VISUAL IMPACT *ASSESSMENT* REPORT

Harmony Nooitgedacht Tailings Storage Facility

18 February 2024

GYLA

VISUAL IMPACT *ASSESSMENT* REPORT

PROPOSED HARMONY NOOITGEDACHT TAILINGS STORAGE FACILITY

FREE STATE, SOUTH AFRICCA

Submitted to:

Environmental Impact Assessment Services

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Report Revision No:	*FINAL Rev 01 -Responded to EAP Comments*
Date Issued:	18 Febreuary 2024
Prepared By:	Graham Young PrLArch, FILASA
Reviewed By:	Graham Young PrLArch, FILASA

Signed:

Reference: 104_2023: Harmony Nooitgedacht TSF - VIA

EXPERTISE OF SPECIALIST

Name:	Graham A Young
Qualification:	BL (Toronto) ML (Pretoria)
Professional Registration:	South African Council for the Landscape Architectural Profession (SACLAP) Reg. No. 87001 Fellow Institute of Landscape Architects of South Africa (FILASA)
Experience in Years:	Over 40 years
Experience	Graham Young is a registered landscape architect with interest and experience in landscape architecture, urban design, and environmental planning. He holds a degree in landscape architecture from the Universities of Toronto (BL) and Pretoria (ML). He has carried out visual impact assessments in Canada and throughout Africa, where he has spent most of his working life. He has served as President of the Institute of Landscape Architects of South Africa (ILASA) and as Vice President of the Board of Control for Landscape Architects. He is a Fellow of the ILASA and a professionally registered landscape architect in South Africa (SACLAP). He is President of the International Federation of Landscape Architect, Africa Region (IFLA Africa) and Vice President of IFLA World. He runs his practice, Graham A Young Landscape Architect (GYLA). A specialty is Visual Impact Assessments for which he has been cited with an Institute of Landscape Architects of South Africa (ILASA), Merit Award (1999). Aspects of this work also include landscape characterisation studies, end-use studies for quarries, and computer modelling and visualisation. He has completed over 300 specialist reports for projects and conducted several VIA reviews. He has served as a specialist witness in legal cases involving visual impact issues. Mr Young helped develop the *Guideline for Involving Visual and Aesthetic Specialists in EIA Processes* (Oberholzer 2005) and produced a research document for Eskom, *The Visual Impacts of Power Lines* (2009). In 2011 he produced '*Guidelines for involving visual and aesthetic specialists'* for the Aapravasi Ghat Trust Fund Technical Committee, which manages a World Heritage Site in Mauritius, along with the *Visual Impact Assessment Training Module Guideline Document* for the same client.

DECLARATION OF INDEPENDENCE

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

	(For official use only)
File Reference Number:	
NEAS Reference Number:	DEA/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

PROJECT TITLE

Harmony Nooitgedacht Mine: Tailings Storage Facility - Visual Impact Scoping Report

Specialist Company Name:	Graham Young Landscape Architect			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	4	Percentage Procurement recognition	100%
Specialist name:	Graham Albert Young			
Specialist Qualifications:	BL (Toronto), ML (Pretoria)			
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I, Graham Albert Young 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 this results in views and findings that are not favourable to the applicant.
- I declare that there are no circumstances that may compromise 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 interests in the undertaking of the 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

Graham A. Young Landscape Architect

Name of Company:

29 August 2023

Date

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PROTECTION OF PERSONAL INFORMATION ACT

In compliance with the Protection of Personal Information Act, No. 37067 of 26 November 2013, please ensure the following:

- Any personal information provided herein has been provided exclusively for use as part of the public participation registration process and may, therefore, not be utilised for any purpose other than that for which it was provided.
- No additional copies of documents containing personal information may be made unless permission has been obtained from the owner of said information.
- All documentation containing personal information must be destroyed as soon as the purpose for which the information was collected has run out.

SPECIALIST REPORTING REQUIREMENTS

Specialist Reporting Requirements According to Appendix 6 of the National Environmental Management Act (Act No. 107 of 1998), Environmental Impact Assessment (EIA) Regulation 2014 (as amended on 7 April 2017)	
Requirement	**Relevant section in report**
Details of the specialist who prepared the report	Pg iii and Appendix B
The expertise of that person to compile a specialist report including a curriculum vitae	Pg iii and Appendix B
A declaration that the person is independent in a form as may be specified by the competent authority	Pg iv
An indication of the scope of, and the purpose for which, the report was prepared;	Section 1.3 and 1.4
An indication of the quality and age of base data used for the specialist report;	Section 1.5
A description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 8.4
The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 1.4 and 3.2
A description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 3
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	Section 6
An identification of any areas to be avoided, including buffers	Section 8.2
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;	Figures 5 and 6
A description of any assumptions made and any uncertainties or gaps in knowledge;	Section 1.5
A description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Section 8
Any mitigation measures for inclusion in the EMPr;	Section 9
Any conditions for inclusion in the environmental authorisation	Section 10
Any monitoring requirements for inclusion in the EMPr or environmental authorisation	Section 10

A reasoned opinion whether the proposed activity, activities or portions thereof should be authorised regarding the acceptability of the proposed activity or activities; and	Section 12
If the opinion is that the proposed activity, or activities or portions thereof should be authorised, any avoidance, management, and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	Section 11
A description of any consultation process that was undertaken during the carrying out the study	N/A this activity is being carried out by EIMS
A summary and copies of any comments that were received during any consultation process	N/A
Any other information requested by the competent authority.	N/A

ACRONYMS, ABBREVIATIONS AND GLOSSARY

Acronyms & Abbreviations	
BAR	Basic Assessment Report
BFS	Bankable Feasibility Study
BID	Background Information Document
EIA	Environmental and Impact Assessment
EMPr	Environmental Management Programme
GYLA	Graham A. Young Landscape Architect (Sole Proprietor)
SACLAP	South African Council for the Landscape Architectural Profession
TSF	Tailing Storage Facility
VAC	Visual Absorption Capacity
VIA	Visual Impact Assessment

Glossary	
Aesthetic Value	Aesthetic value is the emotional response derived from the experience of the environment with its natural and cultural attributes. The response can be either to visual or non-visual elements and can embrace the sound, smell and any other factor having a strong impact on human thoughts, feelings, and attitudes (Ramsay, 1993). Thus, aesthetic value encompasses more than the seen view, visual quality, or scenery, and includes atmosphere, landscape character, and sense of place (Schapper, 1993).
Aesthetically significant place	A formally designated place visited by recreationists and others for the express purpose of enjoying its beauty. For example, tens of thousands of people visit Table Mountain on an annual basis. They come from around the country and even from around the world. By these measurements, one can make the case that Table Mountain (a designated National Park) is an aesthetic resource of national significance. Similarly, a resource that is visited by large numbers who come from across the region probably has regional significance. A place visited primarily by people whose place of origin is local is generally of local significance. Unvisited places either have no significance or are "no trespass" places.
Aesthetic impact	Aesthetic impact occurs when there is a detrimental effect on the perceived beauty of a place or structure. Mere visibility, even startling visibility of a project proposal, should not be a threshold for decision making. Instead, a

	project, by its visibility, must interfere with or reduce (i.e. visual impact) the public's enjoyment and/or appreciation of the appearance of a valued resource e.g. cooling tower blocks a view from a National Park overlook (after New York, Department of Environment 2000).
Cumulative Effects	The summation of effects that result from changes caused by development in conjunction with the other past, present, or reasonably foreseeable actions.
Landscape Character	The individual elements that make up the landscape, including prominent or eye-catching features such as hills, valleys, woods, trees, water bodies, buildings, and roads. They are generally quantifiable and can be easily described.
Landscape Impact	Landscape effects derive from changes in the physical landscape, which may give rise to changes in its character and how this is experienced (Institute of Environmental Assessment & The Landscape Institute 1996).
Study area	For this report, this project the study area refers to the proposed project footprint/project site as well as the 'zone of potential influence' (the area defined as the radius about the centre point of the project beyond which the visual impact of the most visible features will be insignificant) which is a 10,0km radius surrounding the proposed project footprint/site.
Project Footprint / Site	For this report, the Project *site*/*footprint* refers to the layout of the project activities as described.
Sense of Place (genius loci)	Sense of place is the unique value that is allocated to a specific place or area through the cognitive experience of the user or viewer. *A genius locus means* 'spirit of the place.'
Sensitive Receptors	Sensitivity of visual receptors (viewers) to a proposed development.
Viewshed analysis	The two-dimensional spatial pattern created by an analysis defines areas, which contain all possible observation sites from which an object would be visible. The basic assumption for preparing a viewshed analysis is that the observer eye height is 1,8m above ground level.
Visibility	The area from which project components would potentially be visible. Visibility depends upon general topography, aspect, tree cover, or other visual obstruction, elevation, and distance.
Visual Envelope	A visual envelope is established through a viewshed analysis, to define the extent of visual influence of a Project.
Visual Exposure	Visibility and visual intrusion qualified with a distance rating to indicate the degree of intrusion and visual acuity, which is also influenced by weather and light conditions.
Visual Impact	Visual effects relate to the changes that arise in the composition of available views because of changes to the landscape, to people's

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

EXECUTIVE SUMMARY

Project Overview and Background

Graham Young Landscape Architect was commissioned by Environmental Impact Management Services (Pty) Ltd (EIMS) to carry out a Visual Impact Assessment (VIA) of the proposed Tailings Storage Facility (TSF) associated with the Harmony Nooitgedacht project, Welkom, Free State ("the Project"). The VIA focuses on the potential impact of the physical aspects of the proposed TSF (i.e. form, scale, and bulk), and its potential impact within the local landscape and receptor context. The VIA forms part of the Environmental Impact Assessment (EIA).

Project site and study area

The Project is located in Mtjhabeng Local Municipality, Free State Province approximately 7km from Welkom Central. Harmony Nooitgedacht TSF is proposed by Harmony Gold Mining Company Limited. The site is immediately west of the R30, south of the R34 and south of the Phakisa Harmony Mine Nyala shaft. The study area is defined as 5km[1] beyond the footprint of the TSF.

The objective of the Study

The main aim of the study is to document the baseline and to ensure that the visual/aesthetic consequences of the proposed Project are understood. The report, therefore, describes the landscape characteristics and scenic resources of the study area, as well as the visually sensitive areas or receptors. It also identifies high-level impacts and potential mitigation measures. To this end, the report has identified key concerns or issues relating to potential visual impacts arising from the project, and which must be addressed in the assessment phase.

Terms of Reference

A specialist study is required to establish the visual baseline and to identify and potential visual impacts arising from the Project based on the general requirements of a comprehensive VIA scoping report. The following terms of reference were established:

- Data collected during a site visit (carried out on 12 May 2023) allows for a description and characterisation of the receiving environment.
- Describe the landscape character, quality and assess the visual resource of the study area.
- Describe the visual characteristics of the components of the Project; and
- Identify and rate (high level) issues that must be addressed in the impact assessment phase.
- Proposed mitigation options to reduce the potential impact of the project.

Assumptions, Uncertainties, and Limitations

The following assumptions limitations have been made in the study:

[1] The extent of the study area is determined by the zone of potential influence, which in this study relates to a radius of 5,0km around the Project site. At 5,0km and beyond the development would recede into the background of views and or be screened by topography and vegetation.

- The description of project components is derived from the Background Information Document (BID) for the Project.

Findings

The existing visual condition of the landscape that may be affected by the proposed Project has been described. The study area's scenic quality has been rated *low* to *moderate* within the context of the sub-region. Sensitive viewing areas and landscape types have been identified and mapped indicating a potentially low sensitivity to the project. However, the results of the public participation process must confirm this assumption.

Impacts on views are the highest when receptors are identified as being sensitive to change in the landscape, and their views are focused on and dominated by the changes to the landscape. The results of the public participation process where not known at the time of writing this report and generic sensitivities were ascribed to indicate that visual issues are potentially a concern to some of the Interested and Affected Parties (I&Aps), particularly those living in residential areas east of the TSF site.

The Project will introduce a land use currently occurring in the sub-region and will cause a MODERATE cumulative loss of and alteration to the baseline's key features and characteristics. The pre-development landscape and views will be affected by the introduction of elements not considered uncharacteristic when set within the attributes of the receiving landscape. The Project would affect receptors travelling through the study area on the R30, R34 and R710 arterial roads south, east and north of the site, farmsteads south west of the site and people living in residential areas within a 3,0 km radius east of the of the site.

The impact (worst case scenario) on the visual environment during all phases of the project is assessed to have a low magnitude (establishment phase) and moderate for the operational and closure phases. The impact would occur over the short term (construction and decommissioning) to long term (37 years for the operational phase). The unmitigated impact would be regional (beyond 5,0km from the site). The significance of impact is predicted to be LOW in the establishment and closure phases and MODERATE during the operational phase. A moderate negative impact could have a direct influence on the decision to develop in the area.

The impact may result in the low irreplaceable loss of resources (i.e. where the impact is unlikely to result in the irreplaceable loss of resources), primarily due to the baseline visual resource being rated as low to medium.

The implementation of mitigation measures could reduce the predicted impact, but the impact would remain MODERATE during the operational phase. Monitoring and mitigation are, however, essential.

Cumulative effect of the project

The proposed Nooitgedacht TSF project would be an addition to existing mining land-use activities currently prominent in the sub-region. The cumulative effect of the Project, which occurs adjacent to existing mine activities (TSFs) and as such there would be a MODERATE cumulative effect with respect to the other mining activities in the sub region.

Visual Impact Statement

It is the opinion of GYLA that the visual impacts associated with the proposed Project, given the worst case scenario, are of a moderate significance due to the nature, scale and duration of project activities within the

context of the receiving environment. GYLA is of the opinion that the impacts associated with the various phases of the Project can be slightly mitigated. The significance of impact during the operational phase would therefore remain moderate provided that the recommended mitigation measures are implemented and effectively managed.

The Nooitgedacht TSF project is deemed acceptable from a visual perspective.

*** GYLA ***

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1. INTRODUCTION

1.1 Project Overview and Background

Graham Young Landscape Architect was commissioned by Environmental Impact Management Services (Pty) Ltd (EIMS) to carry out a Visual Impact Assessment (VIA) of the proposed Tailings Storage Facility (TSF) associated with the Harmony Nooitgedacht project, Welkom, Free State ("the Project"). The VIA focuses on the potential impact of the physical aspects of the proposed TSF (i.e. form, scale, and bulk), and its potential impact within the local landscape and receptor context. The VIA forms part of the Environmental Impact Assessment (EIA).

1.2 Project site and study area

The Project is located in Mtjhabeng Local Municipality, Free State Province approximately 7km from Welkom Central. Harmony Nooitgedacht TSF is proposed by Harmony Gold Mining Company Limited. The site is immediately west of the R30, south of the R34 and south of the Phakisa Harmony Mine Nyala shaft. The study area is defined as 5km^2 beyond the footprint of the TSF as indicated in Figure 1.

1.3 Objective of the Specialist Study

The main aim of the study is to document the baseline and to ensure that the visual/aesthetic consequences of the proposed Project are understood. The report, therefore, describes the landscape characteristics and scenic resources of the study area, as well as the visually sensitive areas or receptors. It also identifies high-level impacts and potential mitigation measures. To this end, the report has identified key concerns or issues relating to potential visual impacts arising from the project, and which must be addressed in the assessment phase.

1.4 Terms of Reference

A specialist study is required to establish the visual baseline and to identify and potential visual impacts arising from the Project based on the general requirements of a comprehensive VIA scoping report. The following terms of reference were established:

- Data collected during a site visit (carried out on 12 May 2023) allows for a description and characterisation of the receiving environment.
- Describe the landscape character, quality and assess the visual resource of the study area.
- Describe the visual characteristics of the components of the Project; and
- Identify and rate (high level) issues that must be addressed in the impact assessment phase.
- Proposed mitigation options to reduce the potential impact of the project.

1.5 Assumption, Uncertainties, and Limitations

The following assumptions limitations have been made in the study:

- The description of project components is derived from the Background Information Document (BID) for the Project.

[2] The extent of the study area is determined by the zone of potential influence, which in this study relates to a radius of 10,0km around the Project site. At 5,0km and beyond the development would recede into the background of views and or be screened by topography and vegetation.

- Harmony investigated several alternative sites between 2005-2009. “The current situation as described in this report was found to be the best based on locality and several other reasons.”[3] For this reason the Project site is the only site under consideration. i.e. no alternatives have been assessed.

