Visual Impact Assessment for the Proposed Hartland Telecommunications Mast, near Hartenbos, Western Cape Province

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

Prepared for	Sharples Environmental Services CC
Telephone No.	+27 44 873 4923
Physical Address	17 Cathedral Square George Western Cape 6530

Eco Thunder Consulting (Pty) Ltd

11 Ruby Close, Witkoppen, Fourways, Sandton, Johannesburg, South Africa, 2068

Phone: +27 64 655 2752

PO Box 2055, Fourways, Sandton, Johannesburg, South Africa, 2191

Email: admin@eco-thunder.co.za
Website: www.eco-thunder.co.za

CONTROL SHEET

ETC Reference:	ECT0489	
Project Name:	Visual Impact Assessment for the Proposed Hartland Telecommunications Mast, near Hartenbos, Western Cape Province	
Prepared For:	Sharples Environmental Services CC	
Prepared By:	Eco-Thunder Consulting (Pty) Ltd www.eco-thunder.co.za	
Address:	PO Box 2055 Fourways 2191	
Telephone Number:	+27 64 655 2752/	
Email Address:	admin@eco-thunder.co.za brogan@eco-thunder.co.za	
Report Compiled By:	**Compiler:**	Brogan Geldenhuys
	Signature:	
	Date:	28th August 2024
	Jnr. Compilers:	Rykala Lyth Marvin Gabara
	Date:	2nd September 2024
Report Reviewed By:	**Reviewer:**	Siobhan Motley
	Signature:	
	Date:	6th September 2024
Applicant:	Summit Telecommunication	
Revision Number:	000	
Date Issued:	9th September 2024	

COPYRIGHT INFORMATION

EXECUTIVE SUMMARY

The Hartland Telecommunications Mast is a proposed telecommunication infrastructure project to be developed within the proposed Hartland Lifestyle Estate, located near Hartenbos in the Western Cape Province of South Africa. The project involves the construction of a 15m high telecommunications mast, designed to be camouflaged as a windmill, which will serve the surrounding residential and business areas within the estate.

The Hartland Lifestyle was originally granted an EA dated 18 August 2009 and was amended by the Addendum to the EA dated 22 June 2023. However, the proposed telecommunications mast requires an additional amendment to the existing EA before it can be included as part of the authorised activities. The VIA forms a critical component of this amendment process, evaluating how the proposed mast will affect the surrounding environment.

The proposed Hartland Telecommunications Mast aims to enhance telecommunications services in the Hartenbos region. The location for the mast, set within a varied landscape consisting of open high hills, plains, and undulating terrain, reflects the diverse topography of the area. Key water features such as the Klein Brak River, Hartenbos River, and Klipheuwel Dam contribute to the region’s visual and ecological character.

A VIA was conducted to assess how the mast would integrate into this landscape. The assessment acknowledges that the mast will introduce a new visual element to the area. However, it also indicates that this change can be managed through appropriate design and mitigation measures. The selected design of the mast, which incorporates elements reminiscent of traditional rural infrastructure, assists in blending it with the surrounding environment.

The landscape around the proposed site has varying degrees of natural screening and VAC. The hills offer natural screening, reducing the visibility of the mast from certain perspectives. The water features in the area, such as the nearby rivers and dam, provide a visual contrast that complements the natural landscape.

The windmill-inspired design of the telecommunications mast was chosen to harmonise with the existing peri-urban character of the area, reducing its visual presence. This design, combined with the natural topography, will help to integrate the mast into the landscape, allowing it to coexist with the natural features of the region.

The VIA analysis has concluded that while the mast will be visible from various vantage points, the landscape's inherent ability to absorb visual changes, along with the project's strategic placement and design, will ensure that any visual impact is mitigated. The site does not feature any highly sensitive visual resources that would be adversely affected by the development, and the surrounding natural features will be maintained through careful management.

The development of the Hartland Telecommunications Mast is consistent with environmental best practices and is visually compatible with the surrounding landscape. The design and mitigation measures have been carefully developed to reduce visual impacts while improving telecommunications infrastructure in the area. The project is expected to contribute positively to local development without compromising the visual of integrity of the region.

From a visual specialist's perspective there are no fatal flaws and no reason that the project cannot be authorised provided that the recommended mitigation measures are implemented and adhered to.

