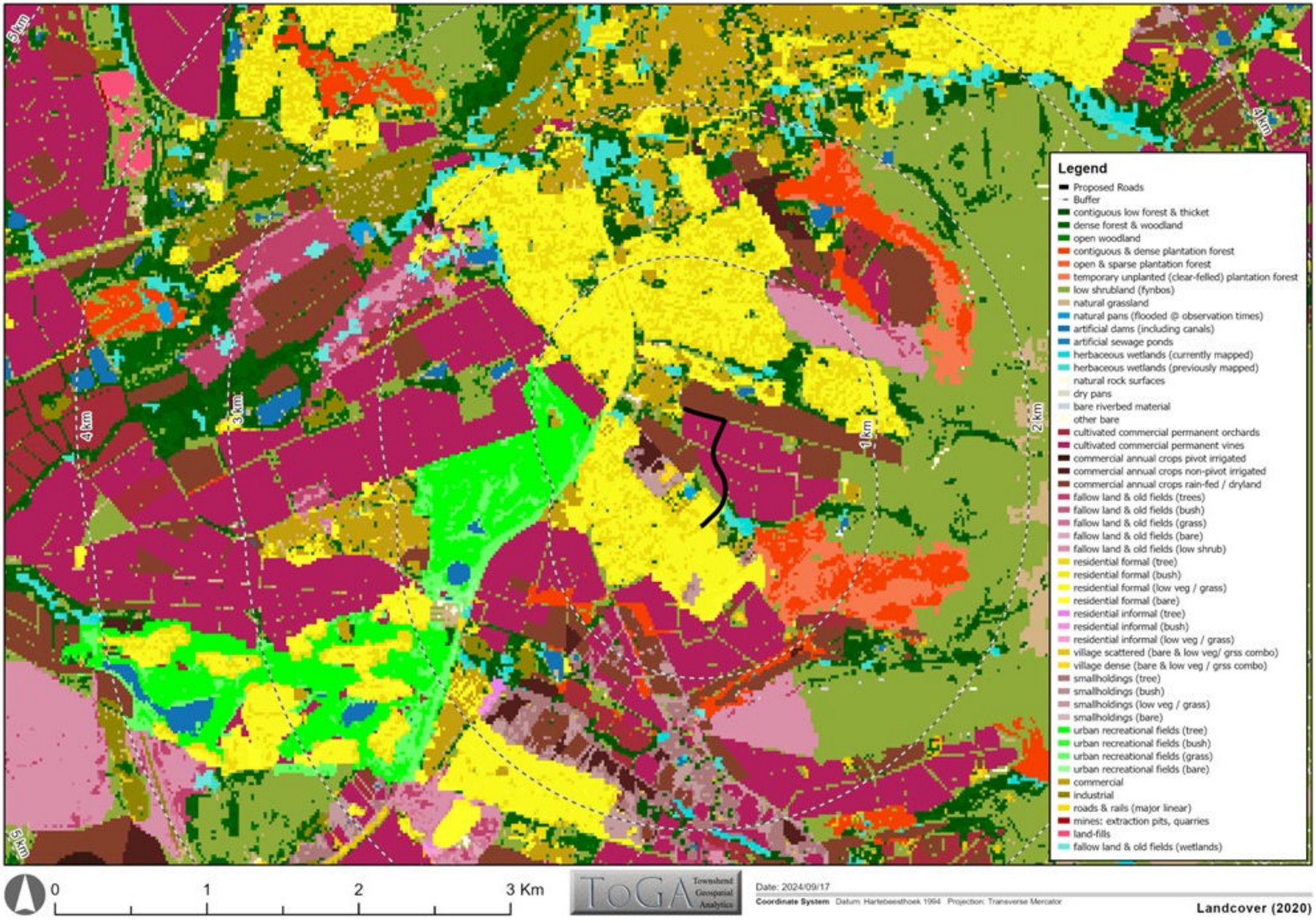

Figure 7: Land cover

Figure 8: Trumali Road going up a foothill with existing vineyards and the Stellenbosch Mountains forming a backdrop to the east. To piece of land to the left of the road is currently used for cattle grazing

Figure 9: Paradyskloof Nature Area with jeep track and typical fynbos vegetation in the forefront, the Eden Forest located to the left and open pastures and vineyards extending across the rolling hills in the background.

Figure 10: Established residential street with free standing houses typical of adjacent neighbourhoods such as Paradyskloof and Dalsig

Figure 11: Tree lined avenue. (Existing section of Wildebosch Road)

Figure 12: Newly constructed Stellenbosch Medi Clinic along the R44, within the vacinity of the site

Figure 13: Newly constructed upmarket residential community (Brandwacht on River) close to Trumali Road

Figure 14: Open piece of land along Paradyskloof Road with prominent gravel roads traversing the vineyards in the background.

Figure 15: Paradyskloof Water Treatment Works building located at the foothill of the Stellenbosch Mountain, east of the proposed site

7.1.3 Landscape quality

Landscape quality is based on human perceptions and expectations in the context of the existing environment. A landscape's visual quality is therefore a factor of an observer's emotional response to physical landscape characteristics such as landform, vegetation, water, colour, adjacent scenery, scarcity and cultural or man-made modifications.

Landscape quality increases with the presence of water, topographic ruggedness and where diverse patterns of vegetation occur. Areas that contain more natural features or harmonious man-made compositions will have a more favourable landscape quality than areas with non-harmonious human activity.

Even though the natural vegetation has been significantly transformed, the overall landscape quality of the study area can still be rated as high as landforms range from high mountains to small rolling hills with a variety of shapes, sizes, and detailed features. The combination of colours from agricultural activities, water bodies, various vegetation types, large to smaller scale well designed infrastructure (such as build up residential areas) offers visual variety and texture and therefore the existing adjacent scenery enhances the overall landscape quality.

7.1.4 Landscape value

Landscape value is concerned with the relative value attached to a specific landscape by society, bearing in mind that a landscape may be valued differently by different stakeholders. Value can apply to areas of landscape as a whole or to the individual elements, features and aesthetic or perceptual dimensions which contribute to the character of the landscape.

In determining landscape value, the people, or groups of people who could be affected by the proposed development should be considered. Due to the landscape being valuable to people in different ways consideration is given to:

- People who live and work in an area may attach a lower value to the landscape;
- Special interest, for example, the ecological, cultural, or historic value of the landscape, as knowledge of these issues can often affect people's perception and appreciation of a landscape; and
- Landscapes valued by a public wider than the local population because they have a strong image or are well known and valued nationally and internationally.

Landscape value is based on receptor perception and is rated in Table 7 below.

Table 7: Landscape perception rating

Rating	Criteria
High	People attach a high value to aesthetics, such as in or around a game reserve, coastal areas, scenic routes, conservation areas, cultural landscapes and tourism destinations. The project is perceived to significantly impact this value of the landscape.
Moderate	People attach a moderate value to aesthetics, such as neighbourhoods and smaller towns, where natural character is still plentiful and in close range of residency.
Low	People attach a low value to aesthetics when compared to employment opportunities or where the environment has already been transformed.

The study area is most likely to be highly valued by tourists and residents residing permanently within the study area.

Receptors visiting the study area for recreational purposes such as golfing at Stellenbosch golf course, hiking and mountain biking in the Paradyskloof Nature Area will have, to some extent, long range unobstructed views towards the proposed infrastructure. This group of receptors will attach moderate value to the landscape as they will be focusing on the task at hand.

People and stakeholders who work within the study area (associated with the nearby agricultural activities and commercial facilities) will have a different perception because of the employment opportunities, their more regular contact with the landscape, and the ongoing infrastructural type changes within it. The proposed development will therefore affect the landscape value to a lesser extent for this specific receptor group.