[3] Information supplied by the EAP as a comment on this report

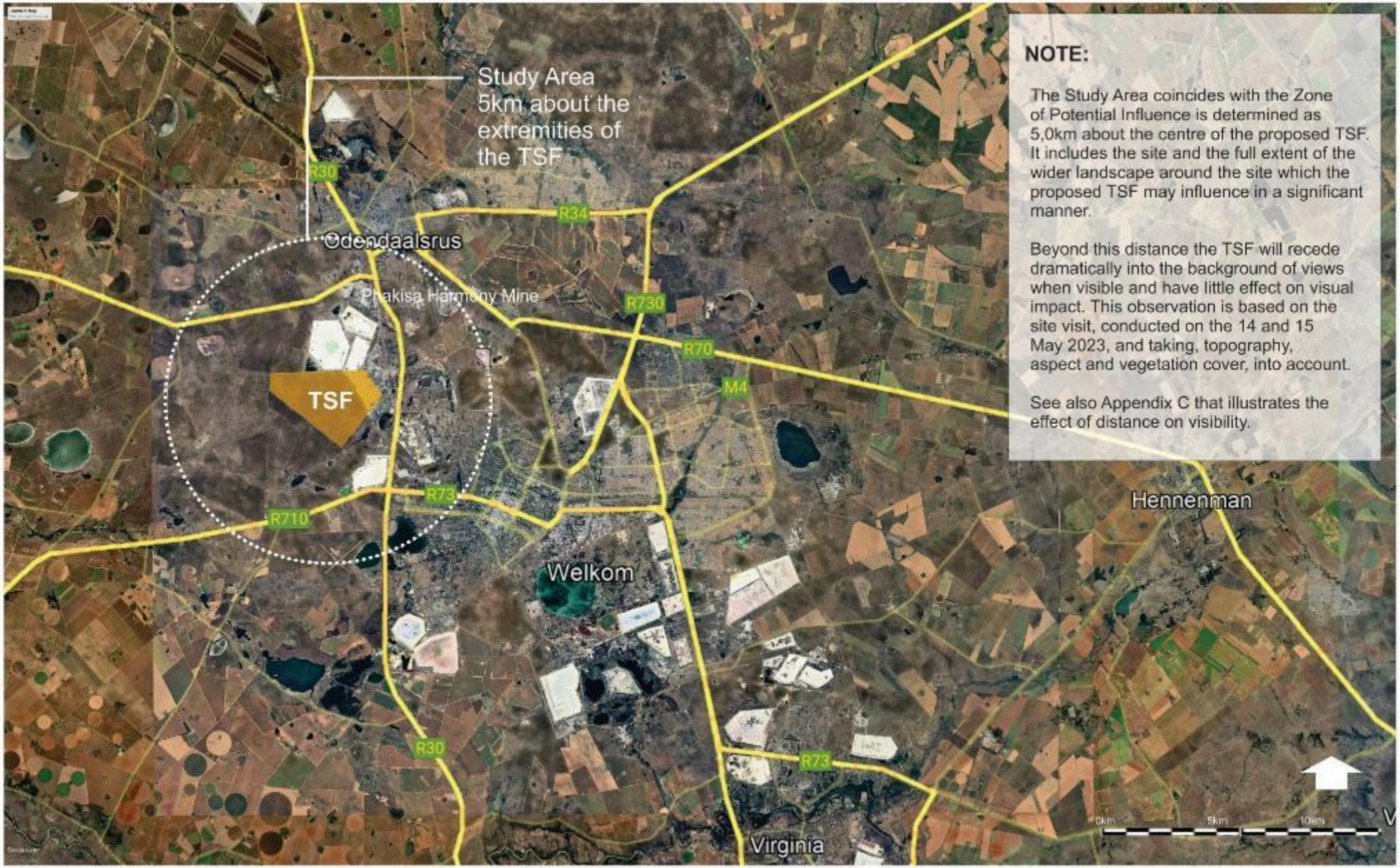


Figure 01: LOCALITY - Nooitgedacht Tailings Storage Facility

2. LEGAL REQUIREMENTS AND GUIDELINES

This report adheres to the following legal requirements and guideline documents.

2.1 National Legislation and Guidelines

National Environmental Management Act (Act 107 of 1998 – as amended), EIA Regulations

The specialist report is in accordance with the specification on conducting specialist studies as per Government Gazette (GN) R 982 of the National Environmental Management Act (NEMA) Act 107 of 1998. The mitigation measures as stipulated in the specialist report can be used as part of the Environmental Management Programme (EMPr) and will be in support of the Environmental Impact Assessment (EIA) and Appendix 6 of the EIA Regulations 2014, as amended on 7 April 2017.

Western Cape Department of Environmental Affairs & Development Planning: Guideline for Involving Visual and Aesthetic Specialists in EIA Processes Edition 1 (CSIR, 2005)

Although the guidelines were specifically compiled for the Province of the Western Cape[4], they provide guidance that is appropriate for any EIA process. The Guideline document also seeks to clarify instances when a visual specialist should get involved in the EIA process.

[4] The Western Cape Guidelines are the only official guidelines for visual impact assessment reports in South Africa and can be regarded as best practice throughout the country.

3. APPROACH AND METHODOLOGY

3.1 Approach

The assessment of likely effects on a landscape resource and visual amenity is complex since it is determined through a combination of quantitative and qualitative evaluations. When assessing visual impact, the worst-case scenario is considered i.e. when all project components are taken together. Landscape and visual assessments are separate, although linked, procedures. The landscape, its analysis, and the assessment of impacts on the landscape all contribute to the baseline for visual impact assessment studies. The assessment of the potential impact on the landscape is carried out as an impact on an environmental resource, i.e. the physical landscape. Visual impacts, on the other hand, are assessed as one of the interrelated effects on people (i.e. the viewers and the impact of an introduced object into a view or scene). Associated with these is the impact on the sense of place, a combination of the landscape impact and its potential effect on the senses, of which visual is a part.

3.1.1 The Visual Resource

Landscape character, landscape quality (Warnock & Brown 1998), and “sense of place” (Lynch 1992) are used to evaluate the visual resource i.e. the receiving environment. A qualitative evaluation of the landscape is essentially a subjective matter. In this study, the aesthetic evaluation and landscape characterisation of the study area is determined by the professional opinion of the author based on-site observations, the results of contemporary research in perceptual psychology (Schapper 1993, Ramsey (1993) and Crawford 1994) and vegetation type descriptions according to Mucina and Rutherford (2066).

Aesthetic value is the emotional response derived from the experience of the environment with its natural and cultural attributes. The response is usually to both visual and non-visual elements and can embrace sound, smell, and any other factor having a strong impact on human thoughts, feelings, and attitudes (Ramsay 1993). Thus, aesthetic value is more than the combined factors of the seen view, visual quality, or scenery. It includes atmosphere, landscape character, and sense of place (Schapper 1993). Refer also to Appendix A for further elaboration. Aesthetic value is not easy to measure but it can be assumed that some places, such as declared nature reserves by their very definition, evoke emotional connections with the land due to the already defined importance of the area i.e. that it is declared a nature reserve and by implication is, therefore, worth saving in its most pristine condition.

Studies for perceptual psychology have shown a human preference for landscapes with higher visual complexity, for instance, scenes with water or topographic interest. Based on contemporary research, landscape quality increases where:

- Topographic ruggedness and relative relief increase.
- Water forms are present.
- Diverse patterns of grassland and trees occur.
- Natural landscape increases and man-made landscape decreases.
- Where land use compatibility increases (Crawford 1994).

Aesthetic appeal (value) is, therefore, considered high when the following are present (Ramsay 1993):

- Abstract qualities: such as the presence of vivid, distinguished, uncommon, or rare features or abstract attributes.
- Evocative responses: the ability of the landscape to evoke particularly strong responses in community members or visitors.
- Meanings: the existence of a long-standing special meaning to a group of people or the ability of the landscape to convey special meanings to viewers in general.
- Landmark quality: a feature that stands out and is recognised by the broader community.

And conversely, it would be low where:

- Limited patterns in the landscape occur.
- Natural landscape decreases and man-made landscape increases causing major contrast/discord between the natural and cultural landscape.
- And where land use compatibility decreases (Crawford 1994).

In determining the quality of the visual resource for the study area, both the objective and the subjective or aesthetic factors (determined by the specialist) associated with the landscape are considered. Many landscapes can be said to have a keen sense of place, regardless of whether they are scenically beautiful. However, where landscape quality, aesthetic value, and a powerful sense of place coincide, the visual resource or perceived value of the landscape is high. The criteria given in Appendix A are used to assess landscape quality, sense of place, and ultimately to determine the visual resource value of the various landscape types, which occur across the study area.

3.1.2 Sensitivity of Visual Resource

The sensitivity of a landscape or visual resource is the degree to which a landscape type can accommodate change arising from development, without detrimental effects on its character. Its determination is based upon an evaluation of each key element or characteristic of the landscape likely to be affected. The evaluation will reflect such factors as its “quality, value, contribution to landscape character, and the degree to which the particular element or characteristic can be replaced or substituted” (LiEMA 2013). Landscape sensitivity, therefore, relates to the nature and character of the landscape and its ability to accept change (VAC) caused by the proposed development.

3.1.3 Sense of Place

Central to the concept of a sense of place is that the landscape requires uniqueness and distinctiveness. The primary informant of these qualities is the spatial form and character of the natural landscape taken together with the cultural transformations and traditions associated with the historic use and habitation of the area. According to Lynch (1992), a sense of place is the extent to which a person can recognise or recall a place as being distinct from other places – as having a vivid, unique, or at least particular, character of its own. Sense of place is the unique value that is allocated to a specific place or area through the cognitive experience of the user or viewer. In some cases, the values allocated to the place are similar for a wide spectrum of users or viewers, giving the place a universally recognised and, therefore, strong sense of place.

Sense of place is derived from the emotional, aesthetic, and visual response to the environment, and,

therefore, it cannot be experienced in isolation. The landscape context must be considered. Therefore, the combination of the natural landscape together with the man-made structures and features contribute to the sense of place for the study area and establish the area's visual and aesthetic identity.

3.1.4 Sensitive Receptors

The sensitivity of visual receptors and viewing areas is dependent on the location and context of the viewpoint, the expectations and occupation or activity of the receptor, or the importance of the view, which may be determined concerning its popularity or numbers of people affected, its appearance in guidebooks, on tourist maps, and in the facilities provided for its enjoyment and references to it in literature or art. Typically, sensitive receptors may include ((LiEMA 2013):

- Users of all outdoor recreational facilities including public rights of way, whose intention or interest may be focused on the landscape i.e. nature reserves.
- Communities where development results in negative changes in the landscape setting or valued views enjoyed by the community.
- Occupiers of residential/tourist properties with views negatively affected by the development i.e. game lodges.
- People traveling through recognised nature reserves or areas of declared scenic beauty (i.e. tourist routes)

Viewing areas, typically from residences and tourist facilities/routes are typically the most sensitive since views from these locations are potentially frequent and of long duration.

Other, less sensitive, receptors include:

- People engaged in outdoor sport or recreation (other than appreciation of the landscape, as in landscapes of acknowledged importance or value).
- People traveling through or past the affected landscape in cars or other transport modes, other than recognised areas of scenic beauty.
- People at their place of work.

For a detailed description of the methodology to determine the value of a visual resource, refer to Appendix A. Image 1 below, graphically illustrates the visual impact process. The baseline/scoping phase is the basis of this report. At a later date the assessment phase will be completed based on the findings of this phase.

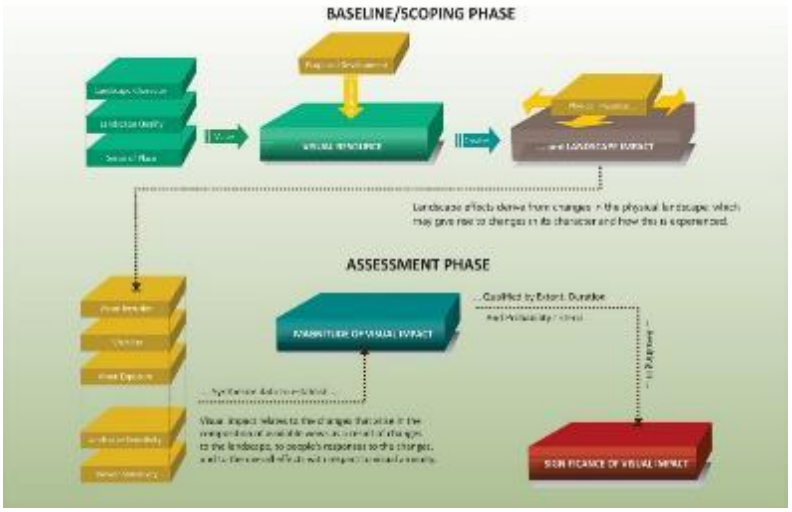


Image 1: Visual Impact Process

3.2 Methodology

The following method was used:

- Site visit: A field survey was undertaken on 12 May 2023 when the study area was visited to the extent that the receiving environment could be documented and adequately described. The climate conditions were mostly sunny with some cloud cover. Refer to Figure 3 for the route travelled during the site visit.
- Project components: The physical characteristics of the TSF were described and illustrated based on information supplied by the EAP.
- General landscape characterisation: The visual resource (i.e. receiving environment) was mapped using the field survey, Google Earth imagery, and Mucina and Rutherford's (2006) reference book, *The Vegetation of South Africa, Lesotho, and Swaziland* and the SANBI Vegetation Map[5]. The description of the landscape focused on the nature of the land rather than the response of a viewer.
- The character of the landscape was described and rated in terms of its aesthetic appeal using recognised contemporary research in perceptual psychology as the basis, and its sensitivity as a landscape receptor.
- The sense of place of the study area was described as to its uniqueness and distinctiveness. The primary informant of these qualities was the spatial form and character of the natural landscape together with the cultural transformations associated with the historic/current use of the land.
- The potential impact on the visual environment of the proposed Project was identified.
- Measures to mitigate the negative impacts of the proposed project were recommended.

[5] https://www.sanbi.org/biodiversity/foundations/national-vegetation-map/

4. DESCRIPTION OF THE PROJECT

The applicant owns and operates a number of Gold Mines and plants in the Welkom region in the Free State and currently deposits tailings onto the Free State South 2 Tailings Storage Facility (TSF), St. Helena 4 TSF, St. Helena 123 TSF, Dam 23 TSF, Brand D TSF and Target 1&2 TSF. The current planned Life of Mine (LOM) of the Free State operations exceed the available deposition capacity of these TSFs and the applicant is therefore proposing to construct the proposed Nooitgedacht TSF to cater for this additional capacity. The TSF will cover an area of approximately 8.95 km2. The TSF profile has an overall outer slope of 1V:4H. The final height of the facility is estimated to be 100m above natural ground level. Figure 2 identifies the proposed layout of the TSF and associated infrastructure.

The exposed side slopes of the TSF walls will be progressively vegetated during operation (i.e. concurrent rehabilitation will commence after the first step-in. At closure the upper surface of the facility will be shaped to retain surface run-off. The placement of a 150mm topsoil cover will be required to provide a growth medium for vegetation and to minimise dust generation. Waste rock cover that will enable cluster vegetation may also be considered as an alternative.

There will be minimal lighting at the TSF, even though deposition will continue through the night.

The operational phase will be approximately 37 years.

Figure 02: LAYOUT - Nooitgedacht Tailings Storage Facility

5. ENVIRONMENTAL SETTING

5.1 Landscape Character

The study area comprises a combination of landscape character types including open grassland (grazing) with some pans, agricultural lands, urbanisation and settlements, and mining and associated infrastructure. The characteristics of the study area can be divided into two distinct zones, the western section, natural/farming zone and the eastern section, dominated by mining and settlement landscape types. The result is a landscape characterised by mixed aesthetic and visual qualities.

The original landscape, of which there remain remnants of it scattered throughout the western section was Western Free State Clay Grassland (Mucina and Rutherford 2006:384), scattered with Highveld Salt Pans (Mucina and Rutherford 2006:619). The salt pans manifest as depressions in the landscape containing temporary water bodies containing many species of important taxa. The slightly irregular undulating grasslands are dominated by *Themeda triandra* and other grasses that attribute to desired grazing lands. Dotted across the grasslands at the homesteads are usually tall stands of exotic trees.

Figure 3 locates the viewing points of the panoramas in Figures 4-1 to 4-5. These images illustrate the natural and cultural characteristics of the study area's four landscape character types, which have varying levels of quality and scenic value. Figure 5 shows the spatial distribution of these types and their associated scenic quality and sensitivities as they occur today.

5.2 Landscape Character Types

5.2.1 Open grassland (grazing) with pans

This is the most widespread landscape type and is distributed across the study as illustrated in Figure 5. The panoramas in Figures 4-3 views 5 and 6 and 4-3 are indicative of grassland, which is typically contained to the western section of the study area and includes a few pans immediately north and south of the R34. The grasslands, for the most part, are open and used for grazing, with little, tall vegetation, other than that which is associated with the homesteads north of the R710. This landscape type is generally sensitive to negative change, due to its natural character and its openness. A large portion of the proposed TSF occurs in this landscape type (Figure 2).

5.2.2 Cultivated Farm Lands

Cultivated farm land is restricted to immediately north of the R34, south of the R710 and south of Phakisa Freeway (Esparanza Farm) and don't have a major influence on the general characteristics of the study area.

5.2.3 Urbanisation and Settlements

Residential areas occur in the far north and south east of the study area (i.e. Rheederpark (Views 2 and 3 Figure 4-1 and Flamingo Park) and abut mining areas to their immediate south and west respectively. The Welkom Cemetery (View 7 Figure 4-3 - View 4 Figure 4-2) is immediately west of the R30 between the proposed TSF site and an existing TSF south of it. The Welkom airport occurs in the far south of the study area.

5.2.4 Mining and degraded lands

This landscape type dominates the central and eastern sections of the study area. The proposed Nooitgedacht TSF is immediately south of existing Free State North TSFs (Figure 2). The Phakisa Harmony Mine, Nyala shaft is at the intersection of the R34 and R30 roads and north of the proposed TSF (Figure 5).