TABLE OF CONTENT

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

LIST OF ABBREVIATIONS

Abbreviation	Description
AfDB	African Development Bank
BAR	Basic Assessment Report
CA	Competent Authority
CBA	Critical Biodiversity Area
DFFE	Department of Forestry, Fisheries and Environment
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme Report
ESA	Ecological Support Area
ETC	Eco Thunder Consulting (Pty) Ltd
GIS	Geographical Information Systems
HA	Hectares
MEA	Millennium Ecosystem Assessment
NEMA	National Environmental Management Act
O&M	Operation and Maintenance
SACLAP	South African Council for the Landscape Architectural Profession
SES	Sharples Environmental Services CC
SLA	Service Level Agreement
UNESCO	United Nations Educational, Scientific and Cultural Organisation
VAC	Visual Absorption Capacity
VIA	Visual Impact Assessment
WHC	World Heritage Convention

GLOSSARY LIST

Glossary Item	Description
Aesthetic Value	Aesthetic value is the emotional response derived from the experience of the environment with its natural and cultural attributes. The response can be either to visual or non-visual elements and can embrace sound, smell and any other factor having a strong impact on human thoughts, feelings, and attitudes (Ramsay, 1993). Thus, aesthetic value encompasses more than the seen view, visual quality, or scenery, and includes atmosphere, landscape character and sense of place (Schapper, 1993).
Aesthetically significant place	A formally designated place visited by recreationists and others for the express purpose of enjoying its beauty. For example, tens of thousands of people visit Table Mountain on an annual basis. They come from around the country and even from around the world. By these measurements, one can make the case that Table Mountain (a designated National Park) is an aesthetic resource of national significance. Similarly, a resource that is visited by large numbers who come from across the region probably has regional significance. A place visited primarily by people whose place of origin is local is generally of local significance. Unvisited places either have no significance or are "no trespass" places. (After New York, Department of Environment 2000).
Aesthetic impact	Aesthetic impact occurs when there is a detrimental effect on the perceived beauty of a place or structure. Mere visibility, even startling visibility of a Project proposal, should not be a threshold for decision making. Instead, a Project, by its visibility, must clearly interfere with or reduce (i.e., visual impact) the public's enjoyment and/or appreciation of the appearance of a valued resource e.g., cooling tower blocks a view from a National Park overlook (after New York, Department of Environment 2000).
Cumulative Effects	The summation of effects that result from changes caused by a development in conjunction with the other past, present, or reasonably foreseeable actions.
Glare	The sensation produced by luminance within the visual field that is sufficiently greater than the luminance to which the eyes are adapted, which causes annoyance, discomfort, or loss in visual performance and visibility. See Glint. (USDI 2013:314)
Glint	A momentary flash of light resulting from a spatially localised reflection of sunlight. See Glare. (USDI 2013:314)
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.

Glossary Item	Description
Landscape Impact	Landscape effects derive from changes in the physical landscape, which may give rise to changes in its character and how this is experienced (Institute of Environmental Assessment & The Landscape Institute 1996).
Study area	For the purposes of this report this Project the study area refers to the proposed Project footprint/Project site as well as the 'zone of potential influence' (the area defined as the radius about the centre point of the Project beyond which the visual impact of the most visible features will be insignificant) which is a 5,0km radius surrounding the proposed Project footprint/site.
Project Footprint/Site	For the purposes of this report the Project site/footprint refers to the actual layout of the Project as described.
Sense of Place (genius loci)	Sense of place is the unique value that is allocated to a specific place or area through the cognitive experience of the user or viewer. A genius locus literally means 'spirit of the place'.
Sensitive Receptors	Sensitivity of visual receptors (viewers) to a proposed development.
Viewshed analysis	The two-dimensional spatial pattern created by an analysis that 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 Exposure	Visibility and visual intrusion qualified with a distance rating to indicate the degree of intrusion and visual acuity, which is also influenced by weather and light conditions.
Visual Impact	Visual effects relate to the changes that arise in the composition of available views because of changes to the landscape, to people's responses to the changes, and to the overall effects with respect to visual amenity available views because of changes to the landscape, to people's responses to the changes, and to the overall effects with respect to visual amenity.
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.