7.2 Visual baseline

7.2.1 Visibility and visual exposure

7.2.1.1 Visibility

Visibility is determined by the distance between the proposed project and the visual receptor. The visibility or viewshed/ZTV of the project is the area from which the project will be visible and includes all the major observation sites. The viewshed is theoretical as it assumes a direct line of sight between any point within the viewshed and the object being viewed, (i.e., it does not consider screening elements such as buildings and vegetation).

A Geographic Information System (GIS) has been used to generate the viewshed analyses for the proposed project and related infrastructure. The system has 3D topographical modelling capabilities, including a line-of-sight analysis. For this project, the viewshed analysis was generated by means of existing contours and pre-determined specific points in the landscape. The visibility of the proposed development and its influence on visual impact is rated using the criteria listed in Table 8.

Table 8: Visibility classes

Class	Description
Highly visible	Clearly noticeable within the observer's view frame 0-0,5 km
Moderately visible	Recognisable feature within the observer's view frame 0,5-1,5 km
Marginally visible	Not particularly noticeable within the observer's view frame 1,5-3 km
Hardly visible	Practically not visible unless pointed out to observer beyond 3-5 km

7.2.1.1.1 Views from the north towards the site

Views from the north will be restricted past the southern fence line of Brandwacht on River Residential Estate (approximately 300m from the proposed infrastructure). The proposed infrastructure will be highly visible for residents who permanently reside along this boundary fence. The proposed infrastructure will not be visible from the neighbourhoods of Bo Dalsig and Dalsig as residential houses and vegetation will obscure views from here. Views open up from the corner of Ben du Toit Avenue (approximately 100m from the proposed road upgrade) towards the existing section of Trumali Road. The proposed infrastructure will be highly visible from here. It can be concluded that views from the north will not extend more than 500m.

7.2.1.1.2 Views from the east towards the site

Due to the natural topography long range views from 1,5km onwards will be possible if the proposed infrastructure is viewed from the east and north east. This is especially true for views from the main jeep track road within the Paradyskloof Nature Area, however views from [1]Eden Forest, including the entrance in Paradyskloof Way will be obscured due to the height of the trees, some reaching well over 20m. The topography forms a natural valley in the vicinity of the Paradyskloof Water Treatment Works (located next to the Paradyskloof Nature Area) and views

[1] The cluster of pine forest plantation bordering the neighbourhood of Eden and within the Paradyskloof Nature Area.

from there will be somewhat screened. It is assumed that the proposed infrastructure will be visible further up the Stellenbosch Mountain Range, albeit marginally, due to the distance.

7.2.1.1.3 Views from the south towards the site

The proposed infrastructure will be highly visible for residents from the neighbourhood of Paradyskloof whose houses borders the open erfs to the north and the houses next to the proposed new section of Wildebosch Road, before tying into the existing road. The type of border (transparent fence vs. solid wall) will greatly impact the actual visibility. Views from Paradyskloof Road will only be visible where there are open pieces of land next to the proposed site. Visibility will be high for motorists driving along the existing section of Wildebosch Road in a north east direction. Due to existing residential houses and clusters of trees, visibility from the neighbourhoods of Paradyskloof and Eden will be mostly limited to those residing directly next to the proposed development.

7.2.1.1.4 Views from the west towards the site

Views from the R44 will be largely restricted due to existing built-up areas and clusters of trees. Sections of the proposed infrastructure will be visible where the topography allows. The proposed infrastructure will be moderately visible from the entrance of the Stellenbosch Golf Club, this is mostly as a result of the receptor being slightly elevated at this point. Visibility will be high from Trumali Street (entrance to the Brandwacht Office Park) looking directly east and from the Grondves premises where views will not be obscured (approximately 300m from the proposed infrastructure at the foot of the hill).

7.2.1.2 Visual exposure

Visual exposure refers to the geographic area from which the proposed project will be visible and is defined by the degree of visibility of a proposed project from various receptor sites. According to Hull and Bishop (1998), the visual exposure of the proposed project is based on the distance from the proposed source of impact and usually (depending on the type of infrastructure) fades out beyond 7 km. The visibility of an object decreases exponentially over distance and accordingly visual impact will diminish as the viewer moves away from the object being viewed. It is also important to note that the actual zone of visual influence of the proposed project may be smaller than indicated because of screening by existing vegetation and infrastructure. The influence of diminishing visual exposure over distance is shown below in Figure 16.

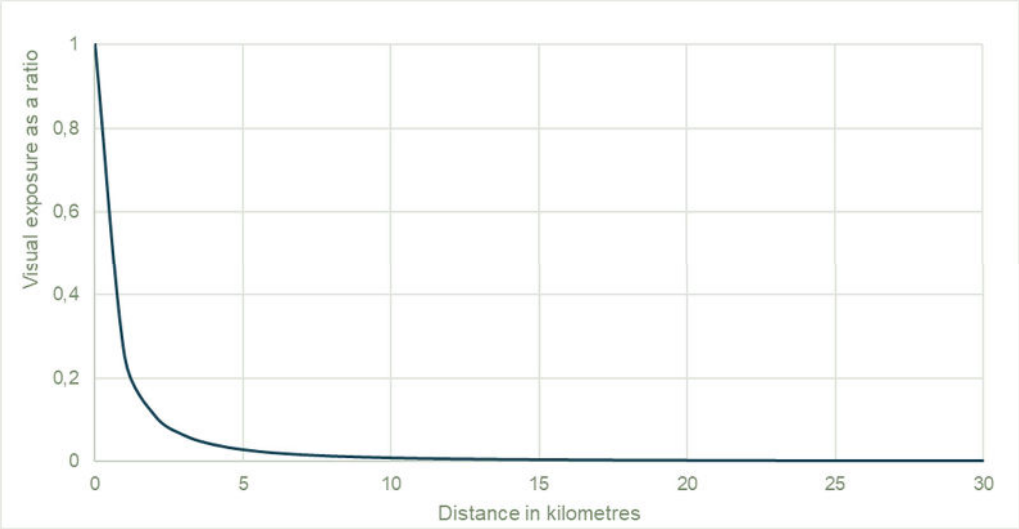

Figure 16: Visual exposure (Hull and Bishop, 1988)

7.2.1.3 Viewshed analysis

The viewshed analysis calculates the geographical locations from where the proposed project might be visible (views towards the proposed infrastructure). This potential visual exposure of the project has been modelled by creating a digital terrain model (DTM) from contour data (20m intervals, obtained from the Surveyor General) and applying a viewshed analysis using GIS software, whereby all areas with a line of sight towards the proposed project are indicated. It must be noted that the heights of existing infrastructure and vegetation are not included in the calculation of the viewshed as these factors have too much variability in terms of seasonal change and possible land use changes in an extensive study area such as the one being assessed. It is therefore important to bear in mind that the proposed development will not be visible from all points within the viewshed, as views may be obstructed by visual elements, whereby such intervening objects will modify the viewshed at ground level. Based on this information and together with the site visit it has been confirmed that the visual envelope of the proposed development is much smaller than the theoretical viewshed analysis (especially in a northern, southern and western direction) as indicated in Figure 17 below. This is mostly as a result of the height and density of patches of large trees, vegetation and existing infrastructure.