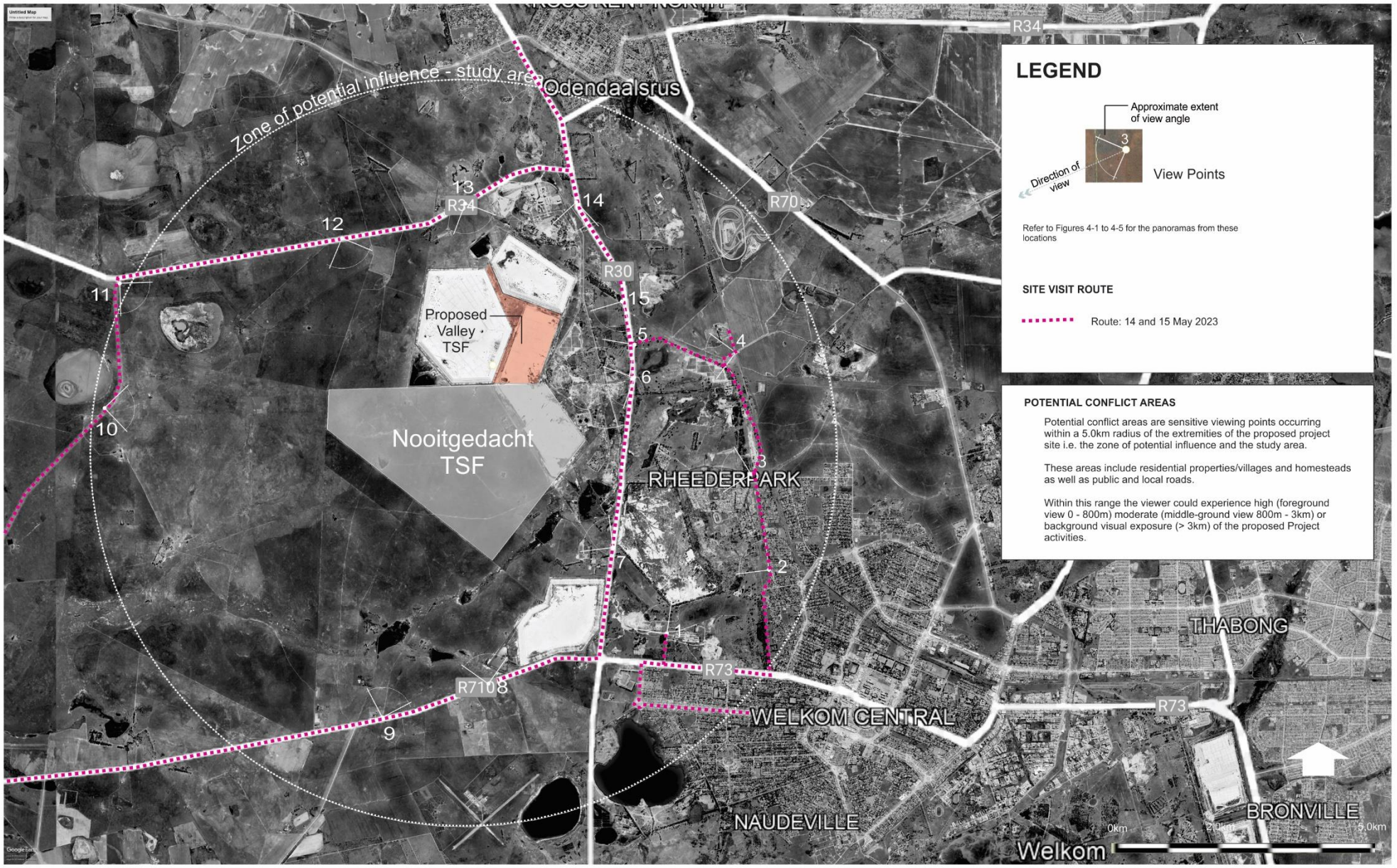
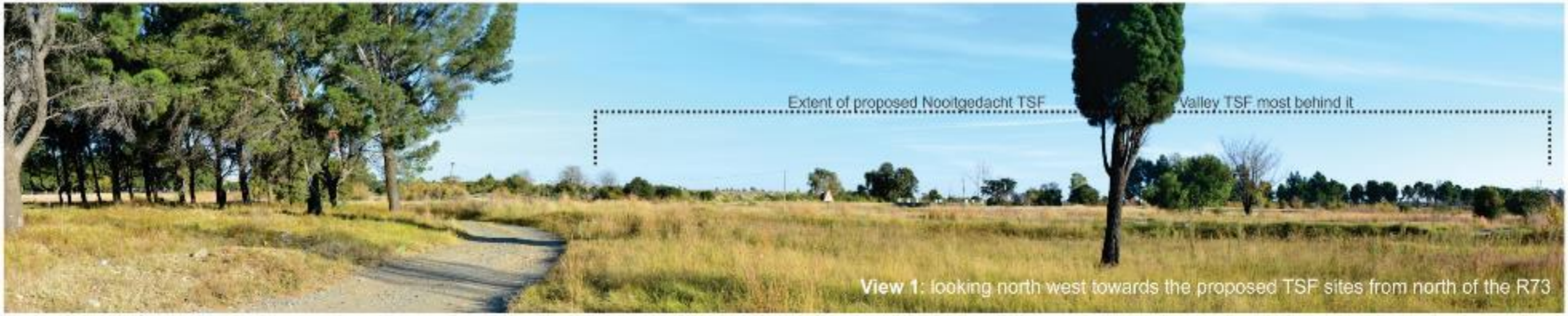
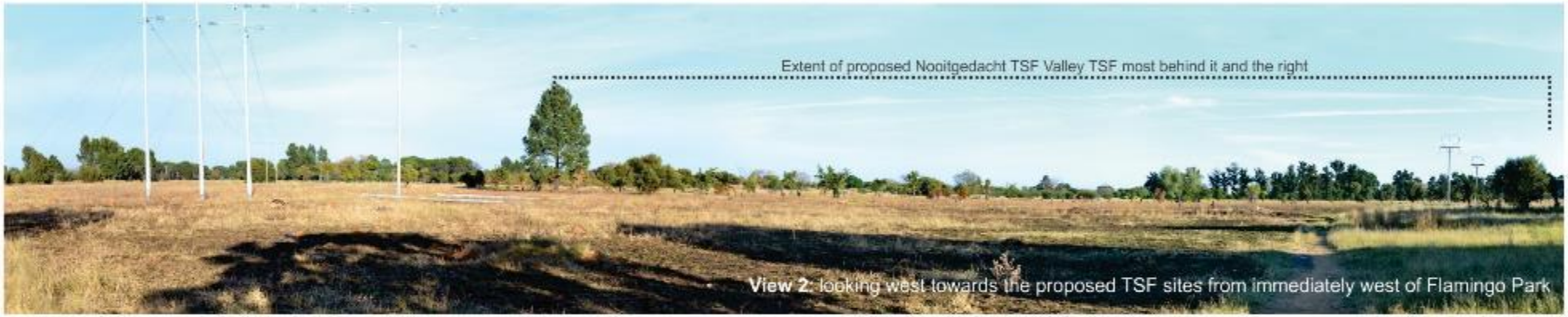


Figure 03: VIEW SITES - Nooitgedacht Tailings Storage Facility

Refer to Figures 4-1 to 4-5 for panoramas taken from the viewing points





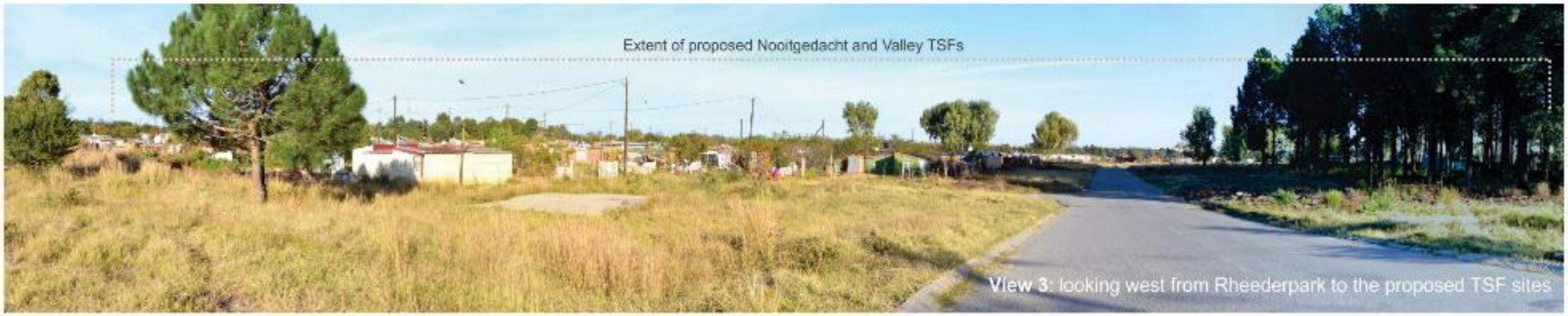


Figure 04-1: LANDSCAPE CHARACTER - Views 1, 2 and 3

Refer to Figure 3 for location of viewing points and Figure 2 for Project Layout: The basic simulations illustrate the worst case scenario before rehabilitation

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Figure 4-2: LANDSCAPE CHARACTER - Views 4, 5 and 6

Refer to Figure 3 for location of viewing points and Figure 2 for Project Layout

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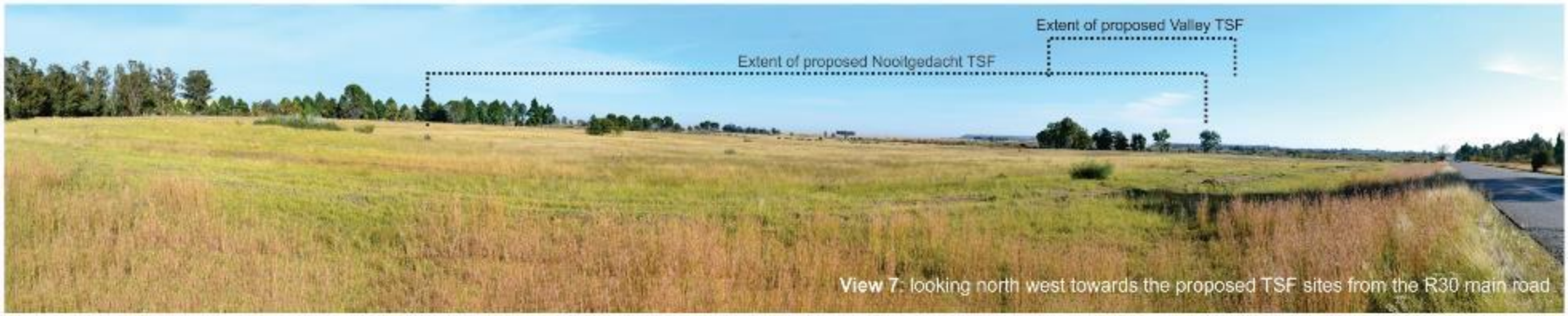

Figure 4-3: LANDSCAPE CHARACTER - Views 7, 8 and 9

Refer to Figure 3 for location of viewing points and Figure 2 for Project Layout

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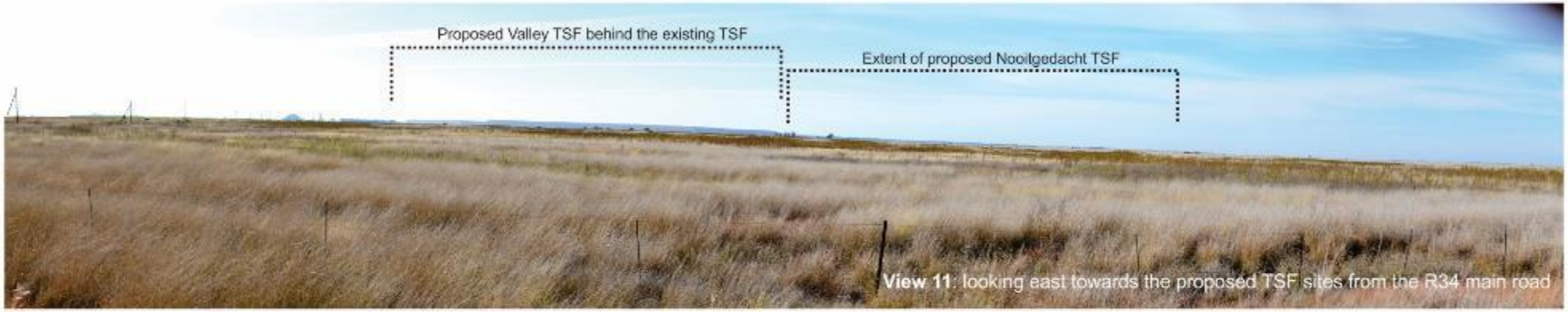

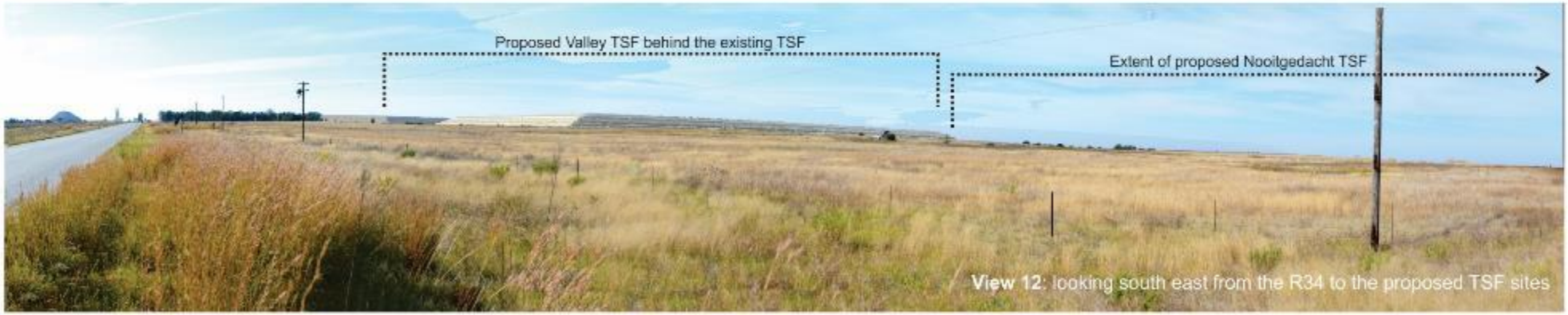

Figure 4-4: LANDSCAPE CHARACTER - Views 10, 11 and 12

Refer to Figure 3 for location of viewing points and Figure 2 for Project Layout

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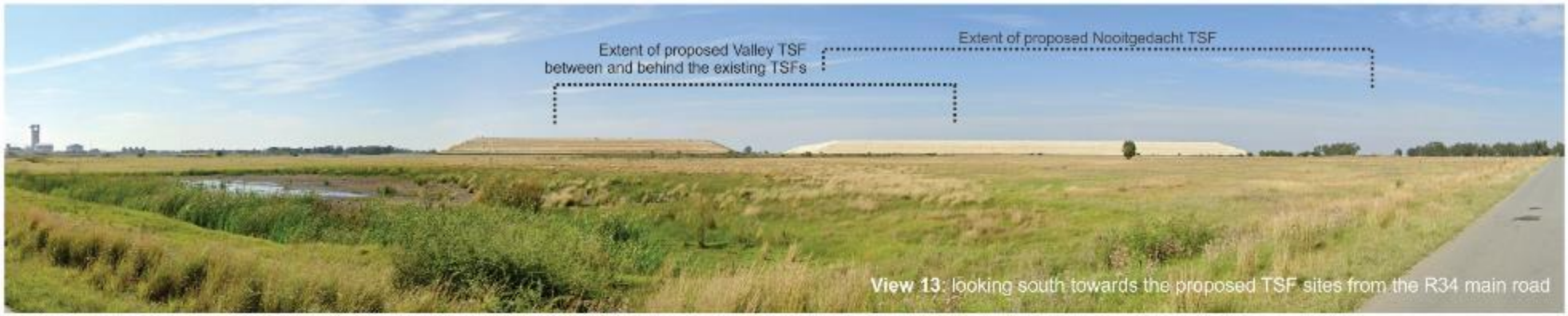

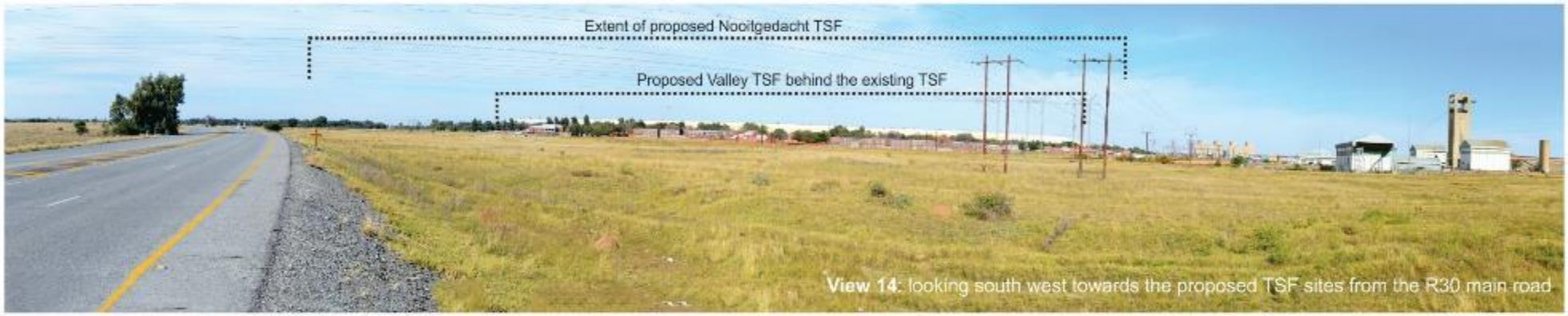

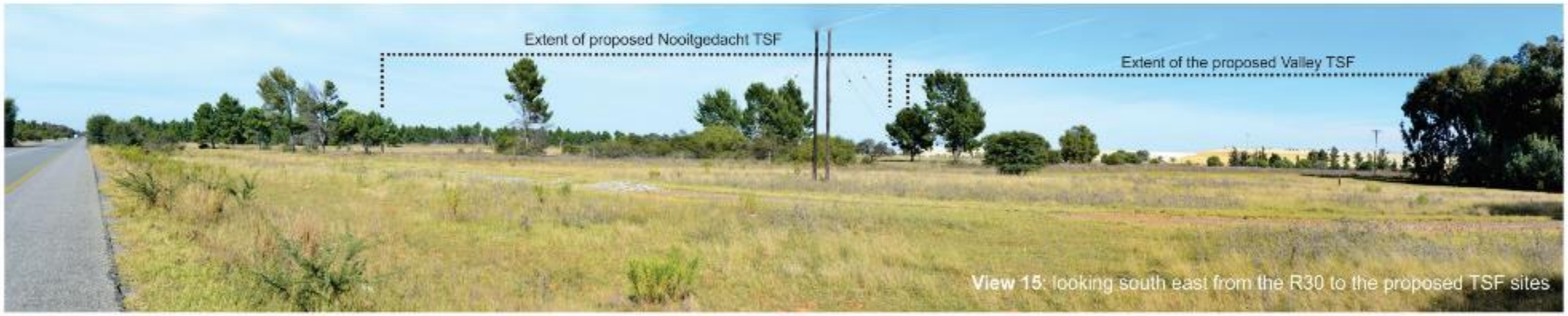

Figure 4-5: LANDSCAPE CHARACTER - Views 13, 14 and 15

Refer to Figure 3 for location of viewing points and Figure 2 for Project Layout

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6. VISUAL RESOURCE, LANDSCAPE SENSITIVITY AND SENSE OF PLACE

6.1 Visual Resource Value, Scenic Quality, and Landscape Sensitivity

The value of the visual resource and its associated scenic quality (using the scenic quality rating criteria described in Appendix A) attached to the landscape character types described in Section 5 is determined through the value of "individual contributors to landscape character, especially key characteristics, which may include individual elements of the landscape, particular landscape features, notable aesthetic, perceptual or experiential qualities, and combinations of these contributors" (LiEMA 2013:89). These are the primary features that give the area its typical characteristics and a sense of place.