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

SPECIALIST CHECKLIST

No.	NEMA 2014 (as amended) Regs - Appendix 6(1) Requirement	Report Section
	A specialist report prepared in terms of these Regulations must contain -	
a	details of - • the specialist who prepared the report; and • the expertise of that specialist to compile a specialist report including a curriculum vitae.	Specialist Details and Appendix A
b	a declaration that the specialist is independent in a form as may be specified by the competent authority (CA);	Specialist Declaration
c	an indication of the scope of, and the purpose for which, the report was prepared;	Section 5.1
	an indication of the quality and age of base data used for the specialist report	Section 1.4
	a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change	Section 7 and Section 8
d	the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 5.4
e	a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 5

No.	NEMA 2014 (as amended) Regs - Appendix 6(1) Requirement	Report Section
f	details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 7
g	an identification of any areas to be avoided, including buffers;	Section **Error! Reference source not found.**
h	a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Section **Error! Reference source not found.**
l	a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 0
j	a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Section 8.2
k	any mitigation measures for inclusion in the EMPr;	Section 0
l	any conditions for inclusion in the EA;	Section 9
m	any monitoring requirements for inclusion in the EMPr or EA;	Section 0
n	a reasoned opinion - • whether the proposed activity, activities or portions thereof should be authorised; • regarding the acceptability of the proposed activity or activities; and • if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan.	Section 9
o	a description of any consultation process that was undertaken during the course of preparing the specialist report;	N/A
p	a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	N/A
q	any other information requested by the CA.	N/A

SPECIALIST DETAILS

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

SPECIALIST DECLARATION

Full Name	**Title/Position**
Brogan Geldenhuys	Director
Telephone Number	**Email Address**
064 655 2752	brogan@eco-thunder.co.za
Qualification(s):	BEng
Registration(s):	ILASA, IAIAsa, GISSA, IAP2

I, **Brogan Geldenhuys**, declare that: –

- I act as an independent specialist in this application;
- I will perform the work relating to the application objectively, 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 CA all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken concerning the application by the CA; and - the objectivity of any report, plan or document to be prepared by myself for submission to the CA;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offense and is punishable by law.

Signature of the Specialist

09/09/2024

Date

Eco Thunder Consulting, acting as an independent specialist in the field of visual impact assessment within the renewable energy sector, hereby affirms its professional standing and expertise. Appointed by Sharples Environmental Services CC for the specific purpose of conducting an independent and unbiased assessment, our firm leverages approaches and methodologies that have been meticulously refined and successfully applied across various projects.

Our engagement with this project is characterised by a commitment to maintaining the highest standards of integrity and professionalism. The opinions and viewpoints expressed within this report are solely those of Eco Thunder Consulting and reflect our extensive experience and specialised knowledge in visual impact assessment within the renewable energy sector.

This assessment is conducted in accordance with the best practices and industry standards, ensuring a comprehensive and objective analysis. It is our firm belief that the methodologies employed are robust and have established precedence in maintaining the quality and accuracy required for such evaluations.

In fulfilling our role as an independent specialist, we have adhered to all relevant legal and regulatory requirements, ensuring that our assessment is both transparent and accountable. We affirm that our relationship with Sharples Environmental Services and all other parties involved in this project is free from any conflict of interest or undue influence, thereby safeguarding the impartiality of our findings and recommendations.

Eco Thunder Consulting remains dedicated to providing an assessment that is not only thorough and precise but also contributes positively to the renewable energy sector, reflecting our ongoing commitment to environmental sustainability and responsible development.

The author of this report, however, accepts no liability for any actions, claims, demands, losses, liabilities, costs, damages, and expenses arising from or in connection with services rendered, and by the use of the information contained in this document.

No form of this report may be amended or extended without the prior written consent of the author and/or a relevant reference to the report by the inclusion of an appropriately detailed citation.

Any recommendations, statements, or conclusions drawn from or based on this report must cite or refer to this report. Whenever such recommendations, statements or conclusions form part of the main report relating to the current investigation, this report must be included in its entirety.

1 Background

1.1 Scope and Objective of the Specialist Study

Sharples Environmental Services CC (SES) has been appointed to oversee the Environmental Authorisation (EA) amendment process for the proposed Hartland Telecommunications Mast, located near Hartenbos in the Western Cape, South Africa. As part of this process, SES has engaged Eco-Thunder Consulting (Pty) Ltd (ETC) to conduct a Visual Impact Assessment (VIA) for the proposed development.