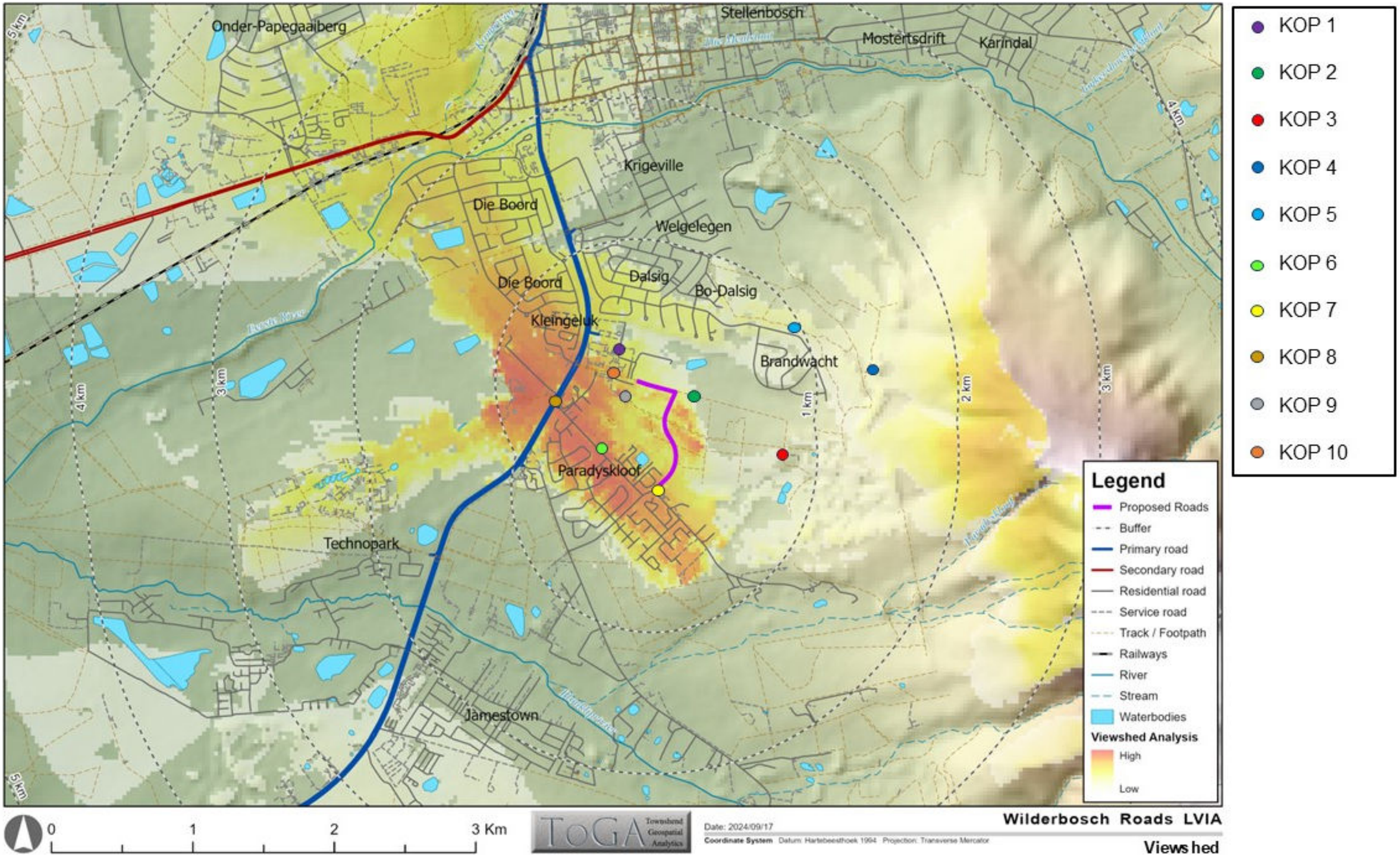

Figure 17: Viewshed Analysis

7.2.2 Visual receptors

Receptors are potential viewers of the proposed development. The perception of viewers is difficult to determine as there are many variables to consider such as:

- Familiarity with the actual scene;
- The location and context of the viewpoint;
- Circumstances that bring them into contact with that view (occupation or activity of the receptor) and;
- Nature and importance of the view (full or glimpsed, near or distant).

Other variables include cultural background, state of mind and how often the proposed project is viewed within a set period. Therefore, it is necessary to generalize the viewer sensitivity to some degree. Potential visual receptors that may be affected by the proposed project include:

- Users of recreational landscapes and public footpaths, including tourists and visitors;
- Residents;
- Users of public sports grounds and amenity open space;
- Users of public roads and railways;
- Workers; and
- Views of or from within valued landscapes.

Of the above visual receptors as mentioned above the most sensitive may include:

- Users of outdoor recreational facilities, whose attention or interest is focused on the landscape;
- Communities for whom the proposed development results in changes in the landscape setting or valued views that they enjoy; and
- Residential property owners with views affected by the proposed development.

The sensitivity of the receptors is indicated in Table 9 below and have, in most cases, been drawn from publicly accessible viewpoints, the sensitivity of which would be dependent on the location, the activity of the viewer and the importance of the view.

Table 9: Summary of visual receptors

Visual receptors	Description (sensitivity of receptors)
Residents residing permanently and next to the proposed infrastructure (this includes the neighbourhoods and residential estate of	These receptors attach a high value to aesthetics.

Visual receptors	Description (sensitivity of receptors)
Brandwacht on River, Brandwacht, Eden and Paradyskloof)	
Motorists travelling along the R44, Schuilplaats Road, Ben du Toit Avenue, Paradyskloof Road, Brandwacht Road, Trumali Road and Wildebosch Road	These receptors will mostly include local residents, tourists (traveling on the R44) and people working at office parks, Medi Clinic and Paradyskloof Water Treatment Works. Receptor sensitivity will range from high (tourists and local residents to moderate – low for people traveling for and to their place of work.
Visitors to the Paradyskloof Nature Area	Receptor sensitivity will range from high – moderate, depending on the task at hand.

7.2.3 Key Observation Points

KOPs were identified based on prominent viewpoints where views towards the proposed project and associated infrastructure are either uninterrupted or partially uninterrupted as well as at points where positive viewshed areas intersect with potential receptors. The KOPs were selected within a 1,5 km buffer area of the proposed infrastructure. The KOP analyses were conducted by investigating the visual influence of the proposed infrastructure as per the available layout and information provided.

A list of key observation points as indicated in Table 10 has been confirmed during the site visit. Viewpoints mostly include views from areas of aesthetically pleasing view corridors, important roads and areas of permanent residence.

Table 10: Key Observation Points

Key Observation Point	Location	Description	Viewing direction	Approximate distance from infrastructure	Visibility
KOP 1	33°57'24.25"S 18°51'34.04"E	View from Ben du Toit Avenue with residential houses from Brandwacht on River to the north east.	East – Northeast	750 m	Full
KOP 2	33°57'32.21"S 18°51'52.02"E	View from existing Trumali Road towards the Stellenbosch Mountains	East	0 – 250m	Full
KOP 3	33°57'43.75"S 18°52'14.57"E	View from the entrance road to the Stellenbsoch Water Treatment works office building.	West	800m	Full
KOP 4	33°57'32.13"S 18°52'38.44"E	View from the Paradyskloof Nature Area (main track)	West	1,4 km	Glimpse (existing trees partially obscure the view)
KOP 5	33°57'16.47"S 18°52'19.16"E	View from the Paradyskloof Nature Area (main track) north of the neighbourhood of Brandwacht	Southwest	700m	Glimpse (existing trees partially obscure the view)
KOP 6	33°57'46.21"S 18°51'26.50"E	8551 -8552. View from the along Paradyskloof Road at the entrance of Kings View Residential Estate	Northeast	500m	Full (as residential construction progress views from the entrance will most likely not be visible