The sensitivity of the study area's various landscape types is defined as either moderate or low (as indicated below and in Figure 5) and is dependent on the following four factors:

- Character (does it contribute to the area's sense of place and distinctiveness?)
- Quality – in what condition is the existing landscape
- Value – is the landscape valued by people, local community, visitors, and is the landscape recognised, locally, regionally, or nationally; and
- Capacity – what scope is there for change (either negative or positive) in the existing landscape character? (LiEMA 2013).

When the criteria listed in Appendix A are considered and understood within the context of the sub-region, a visual resource value is assigned to the landscape types:

- *Low* (Mining and degraded lands)
- *Moderate to low* (urbanisation and settlements)
- *Moderate* (open grasslands with pans, farm lands); and

The TSF and its associated infrastructure, is largely in the open grassland landscape type, which re rated *moderate* within the context of the sub-region. However, as the areas to the north and south of the TSF site are rated *low.* The baseline landscape is relatively robust to change, particularly if the change is similar to existing features that define the landscape (i.e. existing TSFs). Table 1 summarises the four local landscape character types and their consequent sensitivities. Refer also to Figure 5.

Table 1: Value of the Visual Resource

Moderate Open grassland with pans and agricultural lands	**Moderate to Low** Urbanisation and settlements	**Low** Mines and associated infrastructure and degraded land
This landscape type is considered to have a *moderate* value because it is a: A common landscape that exhibits some positive character, but which has evidence of alteration/	This landscape type is considered to have a *moderate* value because it is a: A common landscape that exhibits little positive character, and there is evidence of major alteration/	This landscape type is considered to have a *low* value because it is a: Minimal landscape, generally negative with few, if any, valued features.

Moderate Open grassland with pans and agricultural lands	**Moderate to Low** Urbanisation and settlements	**Low** Mines and associated infrastructure and degraded land
degradation/ erosion of features resulting in areas of more mixed character. Sensitivity: It is potentially sensitive to change in general and change may be detrimental if inappropriately dealt with.	degradation/ erosion of features resulting in areas of more mixed character but little in the way of valued features. Sensitivity: It is potentially sensitive to change in general and change may be detrimental if inappropriately dealt with.	Sensitivity: It is not sensitive to change in general and scope for positive enhancement frequently occurs (After LIEMA 2013)

6.2 Sense of Place

According to Lynch (1992), a sense of place is the extent to which a person can recognise or recall a place as being distinct from other places - as having a vivid, or unique, or at least particular, character of its own. The sense of place for the study area derives from a combination of the local landscape character types described above, their relative 'intactness,' and their impact on the senses. The activities and land-uses indicated in Figure 5 are common within the sub-region.

Two distinct sense of place situations are experienced across the study area. The western, open, rural, farmland sense of place and the eastern, mining dominated features with some residential at the periphery. The proposed new TSF is at the interface of the two general landscape types, and it would not appear out of place when viewed from these areas. The facility would appear to 'fit' (be visually contextual) into the scene. Especially as it would be incorporated into a strip of TSFs that dominate the central part of the study area (Figure 2) and would not appear at odds with the visual characteristics of the baseline landscape. However, due to its height (100m above natural ground level), it would stand proud of existing and proposed TSFs.

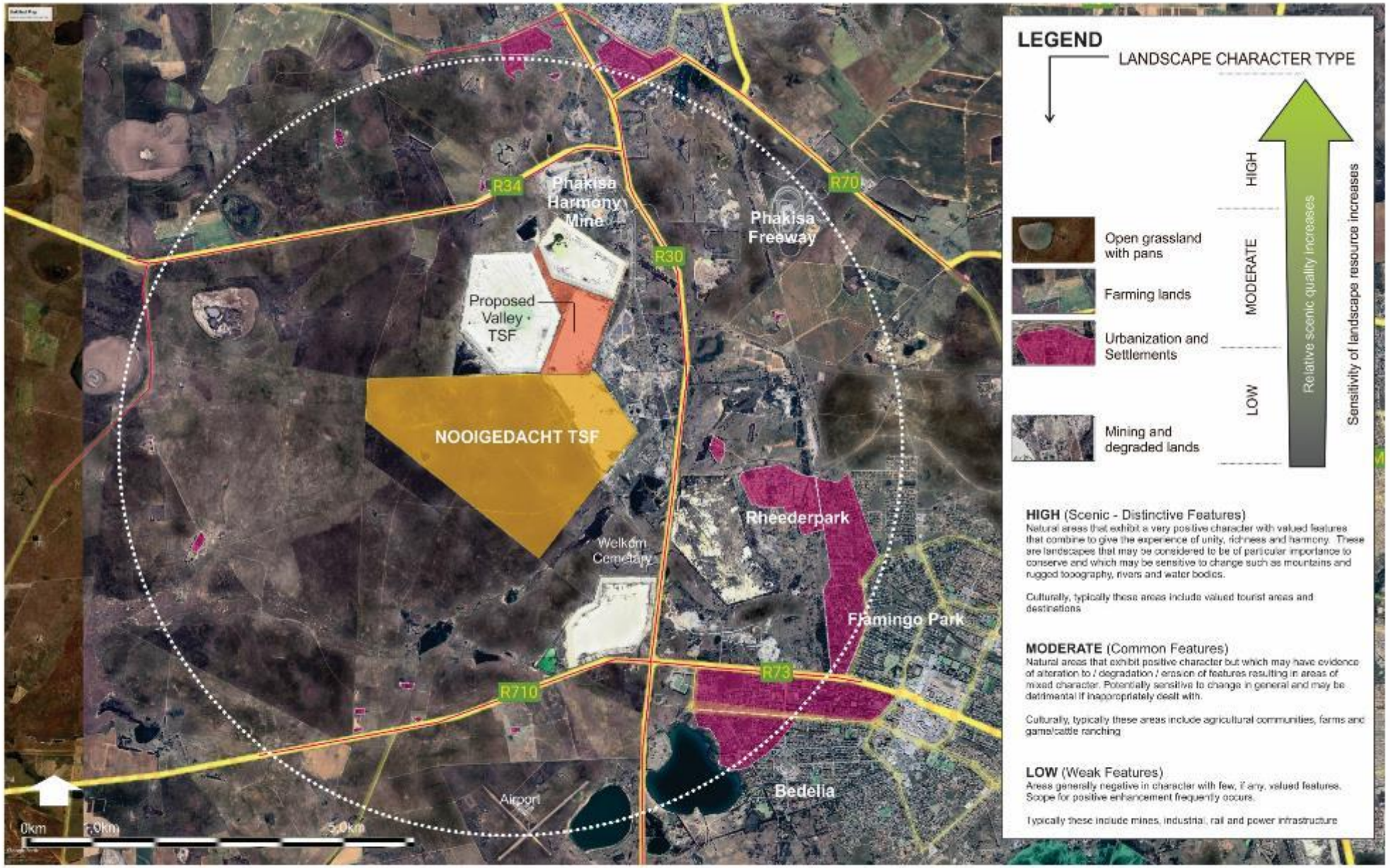

Figure 5: LANDSCAPE TYPE SENSITIVITIES - Nooitgedacht TSF

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7. LANDSCAPE IMPACT

The development of the TSF is mostly on open grassland with its eastern edge proposed over and existing facility and would cause a major change to the existing landscape (due to the extent of the proposed development area), resulting in a minor loss of some elements, features, and aesthetic and perceptual aspects that contribute to the existing character of the landscape associated with the western half of the study area, and as described in Section 5. The establishment process will require the clearing of vegetation and exposing of soil during the establishment period and when the dam walls are being constructed. These activities along with support infrastructure will contrast somewhat with the existing characteristics and topography of the site's landscape and generate large amounts of dust, mainly if these activities take place in the winter months.

The *landscape impact* (i.e. the change to the fabric and character of the landscape caused by the physical presence of the Project) is therefore rated ***moderate***.

8. MAGNITUDE OF VISUAL IMPACT

In addition to the landscape impacts described in Section 7, it is anticipated that visual impacts will result from the TSF and its related infrastructure in all Project phases i.e. establishment, operational, and closure. Activities associated with the Project will be visible, to varying degrees and from varying distances around the project site. During the establishment phase, the Project's visibility will be influenced due to the preparatory activities, primarily earthworks, infrastructure establishment, and the earthworks associated with constructing the dam walls. During the operation phase, the visibility of the Project will be the result of the physical presence of the TSF and the rising dam walls which will ultimately reach a height of 100m (i.e. approximately 65m higher than the existing TSFs).

Typical visual issues associated with TSF projects are:

- Who will be able to see the new development?
- What will it look like, and will it contrast with the receiving environment?
- Will the development affect sensitive views in the area and if so, how?
- What will be the impact of the development during the day and at night?
- What will the cumulative impact be if any?

8.1 Public Concerns

In addition to these general issues the public may voice a concern about the visual impact of such a tall structure, albeit within the general vicinity of exiting mining operations. Their concerns may be[6]:

- the mine operations would cause an aesthetic altering of the landscape
- the effect of lights at night on top of the TSF that would be visible from great distances, especially from the west where a few homesteads are located.

8.2 Sensitive Viewers and Locations

Figure 6 identifies receptor locations where people would most likely be susceptible to negative changes in the landscape caused by the physical presence of the Project. The main areas of concern might be:

- Farmsteads associated with rural development to the west, north west and south west of the Project site
- Residential areas east of the development site (Rheederpark, Odendaalsrus, Flamingo Park, Seemeeu Park and Bedelia)
- Travellers along the R34, R30 and R710 arterial routes.

People living and passing through these locations will experience some negative change and loss of the baseline landscape aesthetic due to the scale and extent of the TSF. Also, due to the low VAC of the western section of the study area, sensitive views to the development would often be open and unobstructed (i.e. the TSF would dominate the view). These negative changes would occur over an extended time frame i.e. over the life of the mine and beyond as the TSF would remain as a residual structure in the landscape and represent the worst case scenario, which is assessed in this report.

[6] At the time of writing the results of the public participation process were not known.

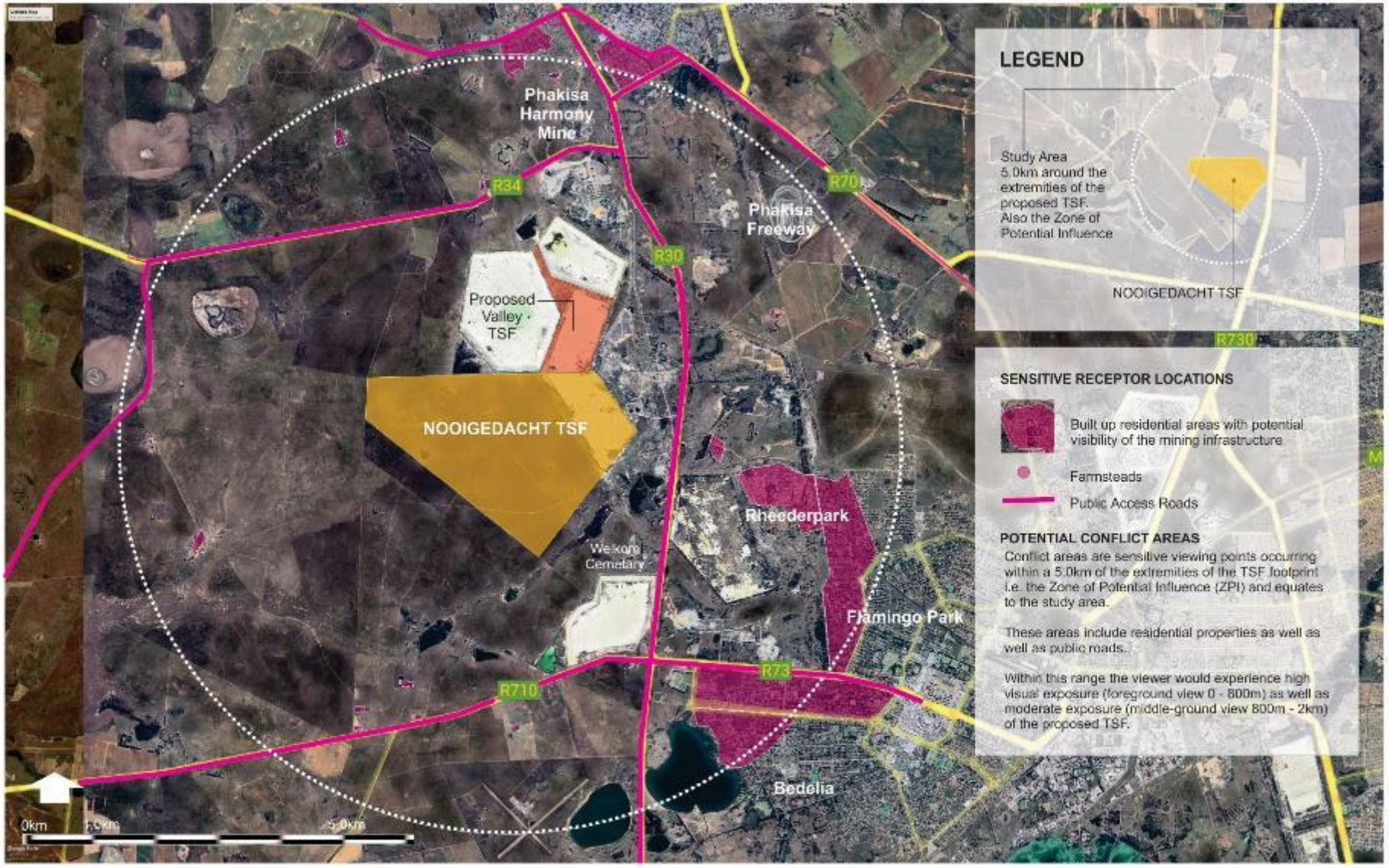

Figure 6: RECEPTOR SENSITIVITIES - Nooitgedacht TSF

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8.3 Visibility

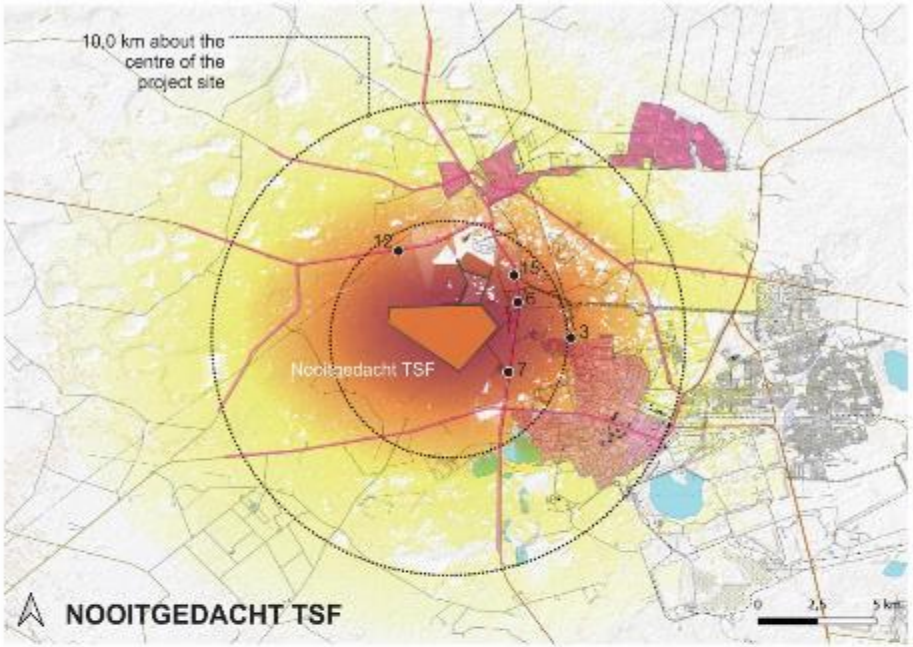
As described above, visual sensitivities would arise from receptors living in and visiting the study area and observing changes to the aesthetic baseline. The TSF, with its dam walls extending to 100m above natural ground level, is proposed in a landscape that has a low VAC. This would make the TSF highly visible to people living within a 5,0km radius of the site and along the R34 and R710 arterial routes, especially after the side walls exceed the height of adjacent existing and proposed TSFs. Views from the east along the R30 and from the western sections of Rheederpark, Flamingo Park and Bedelia and residential areas would be partially obscured due to tall trees growing in and around the existing mining areas, although as the TSF approaches its final levels, it would protrude above the trees. Refer to the viewshed analysis in Figure 7, which suggests that the TSF would be highly visible from these areas. However, on-site observations indicate that most potential views to the Nooitgedacht TSF would be completely or partially screened by existing vegetation, structures and other TSFs.