The main aim of the study is to document the baseline and to ensure that the visual/aesthetic consequences of the proposed Hartland Telecommunications Mast project are understood. The VIA therefore aims to identify scenic resources, and visually sensitive areas or receptors. It also aims to identify key concerns or issues relating to potential visual impacts arising from the Project, and which must be addressed in the assessment phase.

1.2 Structure of the Report

The report is organised into ten sections:

- Section 1: Background;
- Section 2: Project Description;
- Section 0: Requirement for a VIA;
- Section 4: Legislation and Policy Review;
- Section 5: Approach and Methodology;
- Section 6: Baseline Environmental Profile;
- Section 7: Viewshed Analysis;
- Section 8: Impacts and Risks Identified;
- Section 9: Environmental Impact Statement Conclusion; and
- Section 10: References.

1.3 Seasonal Change

In terms of Appendix 6 of the 2014 EIA Regulations, a specialist report must contain information on “the date and season of the site investigation and the relevance of the season to the outcome of the assessment”. The site visit was undertaken in **Late Winter (13 August 2024).** The seasonal variation in vegetation and landscape characteristics will be taken into consideration when evaluating the significance of the impacts identified, the mitigation measures, and the conclusions of the assessment.

1.4 Information Base

The following information was used to conduct the VIA:

- Documentation and KML files supplied by the client;
- ToR for the visual specialist;
- Photographs and information captured during the site visit;
- Google Earth software and data;
- Sentinel-2 Satellite Imagery;
- SRTM Digital Elevation Model;
- South African National Landcover dataset;
- Local zoning and planning documents;
- Historical maps and aerial photographs;
- Stakeholder input and feedback (if provided);
- Meteorological data;
- Landscape character assessments;
- Relevant environmental impact assessment (EIA) reports (if provided);
- Geographic Information System (GIS) data;
- Local biodiversity data; and
- Regulatory and policy documents.

1.5 Terms and Reference

A specialist study is required to establish the visual baseline and to identify and potential visual impacts arising from the proposed development based on the general requirements for a comprehensive VIA.

The following terms of reference were established:

- Data collected allows for a description and characterisation of the receiving environment;
- Describe the landscape character, and quality and assess the visual resource of the study area;
- Describe the visual characteristics of the components of the Project;

- Identify issues that must be addressed in the impact assessment phase; and
- Propose mitigation options to reduce the potential impact of the Project.

1.6 Level of Confidence

Level of confidence is determined as a function of:

The information available, and understanding of the study area by the practitioner:

- 3: A high level of information is available of the study area and a thorough knowledge base could be established during site visits, surveys etc. The study area was readily accessible.
- 2: A moderate level of information is available of the study area and a moderate knowledge base could be established during site visits, surveys etc. Accessibility to the study area was acceptable for the level of assessment.
- 1: Limited information is available of the study area and a poor knowledge base could be established during site visits and/or surveys, or no site visit and/or surveys were carried out.

The information available, understanding of the study area and experience of this type of project by the practitioner:

- 3: A high level of information and knowledge is available of the project and the visual impact assessor is well experienced in this type of project and level of assessment.
- 2: A moderate level of information and knowledge is available of the project and/or the visual impact assessor is moderately experienced in this type of project and level of assessment.
- 1: Limited information and knowledge are available of the project and/or the visual impact assessor has a low experience level in this type of project and level of assessment.

The level of confidence for this assessment is determined to be 9 and indicates that the author's confidence in the accuracy of the findings is high:

- The information available, and understanding of the study area by the practitioner is rated as 3, and
- The information available, understanding and experience of this type of project by the practitioner is rated as 3.