Key Observation Point	Location	Description	Viewing direction	Approximate distance from infrastructure	Visibility
					anymore, however this view is a representation of a typical view from houses bordering the proposed development.
KOP 7	33°57'53.30"S 18°51'39.34"E	View from existing Wildebosch Road where will tie in with the new section of Wildebosch Road.	Northeast	N/A	Full
KOP 8	18°51'39.34"E 18°51'10.52"E	View from the entrance of Stellenbosch Golf Course	East – Southeast	800m	Glimpse, existing houses and trees obscure views.
KOP 9	33°57'31.59"S 18°51'30.66"E	View from the Grondves premises.	East	350m	Full
KOP 10	33°57'25.07"S 18°51'20.86"E	View from the entrance of Trumali Office Park along Trumali Road	East	130m	Full

Figure 18: KOP 1

Figure 19: KOP 2

Figure 20: KOP 3

Figure 21: KOP 4

Figure 22: KOP 5

Figure 23: KOP 6

Figure 24: KOP 7

Figure 25: KOP 8

Figure 26: KOP 9

Figure 27: KOP 10

8 Impact Assessment

8.1 Main issues

Based on the type of infrastructure components and the nature of the receiving environment (obtained during the desktop study and confirmed during the site visit) the main landscape and visual issues identified are listed in section 8.1.1 and 8.1.2.

8.1.1 Construction phase

- The change in landscape character through construction activities such as vegetation clearance and the presence of heavy machinery; and
- Visually intrusive construction activities such as the clearing of vegetation, earthworks (cut and fill), trenching, waste generation, material laydown areas (stockpiling), construction vehicle use (dust emissions) and temporary site offices.

8.1.2 Operational phase

- The visibility and visual exposure from the proposed infrastructure for receptors permanently residing next to the site;
- The visibility and visual exposure for receptors experiencing longer range views from the R44 and the Paradyskloof Nature Reserve;
- The visual intrusiveness of the completed road and the ability of the surrounding landscape to visually absorb the proposed changes;
- The proposed buildable area for the extension of Wildebosch Road is currently undeveloped and consist out of pastures (used for grazing) or informal recreational purposes (section of open lawn along Seuer Road) or vineyards. Development would result in a change in visual character from an open unbuilt landscape to a built landscape; and
- Degradation of the cultural landscape and overall semi-rural character of the study area due to the expansion of the town road network (loss of intrinsic value of natural and cultural landscapes affecting the visual amenity of local communities).

8.2 Landscape impacts

Landscape impacts relates to physical changes to the landscape character and to the landscape as a resource. During the operational phase, the proposed development will include local changes to existing landscape views due to the upgrade of Trumali Street and the extension of Wildebosch Road. During the construction stage, additional impacts such as construction camps and the increase in construction vehicle activity will create further impacts in addition to the main infrastructure components. Landscape scarring from exposed cut slopes, spoil sites and possible soil erosion around cleared areas during the construction phase of the project may also contribute to landscape impacts in localised areas.

8.2.1 Impact on landscape character and sense of place

Impact defined: *A change in the landscape character and sense of place of the study area through the addition of urban infrastructure, resulting in negative changes to the landscape character and sense of place.*

Sense of place is the unique value that is allocated to a specific place or area through the cognitive experience of the user or receptor. It is generated by varying combinations of a range of factors including land use, character, and quality of a landscape, as well as by the tangible and intangible value assigned thereto. As such, sense of place is a subjective matter that differs from person to person based on individual backgrounds, experiences, norms, values, and aspirations. While many factors influencing the sense of place are tangible (e.g., increased development, more people, noise, dust), sense of place can also be significantly altered by a change in intangible factors (e.g., socio-cultural norms and values).

Well-maintained vineyards or pastures in suitable areas are key components of the much-valued Stellenbosch Winelands cultural landscape, construction undertaken in visually prominent areas such as at the foot of the mountain slope can be detrimental to the overall landscape character and sense of place. However, the natural landscape character has already been permanently altered through formal residential development (which include roads similar to the proposed). The clearance of vegetation may significantly change the appearance of the ground surface, since exposed light-coloured sandy soil will contrast reflect more light and contrast with the darker coloured surrounding vegetation and vineyards.

The following impacts on landscape character and sense of place were assessed (reference can be made to Appendix B for the comprehensive impact tables).

- The impact significance as a result of the change in landscape character and sense of place through the introduction of construction activities, vegetation clearing, and the presence of heavy machinery is rated as **minor.**
- The impact significance as a result of the change in visual character from an 'open' rural type of unbuilt landscape to a built landscape is rated as **moderate,** however the significance of this impact can be mitigated to **minor**.
- The impact significance as a result of degradation of the cultural landscape and semi-rural character by the expansion of the town road network is rated as **minor**.

The overall impact on landscape character and sense of place can be rated as minor – moderate.

8.2.1.1 Proposed mitigation guidelines

The negative impacts caused by a permanent change in landscape character and sense of place during the operational phase can be mitigated through the implementation of the proposed mitigation guideline. The mitigation guideline listed below can somewhat lower the intensity during the construction phase of the project, but not the overall significance.

- Minimise or eliminate large scale vegetation clearance for the proposed road servitude and keep and protect existing clusters of large trees in the vicinity of Brandwacht and Le Seuer Road (where feasible) during the construction phase.

8.2.2 Impact on visual intrusion and VAC

Impact defined: *The level of compatibility and the ability of the landscape to visually absorb the proposed infrastructure, including contrasts in form, line, colour, and texture resulting from vegetation clearing and earthworks.*

The proposed infrastructure will be an extension of the town's road network (similar type of infrastructure within the study area) and will be viewed in conjunction with other infrastructure typically found within the urban landscape which have significant height, and which are visually more prominent, such as multi storey buildings and transmission lines. Once the road is operational visual intrusion is expected to be minor. The study area has moderate - high VAC as local topographical changes, existing patches of dense and large trees as well as built infrastructure ensures that the total section of proposed road, for the majority of receptors, cannot be viewed at once (except when viewing from higher laying areas in the east). The proposed curved form of the Wildebosch Road extension also blends in with the existing low rolling foothills of the mountain.

The following impacts as a result of visual intrusion and VAC were assessed (reference can be made to Appendix B for the comprehensive impact tables).

- The impact significance as a result of visually intrusive construction activities such as the clearing of vegetation, earthworks (cut and fill), trenching, waste generation, material laydown areas (stockpiling), construction vehicle use (dust emissions) and temporary site offices are rated as **minor**; and
- The impact significance as a result of the visually intrusiveness of the completed road is rated as **minor**.

The overall impact as a result of visual intrusiveness is rated as minor.

8.2.2.1 Proposed mitigation guidelines

The proposed mitigation guidelines will lower the intensity but will not be able to lower the overall significance of the impacts.

- The construction period should be minimized to the minimum extent possible in order not to cause unnecessary and ongoing visual intrusion for nearby communities;
- A phased approach should be taken with regards to landscape rehabilitation efforts, i.e., landscape rehabilitation should start once sections of the road has been completed;
- The row of street trees along the existing section of Wildebosch Road must be extended into the new section to allow for visual unity whilst driving (enhancing the visual experience) and to soften the "road line" if viewed from a distance;
- If practically feasible road batters should be round and flattened as much as possible;
- Make use of existing access roads so that it minimizes modification of the topography and additional clearing of vegetation;
- Construction signage should not be obtrusive and must be placed with caution in strategic locations as required;
- The Contractor shall ensure ongoing housekeeping to maintain a tidy construction area, this includes the timeously removal of rubble which should be dumped at a registered facility;

- If possible, the construction camp and material laydown area/s must be placed in an already disturbed area or in an area where existing vegetation and/or built structures are able to provide the most effective screening;
- Stockpile heights shall not exceed 3m, except for the vineyards and grazing pastures existing infrastructure and trees will be able to screen heights of 3m and below;
- All stock piles of materials are to be protected against dispersion by any means into the surrounding terrain. This is especially true of cement and diesel which can have a significant long-term negative effect on visual environment if inappropriately used; and
- The Contractor shall not deface, paint, damage or mark any natural feature (e.g., rocks, etc.) situated on or around the site for survey or any other purposes unless agreed beforehand.