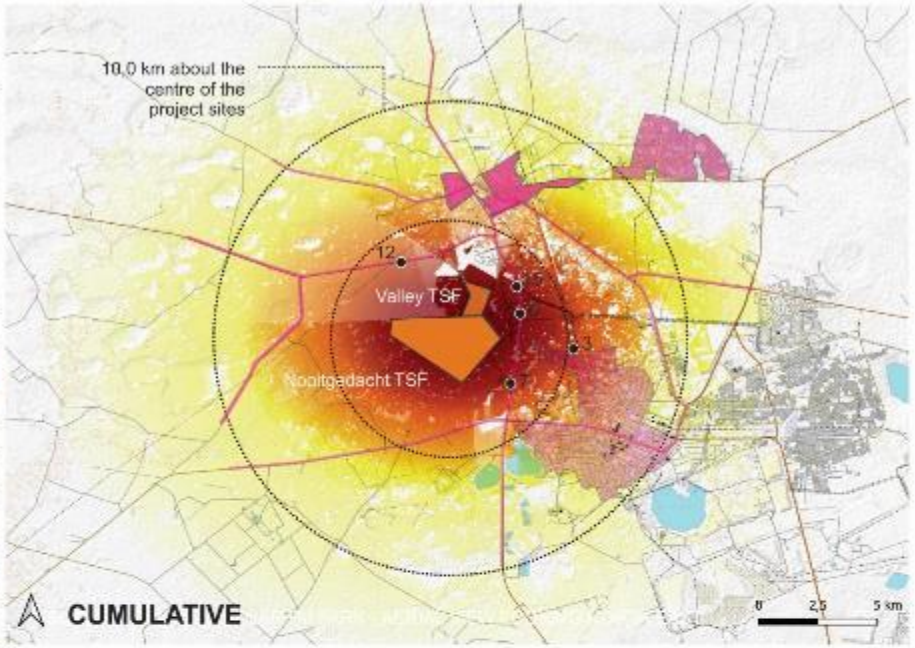
The proposed TSF will contextually fit with the baseline landscape patterns no matter from which angle it is viewed, however, its physical presence will add to the cumulative negative effect of mining operations on the baseline landscape and sensitive viewing areas. The study area's landscape has a low visual absorption capacity when viewed from the west (VAC i.e. the existing landscape's ability to absorb physical changes caused by a project without transformation in its visual character and quality is limited), but a moderate VAC when viewed from the east due to tall trees and other tailings facilities. In its final stages of development, at 100m above ground level, the TSF would protrude above the trees and would be highly visible from all angles about it.

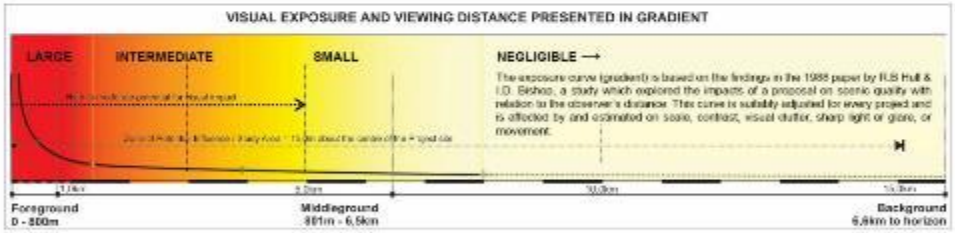
It is anticipated that impacts can be reduced somewhat through effective and strategic management practices as described in Section 9 below.

8.4 Effects of Night-lighting

The impact of lights at night is a sensitive issue associated with mines. The impact of night lighting is consistently raised by I&APs, specifically when they can be seen from tourist and residential sites and when the impact would continue for the mine's life. The negative effect of night lighting could be particularly detrimental to sensitive receptors living west of the site, however, light pollution generated by mining activities and urban areas would negate any real effect they may have There is, however, potential for fixed security lights to cause a spotlight effect to people living west and east of the site, that would not be acceptable to sensitive viewers. Stringent management measures should therefore be implemented to limit the spillage of light beyond the TSF's site boundaries.







The accuracy of the viewshed analysis depends on the quality of the input digital surface model (DSM). Readily available digital contours for the area are limited to 20m contours. GYLA has interpolated these down to 1m intervals to get better accuracy. However, these types of viewshed investigations (using readily available GIS software and terrain contours only) are limited in their accuracy due to their inability to incorporate vegetation information. On-site observations indicated that many views to the proposed development from within the study area, would be blocked due to topographic relief and the low height of the arrays.

The viewshed analyses have therefore presented as a comparative analysis between the visibility of the site as it currently exists (without development) and with the proposed visibility of the site with development.

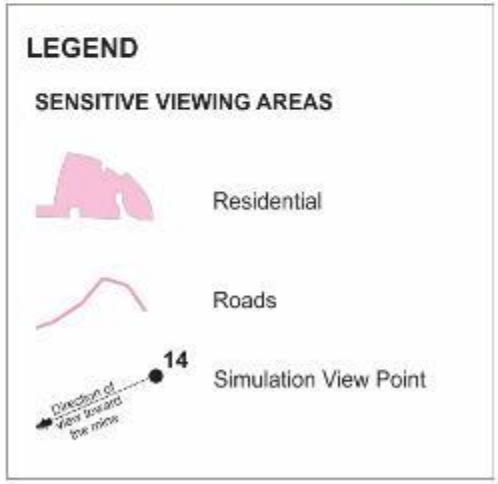


Figure 7: VIEWSHED ANALYSES - Nooitgedacht and CumulativeTSF

8.5 Visual Exposure

Visual exposure is determined by qualifying the visibility of an object, with a distance rating to indicate the degree of intrusion and visual acuity. As the distance between the viewer and the object increases, the visual perception of the object reduces exponentially as changes in form, line, colour, and texture in the landscape become less perceptible with increasing distance. Appendix B illustrates this point.

Table 2 below indicates the anticipated visual exposure of the three main sensitive viewing areas and affected receptors discussed in Sections 8.1 and 8.2 and illustrated in Figure 6. It is noted that at no given viewing point will the entire TSF be visible and it would mostly be viewed in middle to background of any given view.

Table 2: Visual Exposure of Project Activities

	HIGH EXPOSURE Foreground view, i.e. 0 – 800 m from Project activities	**MODERATE EXPOSURE** Middle-ground view, i.e. 800 m to – 3,0 km from Project Activities	**LOW EXPOSURE** Background view i.e. > 3,0 km from Project Activities
Farmsteads associated with rural development to the west, north west and south west of the Project site	None	**X** Mostly unobstructed or diminished due to distance	**X** Mostly obstructed or diminished due to distance and topography
Residential areas east of the development site (Rheederpark, Odendaalsrus, Flamingo Park, Seemeeu Park and Bedelia)	None	**X** Mostly obstructed or diminished due to distance (western edge of Rheederpark and north west corner of Bedlia)	**X** Mostly obstructed or diminished due to distance and topography
Travellers along the R30, the R34 and R710 arterial routes	None	**X** Mostly unobstructed from the west and partially obstructed by vegetation and structures from the east	**X** Mostly obstructed or diminished due to distance and topography

8.6 Visual Intrusion

Visual intrusion deals with contextualism, i.e. how well does a Project activity fit with or disrupt/ enhance the ecological and cultural aesthetic of the landscape as a whole? The simulations in Figures 8-1 to 8-5 illustrate the effect that Project activities will have on views experienced from various viewing points indicative of typical views towards the proposed mine. When visible the TSF would appear in the middleground (up to 3,0km from the viewer) of views from west and east, primarily from the R34 (north west), the R30 (east) and the R710 (south west) as illustrated in Figures 8-2 – 8-5. Figure 8-1 illustrates the view from Rheederpark. The most exposed views of the facility are from the R30 as illustrated in Figures 8-2 (900m away from the receptor) and 8-3 (1,4km away). Distance tends to reduce the intrusive nature of the TSF when viewed from the R34 and the R710, which at its closest to the receptor, it is 2,5km away. The facility would always be viewed within a scene that includes existing mining infrastructure and therefore, do not appear out of place, and therefore its potential for visual intrusion is reduced.

Table 3: Visual Intrusion

HIGH INTRUSION	**MODERATE INTRUSION**	**LOW to NO INTRUSION**
R30 directly east of the TSF	R30, R710, R34, western sections of Rheederpark and farmsteads south west of the site	For all other areas of the areas of the study area.
The Project could: Have a substantial negative effect on the visual quality (sense of place) of the landscape relative to the baseline landscape. Contrast dramatically with the patterns or elements that define the structure of the landscape.	The Project could: Have a moderate negative effect on the visual quality and sense of place of the landscape. Contrast with the current patterns or elements that define the structure of the landscape.	The Project could: Have a minimal to insignificant effect on the visual quality and sense of place of the landscape. Contrasts minimally with the patterns or cultural elements that define the structure of the landscape.
RESULT: An intensive change over a localized area resulting in major changes in key views.	*RESULT:* Moderate change in landscape characteristics over localized area resulting in a moderate change to key views.	*RESULT:* Minimal to insignificant change resulting in a minor change to key views sensitive viewing areas.

Figure 8-1: SIMULATION VIEW 3 - Nooitgedacht TSF

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Figure 8-2: SIMULATION VIEW 6 - Nooitgedacht TSF

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Figure 8-3: SIMULATION VIEW 7 - Valley TSF

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Figure 8-4: SIMULATION VIEW 12 - Nooitgedacht TSF

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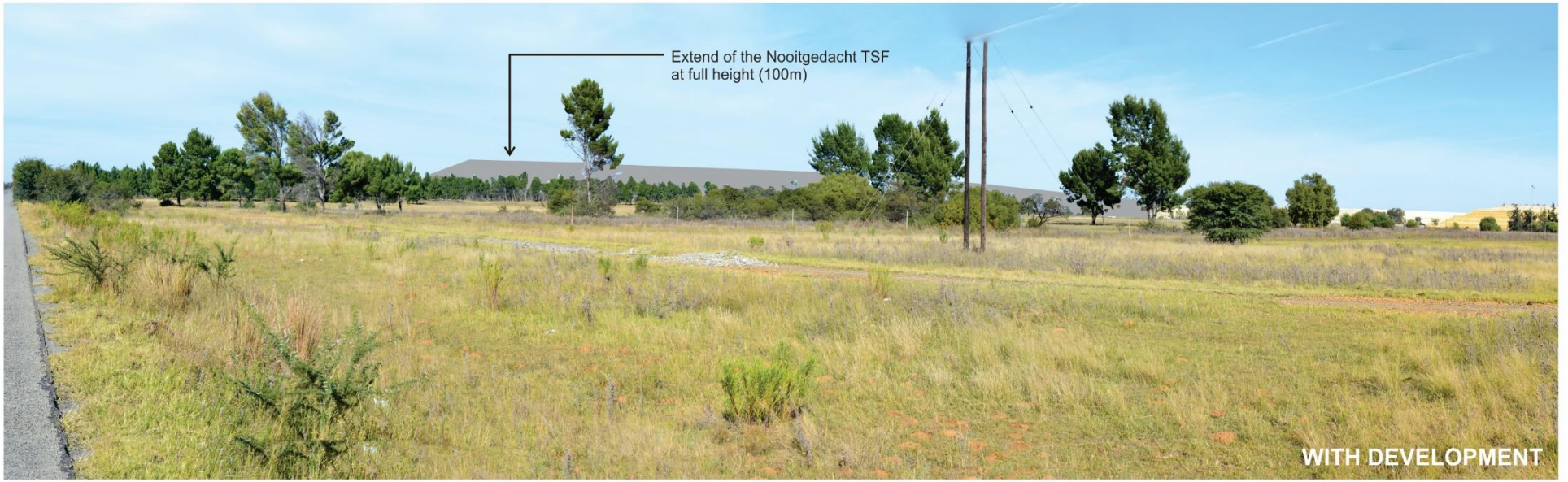

Figure 8-5: SIMULATION VIEW 15 - Nooitgedacht TSF

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8.7 Magnitude of Visual Impact

Referring to discussions in the previous sections and using the criteria listed in Appendix B, the *magnitude* of the visual impact (worst-case scenario with all proposed facilities combined) is rated in Table 4 below. To assess the magnitude of the visual impact, four main factors are considered as well as the fact that the waste material facilities will be residual activities and remain post mining operations (albeit in a rehabilitated state).

- *Visual Intrusion:* The nature of intrusion or contrast (physical characteristics) of a Project component on the visual quality of the surrounding environment and its compatibility/discord with the landscape and surrounding land use within the context of the landscape's VAC.
- *Visibility:* The areas from which Project components will be visible.
- *Visual exposure:* Visibility and visual intrusion qualified with a distance rating to indicate the degree of intrusion.
- *Sensitivity:* Sensitivity of visual receptors to the proposed development.

In synthesizing the criteria, a numerical or weighting system is avoided. Attempting to attach a precise numerical value to qualitative resources is rarely successful and should not be used as a substitute for reasoned professional judgement (LI-IEMA 2013). Given these factors, the *magnitude* of the visual impact during the operational phase is summarised in Table 4 and rated:

Table 4: *Magnitude* of Visual Impact – Operational Phase [7]

High None	**Moderate** R30 (east of the site), R710 (south west), R34 (north), western sections of Rheederpark (closer than 3,0km) and farmsteads south west of the site	**Low** For receptors east of the site and greater than 3,0km from the closest edge of the TSF (west side of Rheeder Park) and travellers along the R710 and R34 at greater than 3,0km from the site.	**Negligible** For receptors, north, north east, east and south east of the site 3,0km km from the closest edge of the TSF (i.e. background of a view)
Major loss of or alteration to key elements / features / characteristics of the baseline in the immediate vicinity of the site. i.e. Pre-development landscape or view and / or introduction of elements considered to be uncharacteristic when set within the attributes of the receiving landscape. High visual impacts would result.	Partial loss of or alteration to key elements / features / characteristics of the baseline. i.e. Pre-development landscape or view and / or introduction of elements that may be prominent but may not necessarily be problematic when set within the attributes of the receiving landscape. Moderate visual impacts would result	Minor loss of or alteration to key elements / features / characteristics of the baseline. i.e. Pre-development landscape or view and / or introduction of elements that may not be problematic when set within the attributes of the receiving landscape. Low visual impacts would result.	Negligible loss or alteration to key elements/features/characteristics of the baseline. i.e. Pre-development landscape or view and / or introduction of elements that is not problematic within the surrounding landscape – approximating the 'no change' situation. Negligible scenic quality impacts would result.

[7] Refer also to Appendix C – EIMS Impact Assessment Methodology

9. MITIGATION OPTIONS

In considering mitigating measures three rules are considered - the measures should be feasible (economically), effective (how long will it take to implement and what provision is made for management/maintenance), and acceptable (within the framework of the existing landscape and land use policies for the area). To address these, the following principles have been established:

- Mitigation measures should be designed to suit the existing landscape character and needs of the locality. They should respect and build upon landscape distinctiveness.
- It should be recognized that many mitigation measures, especially the establishment of planted screens and rehabilitation, are not immediately effective.

The following general options are recommended:

9.1 Planning and site development

- Development footprints should be demarcated and clearing to occur within the demarcated areas.
- Ensure, wherever possible, natural indigenous vegetation and tall trees (specifically in areas between the TSF and the R30) are retained and incorporated into the site rehabilitation.
- All topsoil that occurs within the proposed footprint of an activity must be removed and stockpiled for later use. The construction contract must include the stripping and stockpiling of topsoil. Topsoil would be used later during the rehabilitation phase of disturbed areas and the waste facilities. The presence of degraded areas, which are not rehabilitated, will increase the overall visual impact.
- Apply dust suppression methods to limit the dust generated during the establishment phase.
- Before commencing operation, develop a post-closure rehabilitation plan to acceptable topographic and ecological conditions, particularly for the waste facilities.

9.2 Earthworks

- Earthworks should be executed in such a way that only the footprint and a small ‘construction buffer zone’ around the proposed TSF are exposed. In all other areas, the naturally occurring vegetation should be retained, as well as tall trees, especially along the periphery of the site.
- Topsoil must be exposed for the minimum time possible to avoid prolonged exposure to wind and water erosion and to minimise dust generation. Should the topsoil stockpile be in place for more than 3 months, they should be hydroseeded with indigenous grasses.
- Any soil must be exposed for the minimum time possible once cleared of vegetation to avoid prolonged exposure to wind and water erosion and to minimise dust generation.

9.3 Landscaping and ecological approach

- Where new vegetation is proposed to be introduced to the site, an ecological approach to rehabilitation, as opposed to a horticultural approach should be adopted. For example, communities of indigenous plants will enhance biodiversity, a desirable outcome for the area. This approach can significantly reduce long-term costs as less maintenance would be required

over conventional landscaping methods as well as the introduced landscape being more sustainable.

9.4 Good housekeeping

- "Housekeeping" procedures should be developed for the project to ensure that the Project site and lands adjacent to it are kept clean of debris, garbage, fugitive trash, or waste generated onsite; procedures should extend to control of "track out" of dirt on vehicles leaving the active sites and entering the public domain.