1.7 Limitations and Assumptions

The following assumptions and limitations are applicable to this Report:

Assumptions:

- The assessment has been based on the requirements of the Western Cape Department of Environmental Affairs & Development Planning Guidelines (WC DEDP)[1]
- The assessment assumes that all necessary consultations with stakeholders, including local communities, authorities, and other interested parties, have been/will be conducted in accordance with legal requirements, and that their views and concerns have been duly considered.
- Whilst most homesteads and housing areas were visited during the site visit in order to confirm their nature and likely visibility of the development, it was not possible to visit all homesteads and housing areas.
- The information and analysis provided in this report is based on the details available during the undertaking of the VIA. As the VIA specialists, we have, to the best of our ability, analysed and interpreted the data provided.
- We operate under the assumption that all information supplied by the client is accurate, current, and reflective of the agreements made with relevant landowners. Our assessments and recommendations are based on the information provided to us, and we rely on the client to ensure that this information is complete and up to date.
- The Project report uses the concept of 'worst case scenario' to identify issues and rate visual impacts. This scenario assumes that all facilities along with the associated grid infrastructure and sub-stations would be constructed at the same time.

Limitations:

- It was not possible to visit all homesteads and housing areas.
- The information and analysis are based on the details available during the undertaking of the VIA, and there is an inherent limitation in the data available at any given time.
- There is a reliance on the accuracy, currency, and completeness of the information supplied by the client. Any decisions regarding development on specific portions of land, including agreements on relocations, demolitions, or other alterations, should be confirmed and discussed directly with the relevant landowners.
- Regulation 11(3) of the EIA Regulations, which suggests that if more than one activity is part of the same development, a single application may be required, discourages the

[1] The WC DEDP Guidelines offer detailed directives on incorporating visual and aesthetic specialists into the EIA processes. These guidelines represent the primary legislative framework specifically pertaining to Visual Impact Assessments (VIA) in the region. While provincial insights and information will be integrated into the respective reports where feasible, it is important to note that the WC DEDP Guidelines are regarded as the definitive legislative standard for best practices in VIA.

practice of splitting components or assessing them in isolation, thereby promoting a unified and integrated approach to cumulative impact assessment.

- The findings, assessments, and recommendations represent the professional judgment of the VIA practitioners at the time of the assessment. While every effort has been made to ensure accuracy and completeness, this report does not constitute legal, financial, or other specialised advice.
- The responsibility for implementing the recommendations, mitigation measures, and any other actions outlined in this report lies solely with the client or project proponent. The VIA practitioners are not responsible for monitoring, enforcing, or ensuring compliance with these measures.

2 Project Description

The Hartland Telecommunications Mast is a proposed telecommunication infrastructure project to be developed within the proposed Hartland Lifestyle Estate, located near Hartenbos in the Western Cape Province of South Africa. The project involves the construction of a 15m high telecommunications mast, designed to be camouflaged as a windmill, which will serve the surrounding residential and business areas within the estate.

The proposed Hartland Lifestyle was originally granted an EA dated 18 August 2009 and was amended by the Addendum to the EA dated 22 June 2023. However, the proposed telecommunications mast requires an additional amendment to the existing EA before it can be included as part of the authorised activities. The VIA forms a critical component of this amendment process, evaluating how the proposed mast will affect the surrounding environment.

The goal of the VIA is not to predict whether individual receptors will find the project attractive or not. Instead, the goal is to identify important visual characteristics of the surrounding landscape, especially the features and characteristics that contribute to scenic quality, as the basis for determining how and to what degree the proposed project will affect those scenic values.

The primary aim of the impact assessment phase is to ensure that visual impacts are adequately assessed and considered so that the relevant environmental authorities can decide if the proposed project has unreasonable or undue visual impacts. The secondary aim is to identify effective and practical mitigation measures, where possible.

The VIA process involves several key steps, including:

- Identifying and mapping existing sensitive receptors, buffers, important viewpoints, and view corridors;
- Identifying and screening potential visual concerns;
- Ensuring that the visual assessment will be in compliance with relevant standards, policies, laws, and regulations; and
- Providing recommendations for the impact assessment phase.

The VIA is conducted in accordance with the guidelines provided by relevant authorities, and while there is little legislation relating directly to VIAs, there are guidelines that provide direction for visual assessment as well as a number of laws which aim to protect visual resources.

2.1 Project Location

The proposed Hartland Telecommunications Mast is located ~200m south of the~ N2 highway, ~3km north of Hartenbos and falls within the proposed Hartland Lifestyle Estate, ~9.2km north of Mossel Bay, Western Cape Province.