8.3 Visual impacts

Visual impacts relate to the recording of existing views and the determination of potential impacts as perceived by those living, working, and visiting the area. Infrastructure within visually significant locations will detract from the existing cultural landscape and interfere with the viewsheds of receptors, including road users of main roads such and local residential settlements in close proximity of the proposed infrastructure.

8.3.1 Impact on visibility and visual exposure

Impact defined: *The visibility and presence of the road (operational phase) and cleared road servitude during construction.*

The anticipated visual envelope for the proposed road will be smaller to the north, south and west than indicated in the viewshed analysis, mainly as a result of the screening effects of trees and built-up areas. Longer range views will be possible and sections of the proposed infrastructure will be visible from the R44 (where topography allow). The impact on visual exposure and visibility will be more intense during the construction phase due to vegetation clearance, signage, and movement (dust) of construction vehicles and machinery. Windblown dust (especially during construction) could obscure views of nearby landscape features and degrade general visibility for local residents, fugitive dust generated during construction will increase the visual exposure.

The following impacts as a result of visibility and visual exposure were assessed (reference can be made to Appendix B for the comprehensive impact tables).

- The impact significance as a result of the visibility and visual exposure from the proposed infrastructure for receptors permanently residing next to the site are rated as **minor** during the construction phase and **negligible** during the operational phase;
- The impact significance as a result of the visibility and visual exposure for receptors experiencing longer range views from the R44 and the Paradyskloof Nature Reserve are rated as **minor** during the construction phase and **negligible** during the operational phase.

The overall impact on visibility and visual exposure is rated as minor during the construction phase and negligible during the operational phase.

8.3.1.1 Proposed mitigation guidelines

Mitigation measures as listed under section 8.2.2.1 are also applicable under this section.

8.4 Cumulative impacts

The proposed development will extend the cumulative effect of urban development within the landscape which could lead to the construction of more residential areas west, north and east of the extended road (further transformation of the rural agricultural character of vineyards and green pastures to a more urban character).

During the time of writing this report there were a few active construction projects (residential) within the study area, if the proposed road and future residential projects are constructed simultaneously the overall cumulative visual impact will increase for nearby residents.

9 Conclusion

The change in the landscape character of the study area is mostly a result of the removal of existing vineyards and grazing pastures, the extension of the town road network, the implementation of earthworks and the construction of the proposed road. A variety of shapes, lines, textures, and patterns are visible in the landscape, this is mostly as a result of the variety of land uses such as agricultural activities, residential infrastructure, open pastures and larger scale typical urban infrastructure which increases the overall VAC and reduces the proposed infrastructure's visual intrusion upon the landscape.

The most important views will be from the north and south as the receptor quantity is the highest, however, visibility and visual exposure will be limited, mainly due to the urban built form and dispersed patches of clumps of dense trees. Long range views are possible where receptor quantities are low i.e., from the east and north east, these receptors will be looking down on the proposed infrastructure, but visual impact will be lowered due to the distance.

The most affected receptors are those residing directly next to the site, especially residents along the southern boundary of Brandwacht on River Estate and residents on Du Clair Street (next to the site boundary at the extension of Wildebosch Road in Paradyskloof). The visual envelope will be slightly smaller than indicated in the viewshed and overall visibility will be lower than theoretically indicated.

During construction the landscape and visual impacts remains minor as the overall duration is expected to be limited, however the intensity of the anticipated landscape and visual impacts is expected to be highest during the peak construction phase of the project.

Landscape and visual impact are expected to be negligible during the operational phase (except for the anticipated impact caused by the change in visual character from an 'open' rural type of unbuilt landscape to a built landscape which are rated as moderate but can be reduced to minor if mitigation guidelines are implemented).

With reference to Oberholzer, B. (2005) moderate - high landscape and visual impact is expected, however, after the site visit and specialist assessment the overall combined anticipated landscape and visual impact is expected to be minimal and from a visual perspective it is not fatally flawed, this is largely as a result of:

- Existing similar type of infrastructure within the site/study area. Trumali road has a tarred surface and there are existing prominent gravel roads at the foothill of the mountain mainly associated with the agricultural activities, nature area and access roads to Paradyskloof Water Treatment plant infrastructure;
- The relatively small visual envelope due to the nature of the infrastructure (a road with no significant height)
- The dispersed dense tree stands and built infrastructure offer sufficient screening from most areas within the study area (except for residents residing directly next to the site). It is anticipated that no other sensitive stationary receptors will be directly affected; and
- The proposed infrastructure is not a dominant and significant component in the landscape and blends in well with existing urban forms, colours and textures.

From a visual perspective the proposed project does not heavily impact on landscapes of significant symbolic, aesthetic, cultural and historical value, however every possible effort should be made to make the road blend in with the existing environment. With reference to the existing layout, the topographical form has been respected and the organically shaped

alignment integrate well with the existing contours. Considering this, the implementation of all other mitigation guidelines will lower the intensity of the landscape and visual impacts, but will in most cases, not lower the overall impact significance.

10 References

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3 Mucina, L and Rutherford MC. (2006), The Vegetation of South Africa, Lesotho and Swaziland. SANBI.

4 ttps://www.craiglotter.co.za/2021/03/05/walking-under-the-pine-trees-of-paradyskloof-in-stellenbosch-2021-01-23/. Accessed 20 September 2023

5 GAPP Architects & Infinity Environmental. (2019), Spatial Development Framework. Stellenbosch Municipality.

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9 Oberholzer, B. (2014), Reading the Landscape. Landscape Notebooks.

10 United States Department of Interior, Bureau of Land Management (BLM) (1986) *Manual 8431 Visual Contrast Rating*.

11 United States Department of Interior, Bureau of Land Management (BLM) (1986) *Manual 8410-1 Visual Resource Inventory*.

12 United States Department of Interior, Bureau of Land Management (BLM) (1984) *Manual 8400 Visual Resource Management*.

Appendix A: Impact rating methodology

Calculations

This section outlines the proposed method and calculations for assessing the significance of the potential visual impacts as provided by Zutari (2021). The criteria include the intensity (size or degree of scale), which also includes the type of impact, being either a positive or negative impact; the duration (temporal scale) and the extent (spatial scale). These numerical ratings

Significance = consequence x probability

Consequence = type x (intensity +duration + extent)

are used in an equation whereby the consequence of the impact can be calculated as follows:

To calculate the significance of an impact, the probability (or likelihood) of that impact occurring is applied to the consequence:

Depending on the numerical result the impact would fall into a significance category as negligible, minor, moderate or major, and the type would be either positive or negative.

Intensity

The intensity refers to the degree of alteration of the affected environmental receptor, refer to **Table A 1.**

Table A 1: Description of intensity and assigned numerical values

Numerical Rating	Category	Description
1	**Negligible**	Natural and/ or social functions and/ or processes are negligibly altered
2	**Very low**	Natural and/ or social functions and/ or processes are slightly altered
3	**Low**	Natural and/ or social functions and/ or processes are somewhat altered
4	**Moderate**	Natural and/ or social functions and/ or processes are moderately altered
5	**High**	Natural and/ or social functions and/ or processes are notably altered
6	**Very high**	Natural and/ or social functions and/ or processes are majorly altered
7	**Extremely high**	Natural and/ or social functions and/ or processes are severely altered

Duration

The duration refers to the length of permanence of the impact on the environmental receptor, refer to Table A 2.