9.5 Lighting

Light pollution is largely the result of bad lighting design, which allows artificial light to shine outward and upward into the sky, where it is not wanted, instead of focusing the light downward, where it is needed. Ill-designed lighting washes out the darkness of the night sky and radically alters the light levels in rural areas where light sources shine as 'beacons' against the dark sky and are generally not wanted. Simple changes in lighting design and installation yield immediate changes in the amount of light spilled into the atmosphere. The following are measures, to minimize light pollution beyond the perimeter of the project that must be considered in the lighting design of the Project:

- Install light fixtures that provide precisely directed illumination to reduce light "spillage" beyond the immediate surrounds of the site i.e. lights (spotlights) are to be aimed away from sensitive viewing areas.
- Avoid high pole top security lighting along the periphery of the site and use only lights that are activated on illegal entry to the site.
- Minimise the number of light fixtures to the bare minimum, including security lighting.

10. SIGNIFICANCE OF VISUAL IMPACT

The existing visual condition of the landscape that may be affected by the proposed Project has been described. The study area's scenic quality has been rated *low* to *moderate* within the context of the sub-region (Figure 5). Sensitive viewing areas and landscape types have been identified and mapped indicating a potentially low to moderate sensitivity to the project (Figure 6). However, the results of the public participation process must confirm this assumption.

Impact prediction and evaluation is at the heart of the ESIA process and involves analysing the impacts identified to determine their nature, temporal and spatial scale, reversibility, magnitude, likelihood, extent and effect. Determining the significance of visual impacts is a complex and partially subjective process and a number of factors can affect this significance, including the importance of resources at local, regional, national or international levels.

The impact assessment methodology will be guided by the requirements of the NEMA EIA Regulations. The broad approach to the significance rating methodology is to determine the significance of the environmental impact by considering the consequence of each impact and relate this to the probability or likelihood of the impact occurring. Consequence ("C") is determined through the consideration of the Duration ("D"), Extent ("E"), Magnitude ("M"), Reversibility ("R") and the nature of the impact ("N") applicable to the specific impact.

$$\boldsymbol{C} = \frac{(\boldsymbol{E} + \boldsymbol{D} + \boldsymbol{M} + \boldsymbol{R}) * \boldsymbol{N}}{\boldsymbol{4}}$$

Once C has been determined, the impact significance ("IC") is determined by multiplying the C and Probability ("P"). The result is a qualitative representation of relative IC associated with the impact. Several activities in all project phases have the potential to negatively affect the visual environment, particularly in the worst-case unmitigated scenario, which is rated below for the various project phases.

Impacts on views are the highest when viewers are identified as being sensitive to change in the landscape, and their views are focused on and dominated by the change. The visual impact of the Project will cause changes in the landscape that are noticeable to viewers experiencing the study area from nearby arterial roads, the far western areas of Rheederpark and Bedelia and farmsteads south west of the site. Visual impacts that would potentially result are long-term and based on the worst case scenario and are rated in the tables below. Mitigation is possible but could not significantly reduce the impact.

The cause of these anticipated visual impacts in each of the phases would be:

Establishment Phase:

- Removal of vegetation, the building of access roads, earthworks and exposure of earth to establish the areas to be developed for the TSF,
- The physical presence of TSF dam walls beginning to rise above the existing TSF on which it will be built and
- The generation of dust by establishment activities.

Operational Phase

- The physical presence of the TSF,
- Generation of dust, and
- The potential for light pollution caused by security lighting along the boundary fences.

The significance of these impacts is rated in the sections below.

10.1 Construction Phase

Potential Impacts

Establishment activities include the earthworks required to remove topsoil, create the footprint of the development area and access routes to service the TSF. Dust would be generated during this phase and earth exposed that would contrast with the hues of the existing landscape.

Establishment activities would have a negligible effect on the landscape's visual quality and sense of place relative to its baseline as the activities would not contrast with the patterns that define the visual structure of the landscape. And the change would be restricted to a localized area (less that 5,0km from the site).

The impact on the visual environment during the establishment phase is assessed to have a low magnitude (i.e. where the impact affects the environment in such a way that natural, cultural and social functions and processes are slightly affected) and would occur over the short term (1-5 years). The unmitigated impact would be localized but would extend beyond the project site to adjacent areas, and the significance of impact is predicted to be LOW (i.e. impact would not have a direct influence on the decision to develop in the area).

The Project can be authorised but with conditions and routine inspections. The implementation of mitigation measures would not significantly reduce the anticipated impact, which would remain LOW. Refer to Table 5.

Table 5 Impact Summary:

Change of landscape characteristics and key views in the CONSTRUCTION Phase

Issue: Change to the landscape characteristics and key views and sense of place		
Phases: Construction Phase		
Criteria	Without Mitigation	With Mitigation
CONSEQUENCE		
Duration	Short term	Short term (1-5 Years)
Extent	Local	Local
Magnitude/Severity	Low	Low
Reversibility	Reversible	Reversible
PROBABILITY	Low (there is a possibility that the impact will occur)	Low
IMPACT SIGNIFICANCE	- LOW	- LOW
Degree to which impact can be reversed	Reversible: Impact is reversible without incurring considerable time and cost	
Degree to which impact may cause irreplaceable loss of resources	Low: The impact is unlikely to result in irreplaceable loss of resources	

Monitoring and Reporting

Monitoring or reporting of adherence to the proposed management measures should be conducted by the Mine's Environmental Officer on a weekly basis during the construction phase.

10.2 Operational Phase

Potential Impacts

Operational activities material being deposited at the TSF, dust and security lights along the boundary of the site.

The impact on the visual environment during the operational phase is assessed to have a moderate magnitude (i.e. where the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way) and would occur over the long term (37 years). The unmitigated impact would be regional and would extend beyond the site to adjacent areas (beyond 5,0km from the TSF). The significance of impact is predicted to be MODERATE (i.e. where the impact could have a direct influence on the decision to develop the area).

Project can be authorised but monitoring and mitigation are essential. The implementation of mitigation measures could slight reduce the anticipated impact. It would however remain at MODERATE. Refer to Table 6.

Table 6 Impact Summary:

Change of landscape characteristics and key views in the OPERATIONAL Phase

Issue: Change to the landscape characteristics and key views		
Phases: Operation Phase		
Criteria	Without Mitigation	With Mitigation
CONSEQUENCE		
Duration	Long term (37 years)	Long term
Extent	Regional (beyond 5,0km from site)	Regional
Magnitude/Severity	Moderate	Moderate
Reversibility	Reversible	Reversible
PROBABILITY	High (the impact will most likely occur)	Medium (the impact may occur)
IMPACT SIGNIFICANCE	- MODERATE	- MODERATE
Degree to which impact can be reversed	Reversible: but with prohibitive time and cost	
Degree to which impact may cause irreplaceable loss of resources	Low: The impact is unlikely to result in irreplaceable loss of resources	

Monitoring and Reporting

Monitoring or reporting of adherence to the proposed management measures should be conducted by the Mine's Environmental Officer on a monthly basis.

10.3 Post-Closure and Rehabilitation Phase

Potential Impacts

Rehabilitation activities at the TSF side slopes and surface area, until the areas are self-sustaining.

The impact on the visual environment during the post-closure and rehabilitation phase is assessed to have a minor magnitude (Where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected (no associated consequences)) and would occur over the short term. The unmitigated impact would be localized but would extend beyond the MRA to adjacent areas. The significance of impact is predicted to be LOW (Impact or benefit that requires management but that would not have a direct influence on the decision to develop in the area if it is mitigated.

Project can be authorised but with strict conditions and high levels of compliance and enforcement. Monitoring and mitigation are essential. The implementation of mitigation measures could reduce the anticipated impact slightly, but it would remain LOW. Refer to Table 8.

Table 7 Impact Summary:

Change of landscape characteristics and key views in the CLOSURE AND REHABILITATION Phase

Issue: Change to the landscape characteristics and key views		
Phases: Post-closure and Rehabilitation Phase		
Criteria	Without Mitigation	With Mitigation
CONSEQUENCE		
Duration	Short term (1-5 years)	Short term
Extent	Regional	Regional
Magnitude/Severity	Low	Low
Reversibility	Reversible	Reversible
PROBABILITY	Medium (the impact may occur)	Medium
IMPACT SIGNIFICANCE	- LOW	- LOW
Low		
Short term (1-5 Years)	Reversible: Impact is reversible but incurring significant time and cost	
Degree to which impact may cause irreplaceable loss of resources	Low: The impact is unlikely to result in irreplaceable loss of resources	

Monitoring and Reporting

Monitoring or reporting of adherence to the proposed management measures should be conducted by the Mine's Environmental Officer on a quarterly basis.

Table 8 below is a summary of all phases of the TSF as rated according to the method and criteria in Appendix C.

Table 8 Impact Assessment Table – NOOITGEDACHT TSF

		Pre-Mitigation							Post Mitigation								Priority Factor Criteria			
NOOITGEDACHT TSF (100m)	Phase	Nature	Extent	Duration	Magnitude	Reversibility	Probability	Pre-mitigation ER	Nature	Extent	Duration	Magnitude	Reversibility	Probability	Post-mitigation ER	Confidence	Cumulative Impact	Irreplaceable loss	Priority Factor	Final score
Impacts on Visual Environment and Sense of Place	Construction	-1	3	2	2	2	3	-6,75	-1	3	2	3	2	3	-7,5	Medium	1	1	1,00	-7,5
	Operation	-1	4	4	3	4	4	-15	-1	4	4	3	4	4	-15	High	2	1	1,13	-16,875
	Rehab and closure	-1	4	2	2	3	3	-8,25	-1	3	2	2	3	2	-5	Medium	2	1	1,13	-5,625

11. CUMULATIVE IMPACTS

Cumulative landscape and visual effects (impacts) result from additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments (associated with or separate to it), or actions that occurred in the past, present or are likely to happen in the foreseeable future. They may also affect how the landscape is experienced, and cumulative effects may be positive or negative. Where they comprise a range of benefits, they may be considered to form part of the mitigation measures.

Cumulative effects can also arise from the intervisibility of a range of developments and the combined effects of individual components of the proposed development occurring in different locations or over time. The separate effects of such individual components or developments may not be significant, but taken together, they may create an unacceptable degree of adverse impact on visual receptors within their combined visual envelopes. Intervisibility depends upon general topography, aspect, vegetative cover or other visual obstruction, elevation, and distance, as this affects visual acuity, which is also influenced by weather and light conditions (LI-IEMA (2013)).

11.1 Cumulative effect of the project

The proposed Nooitgedacht TSF project would be an addition to existing mining land-use activities currently prominent in the sub-region. The cumulative effect of individual components of the Project, would occur adjacent to existing and proposed mine deposition activities and as such there would be a moderate cumulative effect with respect to these activities (due primarily to the size and scale of the proposed Nooitgedacht TSF). The simulations in Figures 8-6 to 8-10 below illustrate the cumulative effect that the Nooitgedacht TSF would have on the visual environment, along with the proposed Valley TSF. The cumulative effect of the Nooitgedacht TSF is greater than that of the Valley TSF.

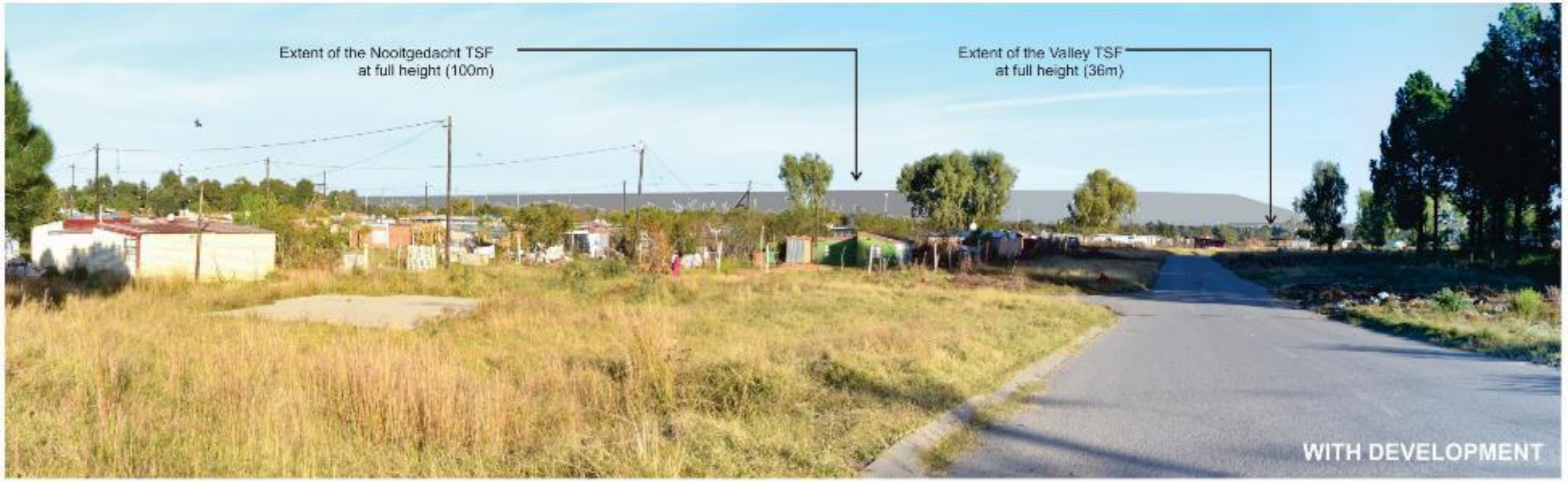

Figure 8-6: SIMULATION VIEW 3 - Cumulative TSFs

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Figure 8-7: SIMULATION VIEW 6 - Cumulative TSFs

Figure 8-8: SIMULATION VIEW 7 - Cumulative TSFs

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Figure 8-9: SIMULATION VIEW 12 - Nooitgedacht TSF

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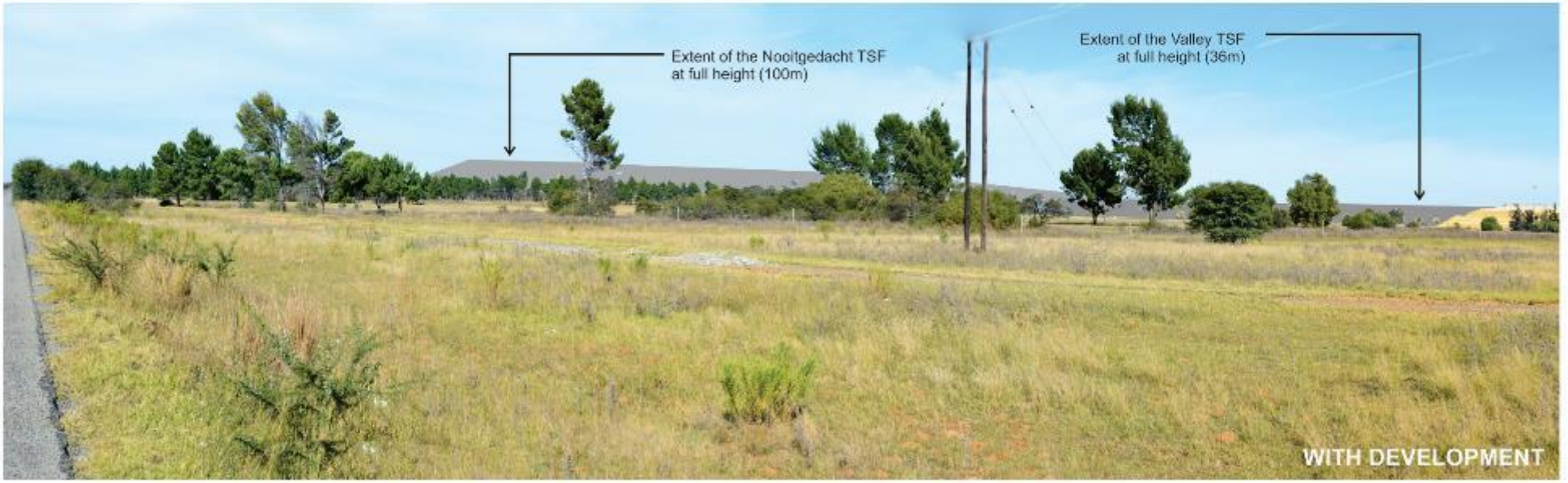

Figure 8-10: SIMULATION VIEW 15 - Cumulative TSFs

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12. CONCLUSION

The existing visual condition of the landscape that may be affected by the proposed Project has been described. The study area's scenic quality has been rated *low* to *moderate* within the context of the sub-region. Sensitive viewing areas and landscape types have been identified and mapped indicating a potentially low sensitivity to the project. However, the results of the public participation process must confirm this assumption.

Impacts on views are the highest when receptors are identified as being sensitive to change in the landscape, and their views are focused on and dominated by the changes to the landscape. The results of the public participation process where not know at the time of writing this report and generic sensitivities were ascribed to indicate that visual issues are potentially a concern to some of the I&APs, particularly those living in residential areas east of the TSF site.

The Project will introduce a land use currently occurring in the sub-region and will cause a MODERATE cumulative loss of and alteration to the baseline's key features and characteristics. The pre-development landscape and views will be affected by the introduction of elements not considered uncharacteristic when set within the attributes of the receiving landscape. The Project would affect receptors travelling through the study area on the R30, R34 and R710 arterial roads south, east and north of the site, farmsteads south west of the site and people living in residential areas within a 3,0 km radius east of the of the site.

The impact (worst case scenario) on the visual environment during all phases of the project is assessed to have a low magnitude (establishment phase) and moderate for the operational and closure phases. The impact would occur over the short term (construction and decommissioning) to long term (37 years for the operational phase). The unmitigated impact would be regional (beyond 5,0km from the site). The significance of impact is predicted to be LOW in the establishment and closure phases and MODERATE during the operational phase. A moderate negative impact could have a direct influence on the decision to develop in the area.

The impact is reversible in all phases although during the operational phase it could incur prohibitively high time and cost.

The impact may result in the low irreplaceable loss of resources (i.e. where the impact is unlikely to result in the irreplaceable loss of resources), primarily due to the baseline visual resource being rated as low to medium.

The implementation of mitigation measures could reduce the predicted impact, but the impact would remain MODERATE during the operational phase. Monitoring and mitigation are, however, essential.

12.1 Cumulative effect of the project

The proposed Nooitegedacht TSF project would be an addition to existing mining land-use activities currently prominent in the sub-region. The cumulative effect of the Project, which occurs adjacent to existing mine activities (TSFs) and as such there would be a MODERATE cumulative effect with respect to the other mining activities in the sub region.

12.2 Visual Impact Statement

It is the opinion of GYLA that the visual impacts associated with the proposed Project, given the worst case scenario, are of a moderate significance due to the nature, scale and duration of project activities within the context of the receiving environment. GYLA is of the opinion that the impacts associated with the various phases of the Project can be slightly mitigated. The significance of impact during the operational phase would therefore remain moderate provided that the recommended mitigation measures are implemented and effectively managed.

The Nooitgedacht TSF project is deemed acceptable from a visual perspective.

***** GYLA *****

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APPENDIX A: DETERMINING THE VISUAL RESOURCE VALUE OF A LANDSCAPE

To reach an understanding of the effect of development on a landscape resource, it is necessary to consider the distinct aspects of the landscape as follows:

Landscape Elements and Character

The individual elements that make up the landscape, including prominent or eye-catching features such as hills, valleys, savannah, trees, water bodies, buildings, and roads are generally quantifiable and can be easily described.

Landscape character is therefore the description of the pattern, resulting from combinations of natural (physical and biological) and cultural (land use) factors and how people perceive these. The visual dimension of the landscape reflects how these factors create repetitive groupings and interact to create areas that have a specific visual identity. The process of landscape character assessment can increase appreciation of what makes the landscape distinctive and what is important about an area. The description of landscape character thus focuses on the *nature of the land*, rather than the response of a viewer.

Landscape Value – all-encompassing (Aesthetic Value)

Aesthetic value is the emotional response derived from the experience of the environment with its natural and cultural attributes. The response can be either to visual or non-visual elements and can embrace the sound, smell and any other factor having a strong impact on human thoughts, feelings, and attitudes (Ramsay 1993). Thus, aesthetic value encompasses more than the seen view, visual quality or scenery, and includes atmosphere, landscape character, and sense of place (Schapper 1993).

Aesthetic appeal (value) is considered high when the following are present (Ramsay 1993):

- *Abstract qualities*: such as the presence of vivid, distinguished, uncommon, or rare features or abstract attributes.
- *Evocative responses*: the ability of the landscape to evoke particularly strong responses in community members or visitors.
- *Meanings*: the existence of a long-standing special meaning to a particular group of people or the ability of the landscape to convey special meanings to viewers in general.
- *Landmark quality*: a particular feature that stands out and is recognised by the broader community.

Sense of Place

Central to the concept of a sense of place is that the place requires uniqueness and distinctiveness. The primary informant of these qualities is the spatial form and character of the natural landscape together with the cultural transformations and traditions associated with historic use and habitation. According to Lynch (1992) sense of place "is the extent to which a person can recognise or recall a place as being distinct from other places - as having a vivid, or unique, or at least particular, character of its own". Sense of place is the unique value that is allocated to a specific place or area through the cognitive experience of the user or viewer. In some cases, these values allocated to the place are similar for a wide spectrum of users or viewers, giving the place a universally recognised and therefore, strong sense of place.

Scenic Quality

Assigning values to visual resources is a subjective process. The phrase, “beauty is in the eye of the beholder,” is often quoted to emphasise the subjectivity in determining scenic values. Yet, researchers have found consistent levels of agreement among individuals asked to evaluate visual quality.

Studies for perceptual psychology have shown human preference for landscapes with a higher visual

complexity particularly in scenes with water, over homogeneous areas. Based on contemporary research landscape quality increases when:

- Topographic ruggedness and relative relief increase.
- Where water forms are present.
- Where diverse patterns of grasslands and trees occur.
- Where natural landscape increases and man-made landscape decreases.
- And where land use compatibility increases, and land use edge diversity decreases (Crawford 1994).

Scenic Quality - Explanation of Rating Criteria:

(After The Visual Resource Management System, Department of the Interior of the USA Government, Bureau of Land Management)

Landform: Topography becomes more interesting as it gets steeper or more massive, or more severely or universally sculptured. Outstanding landforms may be monumental, as the Fish River or Blyde River Canyon, the Drakensberg or other mountain ranges, or they may be exceedingly artistic and subtle as certain pinnacles, arches, and other extraordinary formations.

Vegetation: (Plant communities) Give primary consideration to the variety of patterns, forms, and textures created by plant life. Consider short-lived displays when they are known to be recurring or spectacular (wildflower displays in the Karoo regions). Consider also smaller scale vegetational features, which add striking and intriguing detail elements to the landscape (e.g., gnarled or wind beaten trees, and baobab trees).

Water: That ingredient which adds movement or serenity to a scene. The degree to which water dominates the scene is the primary consideration in selecting the rating score.

Colour: Consider the overall colour(s) of the basic components of the landscape (e.g., soil, rock, vegetation, etc.) as they appear during seasons or periods of high use. Key factors to use when rating "colour" are variety, contrast, and harmony.

Adjacent Scenery: Degree to which scenery outside the scenery unit being rated enhances the overall impression of the scenery within the rating unit. The distance which adjacent scenery will influence scenery within the rating unit will normally range from 0-8 kilometres, depending upon the characteristics of the topography, the vegetative cover, and other such factors. This factor is generally applied to units which would normally rate very low in score, but the influence of the adjacent unit would enhance the visual quality and raise the score.

Scarcity: This factor provides an opportunity to give added importance to one or all of the scenic features that appear to be relatively unique or rare within one physiographic region. There may also be cases where a separate evaluation of each of the key factors does not give a true picture of the overall scenic quality of an area. Often it is a number of not so spectacular elements in the proper combination that produces the most pleasing and memorable scenery - the scarcity factor can be used to recognise this type of area and give it the added emphasis it needs.

Cultural Modifications: Cultural modifications in the landform / water, vegetation, and addition of structures should be considered and may detract from the scenery in the form of a negative intrusion or complement or improve the scenic quality of a unit.

Scenic Quality Inventory and Evaluation Chart

(After The Visual Resource Management System, Department of the Interior of the USA Government, Bureau of Land Management)

Key factors	Rating Criteria and Score		
Landform	High vertical relief as expressed in prominent cliffs, spires, or massive rock outcrops, or severe surface variation or highly eroded formations including major Badlands or dune systems; or detail features dominant and exceptionally striking and intriguing such as glaciers. **5**	Steep canyons, mesas, buttes, cinder cones, and drumlins; or interesting erosional patterns or variety in size and shape of landforms; or detail features which are interesting though not dominant or exceptional. **3**	Low rolling hills, foothills, or flat valley bottoms; or few or no interesting landscape features. **1**
Vegetation and landcover	A variety of vegetative types as expressed in interesting forms, textures, and patterns. **5**	Some variety of vegetation, but only one or two major types. **3**	Little or no variety or contrast in vegetation. **1**
Water	Clear and clean appearing, still, or cascading white water, any of which are a dominant factor in the landscape. **5**	Flowing, or still, but not dominant in the landscape. **3**	Absent, or present, but not noticeable. **0**
Colour	Rich colour combinations, variety, or vivid colour; or pleasing contrasts in the soil, rock, vegetation, water or snow fields. **5**	Some intensity or variety in colours and contrast of the soil, rock, and vegetation, but not a dominant scenic element. **3**	Subtle colour variations, contrast, or interest; generally mute tones. **1**
Influence of adjacent scenery	Adjacent scenery greatly enhances visual quality. **5**	Adjacent scenery moderately enhances overall visual quality. **3**	Adjacent scenery has little or no influence on overall visual quality. **0**
Scarcity	One of a kind; or unusually memorable, or exceedingly rare within region. Consistent chance for exceptional wildlife or wildflower viewing, etc. National and provincial parks and conservation areas *** 5+**	Distinctive, though somewhat like others within the region. **3**	Interesting within its setting, but common within the region. **1**
Cultural modifications	Modifications add favourably to visual	Modifications add little or no visual variety to the	Modifications add variety but are very discordant

	variety while promoting visual harmony. **2**	area and introduce no discordant elements. **0**	and promote strong disharmony. **4**

Scenic Quality (i.e. value of the visual resource)

In determining the quality of the visual resource both the objective and the subjective or aesthetic factors associated with the landscape are considered. Many landscapes can be said to have a strong sense of place, regardless of whether they are considered to be scenically beautiful but where landscape quality, aesthetic value and a strong sense of place coincide - the visual resource or perceived value of the landscape is considered to be very high.

When considering both objective and subjective factors associated with the landscape there is a balance between landscape character and individual landscape features and elements, which would result in the values as follows:

Value of Visual Resource – expressed as Scenic Quality
(After The Landscape Institute with the Institute of Environmental Management and Assessment (2002))

High	Moderate	Low
Areas that exhibit an incredibly positive character with valued features that combine to give the experience of unity, richness, and harmony. These are landscapes that may be of particular importance to conserve, and which may be sensitive change in general and which may be detrimental if change is inappropriately dealt with.	Areas that exhibit positive character, but which may have evidence of alteration to /degradation/erosion of features resulting in areas of more mixed character. Potentially sensitive to change in general; again, change may be detrimental if inappropriately dealt with, but it may not require special or particular attention to detail.	Areas generally negative in character with few, if any, valued features. Scope for positive enhancement frequently occurs.

APPENDIX B: METHOD FOR DETERMINING THE SEVERITY OF LANDSCAPE AND VISUAL IMPACT

A visual impact study analysis addresses the importance of the inherent aesthetics of the landscape, the public value of viewing the natural landscape, and the contrast or change in the landscape from the Project.

For some topics, such as water or air quality, it is possible to use measurable, technical international or national guidelines or legislative standards, against which potential effects can be assessed. The assessment of likely effects on a landscape resource and on visual amenity is more complex, since it is determined through a combination of quantitative and qualitative evaluations. (The Landscape Institute with the Institute of Environmental Management and Assessment (2002).

Landscape impact assessment includes a combination of objective and subjective judgements, and it is therefore important that a structured and consistent approach is used. It is necessary to differentiate between judgements that involve a degree of subjective opinion (as in the assessment of landscape value) from those that are normally more objective and quantifiable (as in the determination of magnitude of change). Judgement should always be based on training and experience and be supported by clear evidence and reasoned argument. Accordingly, suitably qualified and experienced landscape professionals carry out landscape and visual impact assessments (The Landscape Institute with the Institute of Environmental Management and Assessment (2002),

Landscape and visual assessments are separate, although linked, procedures. The landscape baseline, its analysis and the assessment of landscape effects all contribute to the baseline for visual assessment studies. The assessment of the potential effect on the landscape is carried our as an effect on an environmental resource, i.e. the landscape. Visual effects are assessed as one of the interrelated effects on population.

Landscape Impact

Landscape impacts derive from changes in the physical landscape, which may give rise to changes in its character and from effects to the scenic values of the landscape. This may in turn affect the perceived value ascribed to the landscape. The description and analysis of effects on a landscape resource relies on the adoption of certain basic principles about the positive (or beneficial) and negative (or adverse) effects of change in the landscape. Due to the inherently dynamic nature of the landscape, change arising from a development may not necessarily be significant (Institute of Environmental Assessment & The Landscape Institute (2002)).

Visual Impact

Visual impacts relate to the changes that arise in the composition of available views as a result of changes to the landscape, to people's responses to the changes, and to the overall effects with respect to visual amenity. Visual impact is therefore measured as the change to the existing visual environment (caused by the physical presence of a new development) and the extent to which that change compromises (negative impact) or enhances (positive impact) or maintains the visual quality of the area.

To assess the magnitude of visual impact four main factors are considered.

Visual Intrusion:	The nature of intrusion or contrast (physical characteristics) of a Project component on the visual quality of the surrounding environment and its compatibility/discord with the landscape and surrounding land use.
Visibility:	The area/points from which Project components will be visible.
Visual exposure:	Visibility and visual intrusion qualified with a distance rating to indicate the degree of intrusion.
Sensitivity:	Sensitivity of visual receptors to the proposed development

Visual Intrusion / contrast

Visual intrusion deals with the notion of contextualism i.e. how well does a Project component fit into the ecological and cultural aesthetic of the landscape as a whole? Or conversely what is its contrast with the receiving environment. Combining landform / vegetation contrast with structure contrast derives overall visual intrusion/contrast levels of high, moderate, and low.

Landform / vegetation contrast is the change in vegetation cover and patterns that would result from construction activities. Landform contrast is the change in landforms, exposure of soils, potential for erosion scars, slumping, and other physical disturbances that would be noticed as uncharacteristic in the natural landscape. Structure contrast examines the compatibility of the proposed development with other structures in the landscape and the existing natural landscape. Structure contrast is typically strongest where there are no other structures (e.g., buildings, existing utilities) in the landscape setting.

Photographic panoramas from key viewpoints before and after development are presented to illustrate the nature and change (contrast) to the landscape created by the proposed development. A computer simulation technique is employed to superimpose a graphic of the development onto the panorama. The extent to which the component fits or contrasts with the landscape setting can then be assessed using the following criteria.

- **Does the physical development concept have a negative, positive or neutral effect on the quality of the landscape?**
- **Does the development enhance or contrast with the patterns or elements that define the structure of the landscape?**
- **Does the design of the Project enhance and promote cultural continuity, or does it disrupt it?**

The consequence of the intrusion / contrast can then be measured in terms of the sensitivity of the affected landscape and visual resource given the criteria listed below. For instance, within an industrial area, a new sewage treatment works may have an insignificant landscape and visual impact; whereas in a *valued* landscape it might be considered to be an intrusive element. (Institute of Environmental Assessment & The landscape Institute (1996)).

Table 1: Visual Intrusion

High	Moderate	Low	Positive
If the Project: - Has a substantial negative effect on the visual quality of the landscape. - Contrasts dramatically with the patterns or elements that define the structure of the landscape. - Contrasts dramatically with land use, settlement or enclosure patterns. - Is unable to be 'absorbed' into the landscape.	If the Project: - Has a moderate negative effect on the visual quality of the landscape. - Contrasts moderately with the patterns or elements that define the structure of the landscape. - Is partially compatible with land use, settlement or enclosure patterns. - Is partially 'absorbed' into the landscape.	If the Project: - Has a minimal effect on the visual quality of the landscape. - Contrasts minimally with the patterns or elements that define the structure of the landscape. - Is mostly compatible with land use, settlement or enclosure patterns. - Is 'absorbed' into the landscape.	If the Project: - Has a beneficial effect on the visual quality of the landscape. - Enhances the patterns or elements that define the structure of the landscape. - Is compatible with land use, settlement or enclosure patterns.

Result Notable change in landscape characteristics over an extensive area and/or intensive change over a localised area resulting in major changes in key views.	*Result* Moderate change in landscape characteristics over localised area resulting in a moderate change to key views.	*Result* Imperceptible change resulting in a minor change to key views.	*Result* Positive change in key views.

Visual intrusion also diminishes with scenes of higher complexity, as distance increases, the object becomes less of a focal point (more visual distraction), and the observer's attention is diverted by the complexity of the scene (Hull and Bishop (1988)).

Visibility

A viewshed analysis was carried out to define areas, which contain all possible observation sites from which the development would be visible. The basic assumption for preparing a viewshed analysis is that the observer eye height is 1.8m above ground level. Topographic data was captured for the site and its environs at 10 m contour intervals to create the Digital Terrain Model (DTM). The DTM includes features such as vegetation, rivers, roads and nearby urban areas. These features were 'draped' over the topographic data to complete the model used to generate the viewshed analysis. It should be noted that viewshed analyses are not absolute indicators of the level of significance (magnitude) of the impact in the view, but merely a statement of the fact of potential visibility. The visibility of a development and its contribution to visual impact is predicted using the criteria listed below:

Table 2: Visibility

High	**Moderate**	**Low**
Visual Receptors If the development is visible from over half the zone of potential influence, and/or views are mostly unobstructed and/or most viewers are affected.	*Visual Receptors* If the development is visible from less than half the zone of potential influence, and/or views are partially obstructed and or many viewers are affected	*Visual Receptors* If the development is visible from less than a quarter of the zone of potential influence, and/or views are mostly obstructed and/or few viewers are affected.

Visual Exposure

Visual exposure relates directly to the distance of the view. It is a criterion used to account for the limiting effect of increased distance on visual impact. The impact of an object in the foreground (0 – 800m) is greater than the impact of that same object in the middle ground (800m – 5.0 km) which, in turn is greater than the impact of the object in the background (greater than 5.0 km) of a particular scene.

Distance from a viewer to a viewed object or area of the landscape influences how visual changes are perceived in the landscape. Generally, changes in form, line, colour, and texture in the landscape become less perceptible with increasing distance.

Areas seen from 0 to 800m are considered foreground; foliage and fine textural details of vegetation are normally perceptible within this zone.

Areas seen from 800m to 5.0km are considered middle ground; vegetation appears as outlines or patterns. Depending on topography and vegetation, middle ground is sometimes considered to be up to

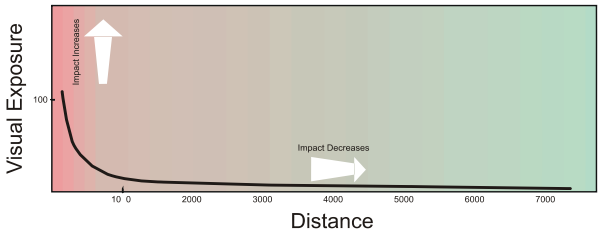
8.0km.