Table A 2: Description of duration and assigned numerical values

Numerical Rating	Category	Descriptors
1	**Immediate**	The impact will continue for less than 1 month.

Numerical Rating	Category	Descriptors
2	**Short term**	The impact will continue for between 1 month and 2 years.
3	**Medium term**	The impact will continue for 2-5 years.
4	**Long term**	The impact will continue for 6-15 years.
5	**Project life**	The impact will cease after the operational life span of the project
6	**Beyond project life**	The impact will remain for some time after the life of the project.
7	**Permanent**	The impact will remain indefinitely.

Extent

The extent refers to the geographical scale of impact on the environmental receptor, refer to Table A 3.

Table A 3: Description of extent and assigned numerical values

Numerical Rating	Category	Descriptors
1	**Very limited**	Impacts very limited / felt in isolated areas of the study area
2	**Limited**	Impacts limited to specific parts of the study area
3	**Local**	Impacts felt mostly throughout the study area
4	**Municipal area**	Impacts felt outside the study area, at a municipal level
5	**Regional**	Impacts felt outside the study area, at a regional/provincial level
6	**National**	Impacts felt outside the study area, at a national level
7	**International**	Impacts felt outside the study area, at an international level

Probability

To calculate the significance of an impact, the probability (or likelihood) of that impact occurring is also considered, refer to Table A 4.

Table A 4: Definition of probability ratings

Numerical Rating	Category	Descriptors
1	**Highly unlikely / None**	Expected never to happen
2	**Rare / improbable**	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
3	**Unlikely**	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur
4	**Probable**	Has occurred here or elsewhere and could therefore occur
5	**Likely**	The impact may occur
6	**Almost certain / Highly probable**	It is most likely that the impact will occur
7	**Certain / Definite**	There are sound scientific reasons to expect that the impact will definitely occur

Significance

Table A 5: Application of significance ratings

Range		Significance rating
-147	**-109**	Major (-)
-108	**-73**	Moderate (-)
-72	**-36**	Minor (-)
-35	**-1**	Negligible (-)
0	**0**	Neutral
1	**35**	Negligible (+)
36	**72**	Minor (+)
73	**108**	Moderate (+)
109	**147**	Major (+)

When assessing impacts, broader considerations should also be considered. These include the level of confidence in the assessment rating; the reversibility of the impact; and the irreplaceability of the resource as set out in respectively in **Error! Reference source not found.** – **Error! Reference source not found.**.

Table A 6: Definition of confidence ratings

Rating	Descriptor
Low	Judgement is based on intuition
Medium	Determination is based on common sense and general knowledge
High	Substantive supportive data exists to verify the assessment

Table A 7: Definition of reversibility ratings

Rating	Descriptor
Low	The affected environment will not be able to recover from the impact – permanently modified
Medium	The affected environment will only recover from the impact with significant intervention
High	The affected environmental will be able to recover from the impact

Table A 8: Definition of irreplaceability ratings

Rating	Descriptor
Low	The resource is not damaged irreparably or is not scarce
Medium	The resource is damaged irreparably but is represented elsewhere
High	The resource is irreparably damaged and is not represented elsewhere

Appendix B: Impact rating spreadsheet

Ref:	1			
Project phase	**Construction**			
Impact	**Change in landscape character and sense of place**			
Description of impact	**Change in landscape character and sense of place through the introduction of construction activities, vegetation clearing and the presence of heavy machinery**			
Mitigatability	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts		
Potential mitigation	**Refer to report**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Short term	impact will last between 1 and 5 years	Short term	impact will last between 1 and 5 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	Moderate	Natural and/ or social functions and/ or processes are moderately altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
Probability	Likely	The impact may occur	Likely	The impact may occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	**Minor - negative**		**Minor - negative**	
Comment on significance	Refer to report			
Cumulative impacts	Refer to report			

Ref:	2			
Project phase	**Operation**			
Impact	**Change in landscape character and sense of place**			
Description of impact	**The change in visual character from an 'open' rural type of unbuilt landscape to a built landscape**			
Mitigatability	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	**Refer to report**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	

Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	High	Natural and/ or social functions and/ or processes are notably altered	Moderate	Natural and/ or social functions and/ or processes are moderately altered
Probability	Likely	The impact may occur	Likely	The impact may occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	**Moderate - negative**		**Minor - negative**	
Comment on significance	Refer to report			
Cumulative impacts	Refer to report			

Ref:	3			
Project phase	**Operation**			
Impact	**Change in landscape character and sense of place**			
Description of impact	**Degradation of the cultural landscape and semi-rural character by the expansion of the town road network.**			
Mitigatability	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts		
Potential mitigation	**Refer to report**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	z
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	Moderate	Natural and/ or social functions and/ or processes are moderately altered	Moderate	Natural and/ or social functions and/ or processes are moderately altered
Probability	Likely	The impact may occur	Likely	The impact may occur

Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	**Minor - negative**		**Minor - negative**	
Comment on significance	Refer to report			
Cumulative impacts	Refer to report			

Ref:	4

Project phase	**Construction**			
Impact	**Visually intrusion and VAC**			
Description of impact	**Visually intrusive construction activities such as the clearing of vegetation, earthworks (cut and fill), trenching, waste generation, material laydown areas (stockpiling), construction vehicle use (dust emissions) and temporary site offices.**			
Mitigatability	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts		
Potential mitigation	**Refer to report**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Short term	impact will last between 1 and 5 years	Short term	impact will last between 1 and 5 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	High	Natural and/ or social functions and/ or processes are notably altered	Moderate	Natural and/ or social functions and/ or processes are moderately altered
Probability	Likely	The impact may occur	Likely	The impact may occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere

Significance	**Minor - negative**		**Minor - negative**	
Comment on significance	Refer to report			
Cumulative impacts	Refer to report			
Ref:	5			
Project phase	**Operation**			
Impact	**Visual intrusion and VAC**			
Description of impact	**The visually intrusiveness of the completed road**			
Mitigatability	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts		
Potential mitigation	**Refer to report**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	Low	Natural and/ or social functions and/ or processes are somewhat altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
Probability	Unlikely	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur	Unlikely	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	**Minor - negative**		**Minor - negative**	
Comment on significance	Refer to report			
Cumulative impacts	Refer to report			
Ref:	6			
Project phase	**Construction**			
Impact	**Visibility and visual exposure**			
Description of impact	**Visibility and visual exposure from the proposed infrastructure for receptors permanently residing next to the site**			
Mitigatability	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts		

Potential mitigation	**Refer to report**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Short term	impact will last between 1 and 5 years	Short term	impact will last between 1 and 5 years
Extent	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
Intensity	Very high	Natural and/ or social functions and/ or processes are majorly altered	High	Natural and/ or social functions and/ or processes are notably altered
Probability	Probable	The impact has occurred here or elsewhere and could therefore occur	Probable	The impact has occurred here or elsewhere and could therefore occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	**Minor - negative**		**Minor - negative**	
Comment on significance	Refer to report			
Cumulative impacts	Refer to report			

Ref:	7

Project phase	**Operation**			
Impact	**Visibility and visual exposure**			
Description of impact	**Visibility and visual exposure from the proposed infrastructure for receptors permanently residing next to the site**			
Mitigatability	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts		
Potential mitigation	**Refer to report**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings

Intensity	Negligible	Natural and/ or social functions and/ or processes are negligibly altered	Negligible	Natural and/ or social functions and/ or processes are negligibly altered
Probability	Unlikely	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur	Unlikely	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	**Negligible - negative**		**Negligible - negative**	
Comment on significance	Refer to report			
Cumulative impacts	Refer to report			

Ref:	8			
Project phase	**Construction**			
Impact	**Visibility and visual intrusion**			
Description of impact	**Visibility and visual exposure for receptors experiencing longer range views from the R44 and the Paradyskloof Nature Reserve**			
Mitigatability	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts		
Potential mitigation	**Refer to report**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Short term	impact will last between 1 and 5 years	Short term	impact will last between 1 and 5 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	High	Natural and/ or social functions and/ or processes are notably altered	Moderate	Natural and/ or social functions and/ or processes are moderately altered
Probability	Probable	The impact has occurred here or elsewhere and could therefore occur	Probable	The impact has occurred here or elsewhere and could therefore occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge

Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	**Minor - negative**		**Minor - negative**	
Comment on significance	Refer to report			
Cumulative impacts	Refer to report			

Ref:	9

Project phase	**Operation**			
Impact	**Visibility and visual intrusion**			
Description of impact	**Visibility and visual exposure for receptors experiencing longer range views from the R44 and the Paradyskloof Nature Reserve**			
Mitigatability	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts		
Potential mitigation	**Refer to report**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	Negligible	Natural and/ or social functions and/ or processes are negligibly altered	Negligible	Natural and/ or social functions and/ or processes are negligibly altered
Probability	Unlikely	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur	Unlikely	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	**Negligible - negative**		**Negligible - negative**	
Comment on significance	Refer to report			
Cumulative impacts	Refer to report			

Appendix C: Curriculum Vitae

Name	:	**WEIDEMAN, ELMIE**
Date of Birth	:	28 September 1984
Profession/Specialisation Assessments	:	Landscape Architecture /Visual Impact
Nationality	:	South African
Years' experience	:	15

Key qualifications

Elmie is a professionally registered Landscape Architect *(SACLAP 20223)* and the owner of Create Landscape Architecture and Consulting. She is proficient in various aspects related to Landscape Architecture. This includes sustainable landscape design and comprehensive master planning from the conceptual stages through to detail design and implementation. She has also been involved with various design projects which have successfully achieved formal landscape sustainability credits.

She has gained valuable experience in the environmental part of Landscape Architecture where she has mostly dealt with landscape and vegetation rehabilitation, environmental management programmes (EMP's), environmental auditing/monitoring and Landscape and Visual Impact Assessments (LVIA's).

Elmie has worked on various international projects in Lesotho, Abu Dhabi, Nigeria, Kenya, Angola, Malawi, Liberia, Guinea, Botswana, and Mozambique. Elmie has 13 years of experience and holds a Master's (2008) and an Honours degree (2007) in Landscape Architecture, both which she obtained from the University of Pretoria in South Africa.

Relevant previous specialist studies undertaken:

Ekurhuleni Solar Projects (Gauteng Province, South Africa) 06/2023- 07/2023. Visual Specialist. Create Landscape Architecture and Consulting has been appointed by EnviroSaint to undertake the Landscape and Visual Impact Assessment for the proposed PV Facility near Brakpan.

*Humansdorp PV facility (Eastern Cape Province, South Africa) 03/ 2023 – 04/2023 Visual Specialist***.** Create Landscape Architecture and Consulting has been appointed by EnviroSaint to undertake a Landscape and Visual Impact Assessment for PV facility near Humansdorp.

Ribbok and Eland WEF and SEF site sensitivity assessment (Northern Cape Province, South Africa)11/2022 – 03/2023 Visual Specialist. Create Landscape Architecture and Consulting has been appointed by an independent environmental consulting firm to undertake a site sensitivity assessment on various parcels of land which are earmarked for extensive SEF and WEF development.

Sinati Housing Estate (East London, Eastern Cape Province) 01/2023 – 02/2023
Visual Specialist. Create Landscape Architecture and Consulting has been appointed by ECI Consultants to undertake a Landscape and Visual Impact Assessment for a proposed housing estate close to the city of East London. (Billion Group)

Venetia Mine Glint and Glare Assessment (Alldays, Limpopo Province) 10/2022 – 12/2022

Glint and Glare Specialist. Create Landscape Architecture and Consulting was appointed by SRK Consultants to undertake the aviation and ground receptor glint and glare assessment for a proposed solar facility close to the Venetial Mine. (Anglo American)

Waterkloof SEF (Rustenburh, North West Province) 08/2022 – 12/2022. Visual Impact Specialist. Create Landscape Architecture and Consulting has been appointed by GIBB Environmental to undertake the Landscape and Visual Impact Assessment for the proposed PV Facility at the Bafokne Rasimone Platinum Mine.

Siriti Kriel Open Pit Mining Pits and Dragline, (Kriel, Mpumalanga Province) 02/2022 - present. Visual Impact Specialist. Create Landscape Architecture and Consulting has been appointed by Zutari South Africa to undertake the Landscape and Visual Impact Assessment for the proposed Pit 11 and 13 Opencast Operation and associated Dragline Walk at Kriel Colliery. (Seriti Coal (Pty) Ltd).

Mosselbay Energy proposed 1000MW Gas Plant (Mossel Bay South Africa) 11/2021 – 03/2022 Visual Impact Specialist. Create Landscape Architecture and Consulting has been appointed by Sativatec to undertake a Landscape and Visual Impact Assessment for a 1000MW Gas Plant close to the town of Mosselbay. (PetroSA)

Greenleaf Energy 3000MW Plant (Mossel Bay, South Africa) 01/2022 – 03/2022. Visual Impact Specialist. Create Landscape Architecture and Consulting has been appointed by Sativatec to undertake a Landscape and Vsual Impact Assessment for a 3000MW Gas Plant close to the town of Mosselbay. (Greenleaf Energy)

Dwaalboom Mining Rights (North West Province, South Africa) 02/2022 – 03/2022 Visual Impact Specialist. Create Landscape Architecture and Consulting has been appointed by EnviroSaint (Pty) Ltd. to conduct a Landscape and Visual Impact Assessment for a Mining Right Application (MRA) for Dangote Dwaalboom Mining (Pty) Ltd, a wholly owned subsidiary of Dangote Cement South Africa (Pty) Ltd. (Dangote Dwaalboom Mining (Pty) Ltd)

Benadeplaats Prospecting Rights (North West Province, South Africa) 02/2022 Visual Impact Specialist. Create Landscape Architecture and Consulting has been appointed by Sativatec to conduct a visual specialist study for the Witkop Fluorspar Mine which intend to apply for prospecting rights on Portion 8 of the Farm Benadeplaats.