Areas seen from 5.0km to 8.0km and sometimes up to 16km and beyond are considered background. Landforms become the most dominant element at these distances.

Seldom seen areas are those portions of the landscape that, due to topographic relief or vegetation, are screened from the viewpoint or are beyond 16km from the viewpoint. Landforms become the most dominant element at these distances.

The impact of an object diminishes at an exponential rate as the distance between the observer and the object increases. Thus, the visual impact at 1000 m would be 25% of the impact as viewed from 500 m. At 2000 m it would be 10% of the impact at 500 m. The inverse relationship of distance and visual impact is well recognised in visual analysis literature (e.g.: Hull and Bishop (1988)) and is used as an important criteria for the study. This principle is illustrated in the Figures below.

Image 1: Effect of Distance on Visual Exposure



Sensitivity of Visual Receptors

When visual intrusion, visibility and visual exposure are incorporated, and qualified by sensitivity criteria (visual receptors) the magnitude of the impact of the development can be determined.

The sensitivity of visual receptors and views will be depended on:

- **The location and context of the viewpoint.**
- **The expectations and occupation or activity of the receptor.**
- **The importance of the view (which may be determined with respect to is popularity or numbers of people affected, its appearance in guidebooks, on tourist maps, and in the facilities provided for its enjoyment and references to it in literature or art).**

The most sensitive receptors may include:

- **Users of all outdoor recreational facilities including public rights of way, whose intention or interest may be focused on the landscape.**
- **Communities where the development results in changes in the landscape setting or valued views enjoyed by the community.**
- **Occupiers of residential properties with views affected by the development.**
- **These would all be high.**

Other receptors include:

- **People engaged in outdoor sport or recreation (other than appreciation of the landscape, as in landscapes of acknowledged importance or value).**
- **People travelling through or past the affected landscape in cars, on trains or other transport routes.**
- **People at their place of work.**

The least sensitive receptors are likely to be people at their place of work, or engaged in similar activities, whose attention may be focused on their work or activity and who therefore may be potentially less susceptible to changes in the view.

In this process more weight is usually given to changes in the view or visual amenity which are greater in scale, and visible over a wide area. In assessing the effect on views, consideration should be given to the effectiveness of mitigation measures, particularly where planting is proposed for screening purposes (Institute of Environmental Assessment & The Landscape Institute (1996).

Table 3: Sensitivity of Visual Receptors

High	Moderate	Low
Users of all outdoor recreational facilities including public rights of way, whose intention or interest may be focused on the landscape. Communities where the development results in changes in the landscape setting or valued views enjoyed by the community. Occupiers of residential properties with views affected by the development.	People engaged in outdoor sport or recreation (other than appreciation of the landscape, as in landscapes of acknowledged importance or value). People travelling through or past the affected landscape in cars, on trains or other transport routes.	The least sensitive receptors are likely to be people at their place of work, or engaged in similar activities, whose attention may be focused on their work or activity and who therefore may be potentially less susceptible to changes in the view (i.e. office and industrial areas). Roads going through urban and industrial areas

Severity of the Visual Impact

Potential visual impacts are determined by analysing how the physical change in the landscape, resulting from the introduction of a Project, are viewed and perceived from sensitive viewpoints. Impacts to views are the highest when viewers are identified as being sensitive to change in the landscape, and their views are focused on and dominated by the change. Visual impacts occur when changes in the landscape are noticeable to viewers looking at the landscape from their homes or from parks, and conservation areas, highways and travel routes, and important cultural features and historic sites, especially in foreground views.

The magnitude of impact is assessed through a synthesis of visual intrusion, visibility, visual exposure and viewer sensitivity criteria. Once the magnitude of impact has been established this value is further qualified with spatial, duration and probability criteria to determine the *significance* of the visual impact.

For instance, the fact that visual intrusion and exposure diminishes significantly with distance does not necessarily imply that the relatively small impact that exists at greater distances is unimportant. The level of impact that people consider acceptable may be dependent upon the purpose they have in viewing the landscape. A particular development may be unacceptable to a hiker seeking a natural experience, or a household whose view is impaired, but may be barely noticed by a golfer concentrating on his game or a commuter trying to get to work on time (Ittleson *et al.,* 1974).

In synthesising these criteria a numerical or weighting system is avoided. Attempting to attach a precise numerical value to qualitative resources is rarely successful, and should not be used as a substitute for reasoned professional judgement. (Institute of Environmental Assessment and The landscape Institute (1996)).

Table 4: Severity of Visual Impact

High	Moderate	Low	Negligible
Total loss of or major alteration to key	Partial loss of or alteration to key	Minor loss of or alteration to key	Very minor loss or alteration to key

elements/features/characteristics of the baseline. I.e. Pre-development landscape or view and/or introduction of elements considered to be uncharacteristic when set within the attributes of the receiving landscape. High scenic quality impacts would result.	elements/features/characteristics of the baseline. I.e. Pre-development landscape or view and/or introduction of elements that may be prominent but may not necessarily be uncharacteristic when set within the attributes of the receiving landscape. Moderate scenic quality impacts would result	elements/features/characteristics of the baseline. I.e. Pre-development landscape or view and/or introduction of elements that may not be uncharacteristic when set within the attributes of the receiving landscape. Low scenic quality impacts would result.	elements/features/characteristics of the baseline. I.e. Pre-development landscape or view and/or introduction of elements that are characteristic with the surrounding landscape – approximating the 'no change' situation. Negligible scenic quality impacts would result.

Cumulative effects

Cumulative landscape and visual effects (impacts) result from additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments (associated with or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future. They may also affect the way in which the landscape is experienced. Cumulative effects may be positive or negative. Where they comprise a range of benefits, they may be considered to form part of the mitigation measures.

Cumulative effects can also arise from the intervisibility (visibility) of a range of developments and /or the combined effects of individual components of the proposed development occurring in different locations or over a period of time. The separate effects of such individual components or developments may not be significant, but together they may create an unacceptable degree of adverse effect on visual receptors within their combined visual envelopes. Intervisibility depends upon general topography, aspect, tree cover or other visual obstruction, elevation and distance, as this affects visual acuity, which is also influenced by weather and light conditions. (Institute of Environmental Assessment and The landscape Institute (1996)).

APPENDIX C: METHOD FOR DETERMINING THE SIGNIFICANCE OF IMPACT (EIMS)

1. Purpose

The purpose of this procedure is to guide the undertaking of an impact and risk assessment process, as required under the regulations promulgated under the National Environmental Management Act (Act 107 of 1998 - NEMA).

2. Scope

This procedure provides the methodology to be applied to environmental impacts and risks identified during the Environmental Impact Assessment Process. The methodology ensures that consistent impact assessment rating is carried out that is legally compliant and aligned with EIMS's objective of providing a quality service.

3. References

GNR. 982 National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment Regulations, 2014 – hereafter referred to as the Regulations.

4. Additional Guidelines and References

Guidelines and Reference Docs (not exhaustive – please verify with the applicable competent authority).	
Compulsory Compliance: GNR. 982 National Environmental Management Act (Act No. 107 of 1998 - NEMA): Environmental Impact Assessment Regulations, 2014.	National
Companion Guideline for Implementation: Environmental Management Assessment Regulations, 2010 - GN 805/2012 (NEMA)	National
DEAT (2002) Impact Significance, Integrated Environmental Management, Information Series 5, Department of Environmental Affairs and Tourism (DEAT), Pretoria	National

5. Definitions and Abbreviations

Refer to Chapter 1 of the Regulations.

6. Procedure

The impact significance rating methodology, as presented herein and utilised for all EIMS Impact Assessment Projects, is guided by the requirements of the NEMA EIA Regulations 2014 (as amended). The broad approach to the significance rating methodology is to determine the environmental risk (ER) by considering the consequence (C) of each impact (comprising Nature, Extent, Duration, Magnitude, and Reversibility) and relate this to the probability/ likelihood (P) of the impact occurring. The ER is determined for the pre- and post-mitigation scenario. In addition, other factors, including cumulative impacts and potential for irreplaceable loss of resources, are used to determine a prioritisation factor (PF) which is applied to the ER to determine the overall significance (S). The impact assessment will be applied to all identified alternatives.

a. Determination of Environmental Risk

The significance (S) of an impact is determined by applying a prioritisation factor (PF) to the environmental risk (ER). The environmental risk is dependent on the consequence (C) of the particular impact and the probability (P) of the impact occurring. Consequence is determined through the consideration of the Nature (N), Extent (E), Duration (D), Magnitude (M), and Reversibility (R) applicable to the specific impact.

For the purpose of this methodology the consequence of the impact is represented by:

$$C = \frac{(E + D + M + R) * N}{4}$$

Each individual aspect in the determination of the consequence is represented by a rating scale as defined in Table 1 below.

Table 1: Criteria for Determining Impact Consequence

Aspect	Score	Definition
Nature	- 1	Likely to result in a negative/ detrimental impact
	+1	Likely to result in a positive/ beneficial impact
Extent	1	Activity (i.e. limited to the area applicable to the specific activity)
	2	Site (i.e. within the development property boundary)
	3	Local (i.e. the area within 5 km of the site)
	4	Regional (i.e. extends between 5 and 50 km from the site)
	5	Provincial / National (i.e. extends beyond 50 km from the site)
Duration	1	Immediate (<1 year)
	2	Short term (1-5 years)
	3	Medium term (6-15 years)
	4	Long term (15-65 years, the impact will cease after the operational life span of the project)
	5	Permanent (>65 years, no mitigation measure of natural process will reduce the impact after construction)
Magnitude/ Intensity	1	Minor (where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected)
	2	Low (where the impact affects the environment in such a way that natural, cultural and social functions and processes are slightly affected)
	3	Moderate (where the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way, moderate improvement for +ve impacts)
	4	High (where natural, cultural or social functions or processes are altered to the extent that it will temporarily cease, high improvement for +ve impacts)
	5	Very high / don't know (where natural, cultural or social functions or processes are altered to the extent that it will permanently cease, substantial improvement for +ve impacts)
Reversibility	1	Impact is reversible without any time and cost.
	2	Impact is reversible without incurring significant time and cost.
	3	Impact is reversible only by incurring significant time and cost.
	4	Impact is reversible only by incurring prohibitively high time and cost.
	5	Irreversible Impact.

Once the C has been determined, the ER is determined in accordance with the standard risk assessment relationship by multiplying the C and the P. Probability is rated/ scored as per Table 2.

Table 2: Probability Scoring

Probability	1	Improbable (the possibility of the impact materialising is very low as a result of design, historic experience, or implementation of adequate corrective actions; <25%),
	2	Low probability (there is a possibility that the impact will occur; >25% and <50%),
	3	Medium probability (the impact may occur; >50% and <75%),
	4	High probability (it is most likely that the impact will occur- > 75% probability), or
	5	Definite (the impact will occur),

The result is a qualitative representation of relative ER associated with the impact. ER is therefore calculated as follows:

$$ER = C \times P$$

Table 3: Determination of Environmental Risk

Consequence	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
		1	2	3	4	5
	obability					

The outcome of the environmental risk assessment will result in a range of scores, ranging from 1 through to 25. These ER scores are then grouped into respective classes as described in Table 4.

Table 4: Environmental Risk Scores

ER Score	Description
<9	Low (i.e. where this impact is unlikely to be a significant environmental risk/ reward).
≥9 ≤17	Medium (i.e. where the impact could have a significant environmental risk/ reward),
>17	High (i.e. where the impact will have a significant environmental risk/ reward).

The impact ER will be determined for each impact without relevant management and mitigation measures (pre-mitigation), as well as post implementation of relevant management and mitigation measures (post-mitigation). This allows for a prediction in the degree to which the impact can be managed/mitigated.

b. Impact Prioritisation

Further to the assessment criteria presented in the section above, it is necessary to assess each potentially significant impact in terms of:

1. Cumulative impacts; and
2. The degree to which the impact may cause irreplaceable loss of resources.

To ensure that these factors are considered, an impact prioritisation factor (PF) will be applied to each impact ER (post- mitigation). This prioritisation factor does not aim to detract from the risk ratings but rather to focus the attention of the decision-making authority on the higher priority/significance issues and impacts. The PF will be applied to the ER score based on the assumption that relevant suggested management/mitigation impacts are implemented.

Table 5: Criteria for Determining Prioritisation

Cumulative Impact (CI)	Low (1)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely that the impact will result in spatial and temporal cumulative change.
	Medium (2)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.
	High (3)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is highly probable/ definite that the impact will result in spatial and temporal cumulative change.
Irreplaceable Loss of Resources (LR)	Low (1)	Where the impact is unlikely to result in irreplaceable loss of resources.
	Medium (2)	Where the impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.
	High (3)	Where the impact may result in the irreplaceable loss of resources of high value (services and/or functions).

The value for the final impact priority is represented as a single consolidated priority, determined as the sum of each individual criteria represented in Table 5. The impact priority is therefore determined as follows:

$$\boldsymbol{Priority = CI + LR}$$

The result is a priority score which ranges from 2 to 6 and a consequent PF ranging from 1 to 1.5 (Refer to Table 6).

Table 6: Determination of Prioritisation Factor

Priority	Prioritisation Factor
2	1
3	1.125
4	1.25
5	1.375
6	1.5

In order to determine the final impact significance, the PF is multiplied by the ER of the post mitigation scoring. The ultimate aim of the PF is an attempt to increase the post mitigation environmental risk rating by a factor of 0.5, if all the priority attributes are high (i.e. if an impact comes out with a high medium environmental risk after the conventional impact rating, but there is significant cumulative impact potential and significant potential for irreplaceable loss of resources, then the net result would be to upscale the impact to a high significance).

Table 7: Final Environmental Significance Rating

Significance Rating	Description
<-17	High negative (i.e. where the impact must have an influence on the decision process to develop in the area).
≥-17, ≤-9	Medium negative (i.e. where the impact could influence the decision to develop in the area).
>-9, < 0	Low negative (i.e. where this impact would not have a direct influence on the decision to develop in the area).
0	No impact
>0, <9	Low positive (i.e. where this impact would not have a direct influence on the decision to develop in the area).
≥9, ≤17	Medium positive (i.e. where the impact could influence the decision to develop in the area).
>17	High positive (i.e. where the impact must have an influence on the decision process to develop in the area).

The significance ratings and additional considerations applied to each impact will be used to provide a quantitative comparative assessment of the alternatives being considered. In addition, professional expertise and opinion of the specialists and the environmental consultants will be applied to provide a qualitative comparison of the alternatives under consideration. This process will identify the best alternative for the proposed project.

7. Responsibilities

It is the responsibility of each EIMS employee, and each external Specialist appointed by EIMS to ensure that this procedure is carried out as described. All the personnel within the organization have the responsibility to report any deviations/changes from the procedures to management. This is to ensure that the necessary changes are documented after approval.

It is the responsibility of the senior/ junior consultant (as applicable) assigned with the task of report compilation to ensure that this methodology/ procedure is strictly applied. It is the responsibility of the assigned Senior Consultant or Quality Reviewer to review and verify that the procedure has been complied with, and such documented at the specified quality check intervals.

8. Records

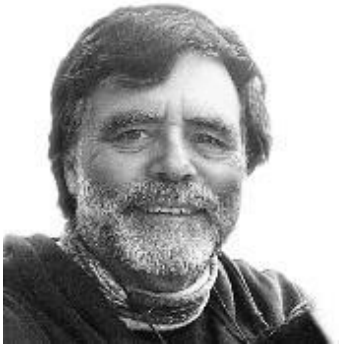
RECORD	STORAGE LOCATION	STORAGE SYSTEM	RESPONSIBLE PERSON	RETENTION PERIOD

Significance Rating Input Spreadsheet	Project File - /Server/assignments/ Job#/Records	Electronic- Scanned PDF	Project Manager	10 Years

9. Record of Changes, Revisions and Cancellations

RECORD OF CHANGES, REVISIONS AND CANCELLATIONS		
DATE	**NATURE / DETAIL OF CHANGE**	**REV No.**

APPENDIX C: CURRICULUM VITAE



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Graham is a registered landscape architect with interest and experience in landscape architecture, urban design, and environmental planning. He holds a degree in landscape architecture from the University of Toronto and has practiced in Canada and Africa, where he has spent most of his working life. He has served as President of the Institute of Landscape Architects of South Africa (ILASA) and as Vice President of the Board of Control for Landscape Architects.

During his 30 years plus career he has received numerous ILASA and other industry awards. He has published widely on landscape architectural issues and has had projects published both locally and internationally in, scientific and design journals and books. He was a founding member of Newtown Landscape Architects and was also a senior lecturer, teaching landscape architecture and urban design at post and undergraduate levels, at the University of Pretoria (retired 2018). He has been a visiting studio critic at the Universities of the Witwatersrand and Cape Town and in 2011 was invited to the University of Rhode Island, USA as their Distinguished International Scholar. In 2022 he was awarded the ILASA Lifetime Achievement Award. Graham now practices as a Sole Proprietor: Graham Young Landscape Architect.

A niche specialty of his is Visual Impact Assessment for which he was cited with an ILASA Merit Award in 1999. He has completed over 250 specialist reports for projects in South Africa, Canada, and other African countries. He was on the panel that developed the *Guideline for Involving Visual and Aesthetic Specialists in EIA Processes* (2005) and produced a research document for Eskom, *The Visual Impacts of Power Lines* (2009). In 2011, he produced '*Guidelines for involving visual and aesthetic specialists'* for the Aapravasi Ghat Trust Fund Technical Committee (they manage a World Heritage Site) along with the *Visual Impact Assessment Training Module Guideline Document.*

*** GYLA ***