Cresco De Beers PV Project (Limpopo Province, South Africa) 10/2021- 03/2022 Visual Impact Specialist. Zutari South Africa appointed Create Landscape Architecture and Consulting to conduct a Landscape and Visual Impact Assessment for a 100-Megawatt (MW) alternating current (MWac) Photovoltaic (PV) solar energy facility next to the Venetia Diamond Mine. This is done in order to reduce its consumption of grid-supplied power by procuring locally generated solar power. (De Beers Venetia)

God's Window Skywalk Project (Mpumalanga Province, South Africa) 02/2022 -06/2022. Visual Impact Specialist. Zutari Lesotho appointed Create Landscape Architecture and Consulting to conduct a preliminary visual inputs report and Landscape and Visual Impact Assessment for the newly proposed God's Window Skywalk and associated tourist building. The Skywalk involves a cantilevered structure which will protrude over the canyon's edge. (Mpumalanga Tourism and Parks Agency/ Mapulana Canyon (Pty) Ltd)

Polihali Reservoir Master Plan of the Feeder Roads and Bridges (Lesotho) 05/2021 – 05/2022t. Visual Impact Specialist. Zutari South Africa appointed Create Landscape Architecture and Consulting to conduct an options analysis (in terms of various visual criteria) for the feeder

roads as well as a Landscape and Visual Impact Assessment for the advanced infrastructure which forms part of the Polihali Reservoir. (LHDA)

Mogalakwena PV Facility (Limpopo Province, South Africa) 06/2021 Visual Impact Specialist. Zutari South Africa appointed Create Landscape Architecture and Consulting to conduct a specialist landscape and visual assessment for a PV Facility which will supply energy on an exclusive basis to the Anglo-American Platinum Mogalakwena Mine in Limpopo, South Africa in terms of a Power Purchase Agreement. (Anglo American Platinum)

Cato Ridge Strategic Environmental Assessment (KwaZulu Natal Province) 03/2021 – Current. Visual Impact Specialist. Zutari South Africa appointed Create Landscape Architecture and Consulting to conduct a strategic visual assessment for a 1800ha mixed used development to stimulate economic opportunities across the wider community of Cato Ridge. Due to the scale of the proposed footprint, coupled with environmental sensitivities and long-term development horizon, a Strategic Environmental Assessment (SEA) is proposed to refine potential layout options and no-go areas. (Assmang (Pty) Ltd and Cato Ridge Development Company Ltd (CRDC))

Mokolo Crocodile Water Augmentation Project (MCWAP) Phase 2 Environmental Impact Assessment. (Limpopo Province, South Africa) 01/2021 -04/2021 Visual Impact Specialist. GBN - JV appointed InterDesign Landscape Architects to conduct the specialist Landscape and Visual Impact Assessment for the MCWAP phase 2. The project involves the transfer of water from the Crocodile River (West) to the Steenbokpan and Lephalale areas, including the implementation of the River Management System in the Crocodile River (West) and its tributaries. The aim of the Landscape and Visual Impact Assessment was to determine the visual impact of infrastructure elements based on the latest engineering designs. (Department of Water and Sanitation)

Landscape and visual impact assessment for a mining right application near Vanrhynsdorp (Western Cape Province, South Africa) 01/2021 Visual Impact Specialist. Sativatec appointed CREATE Landscape Architects and Consulting for conducting the specialist landscape and visual impact assessment which forms part of the Environmental Impact Assessment study. The aim of the application for environmental authorisation is to graduate the prospecting rights into a composite mining right for Limestone, Calcite, Aggregate, Dolomite and Dolomitic Limestone on two sites in the Vanrhynsdorp district. (Blue Waves Properties (Pty) Ltd.

ANNA Transmission Project (Angola – Namibia) 01/2019 – 02/2020 Visual Impact Specialist .Create Landscape Architecture and Consulting was appointed by Aurecon South Africa to do a visual impact assessment for the 400kV overhead transmission power line, with a total length of approximately 390 km from the Kunene substation in Namibia (currently under construction) to the proposed Lubango substation in Angola. (SAPP cc (South African Power Pool) via Aurecon South Africa)

Eskom KZN northern strengthening Visual Impact Assessment (Kwazulu – Natal, South Africa) 07/2016 – 11/2017 Visual Impact Specialist. The Northern KZN Strengthening project consists of the construction of the new Iphiva Substation situated near Mkuze, approximately 20km west of the Mkuze Game Reserve, a new feeder bay at the Normandie Substation (situated approximately 18km south east of the town of Piet Retief) and a 120km Transmission Line will also be constructed, connecting these 2 substations. (Eskom)

Amandelbult Visual Impact Statement (North West Province, South Africa) 01/2017 – date Visual Impact Specialist. Rustenburg Platinum Mines Limited (RPM), owned by Anglo American Platinum (Pty) Ltd proposes the mining of shallow reefs for Platinum Group Elements (PGE) through the proposed Haakdoorndrift Opencast pit at its Amandelbult Section within its Mining Right boundary. A visual statement was compiled on order to measure the visual

impact of the proposed development on the receiving environment. (Anglo American Platinum)

BOSA Visual Impact Assessment 06/2016 – date (North West Province South Africa – Botswana) Visual Impact Specialist. Aurecon has been appointed to undertake an Environmental and Social Impact Assessment (ESIA) study to assess and address environmental and social impacts associated with the Botswana-South Africa (BOSA) Transmission Interconnection Project. A visual impact assessment of the study area is required to inform the ESIA of the potential impacts posed by the construction and operational activities of the proposed project.

Nuclear 1 specialist review 08/2015 Visual Impact Specialist. Aurecon South Africa has been appointed by GIBB to conduct an external specialist study review for the proposed Nuclear 1 power plant. (GIBB)

Olifants Water Reclamation Project (Limpopo Province, South Africa) 07/2015 –12/2015 Visual Impact Specialist. The Olifants River Water Resource Development Project (ORWRDP) is an extensive water resource development project which will supply water for domestic and industrial use in the Limpopo province. The DWA appointed the Trans –Caledon Tunnel Authority (TCTA) as project implementer to oversee the project funding, planning and construction of phases 2B to 2F, whilst at the same time taking account of environmental obligation compliance. The project involves the construction of bulk water transfer pipelines between Flag Bashielo Dam and Pruissen Reservoir near Mokopane (total length 72km) and between De Hoop dam and Olifantspoort (total length120km). The project will deliver water to the domestic as well as the mining sector. (TCTA).

Sibanye Gold PV plant Visual Impact Assessment (Carletonville, South Africa) 07/2014 –2016 Visual Impact Specialist. Aurecon South Africa was appointed by Sibanye Gold to conduct a site screening, scoping and final EIA study for their proposed 200MW photovoltaic energy facility. (Sibanye Gold).

Saldanha tank farm (Western Cape Province, South Africa) 03/2012 - 03/2013. Visual Impact specialist. Aurecon was appointed as visual sub consultant on both the scoping and environmental impact assessment phase for an extension to the existing oil tank farm located close to Saldanha Bay. Responsible for the visual impact assessment. (Worley Parsons).

Eskom: Sigma - Theta power station power line (KwaZulu-Natal Province, South Africa) 12/2010 – 06/2011. Visual Specialist. Aurecon was appointed to complete an environmental impact assessment (EIA) and environmental management plan (EMP) for the proposed power line from Albert Falls in the Natal Midlands to Empangeni for the establishment of two 400 kV power lines, approximately 150 km in length, to link the Sigma substation and the Theta substation. Responsible for the visual impact assessment (VIA). (Eskom).

Kriel Power Station (Mpumalanga Province, South Africa) 11/2009 - 04/2015. Environmental Specialist. Aurecon was appointed to compile an environmental impact assessment (EIA) and environmental management plan (EMP) for an extension to the existing ash dam facilities. Responsible, as a member of the specialist team, for compiling a visual impact assessment (VIA) focusing on two alternative sites. (Eskom).

All GIS modelling was conducted by Stephen Townshend from Townshend Geospatial, who has a BSc. Geography degree and which have extensive experience in GIS modelling and viewsheds analyses specifically related to landscape and visual impact assessments, and recently for glint and glare assessments.

Appendix D: Specialist declaration

Declaration of independence

I, Elmie Weideman declare that:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if it results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may comprise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the ACT, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations, and all other applicable legislation;
- I have no, and will not engage in, conflicting interest in the undertaking of this activity;I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing -any decision to be taken with respect to the application by the competent authority; and – the objectivity of any report, plan, or document to be prepared by myself for submission to the competent authority; all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

Elmie Weideman Pr. Larch *SACLAP 20223*
CREATE Landscape Architecture and Consulting
January 2023