Strategically positioned between the towns of Hartenbos and Klein Brak River, the site is well-placed for local telecommunications expansion, providing both accessibility and significance to the development. The main access route will be through the New Vintage Development, located to the southwest of Hartland, with a secondary access point from the MR 344 via the culvert under the N2 National Road.

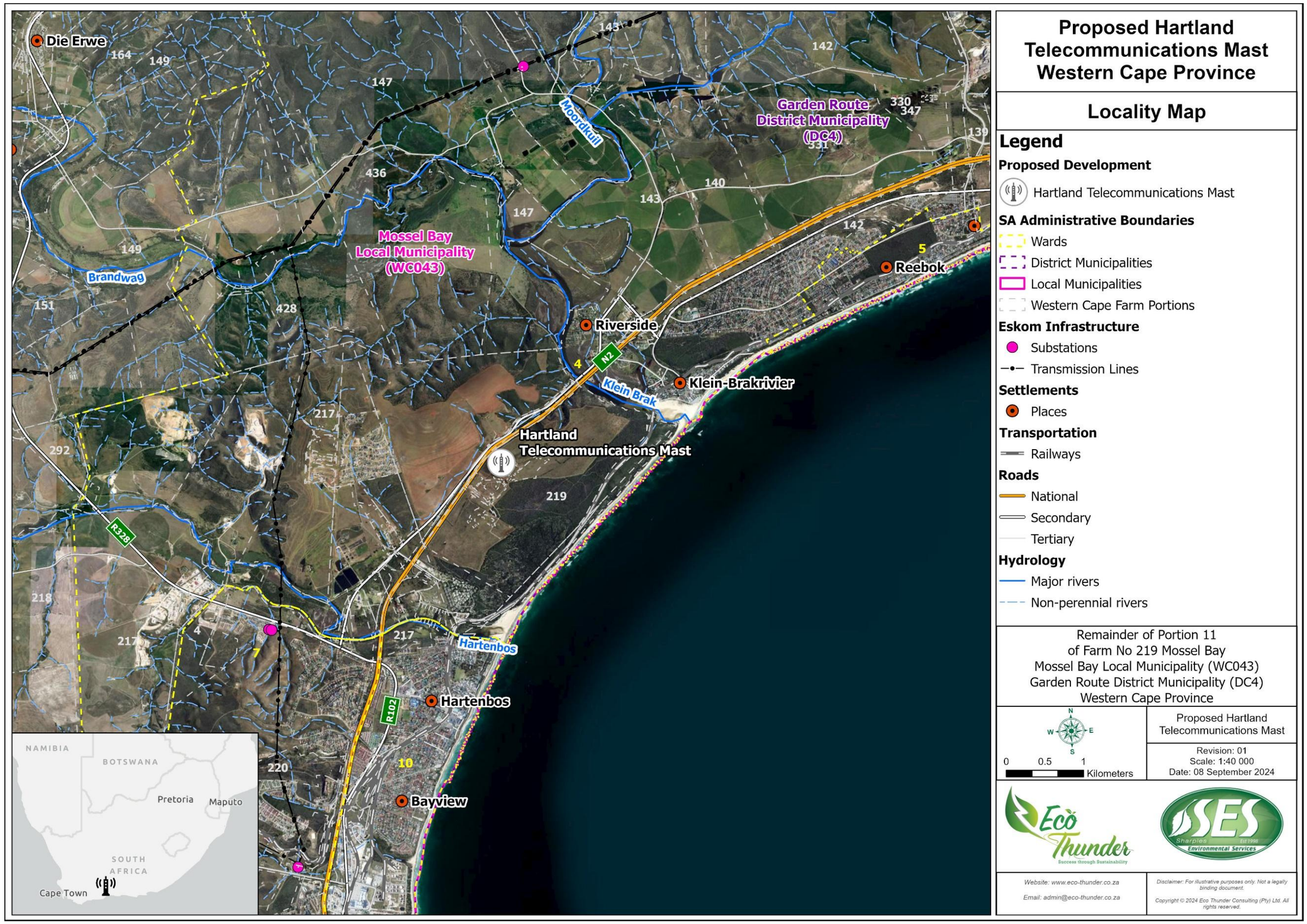


Figure 1: Locality Map

2.2 Project Technical Details

Table 1 and Figure 1 to Figure 4 provides the details of the project, including the main infrastructure components and services that will be required during the project life cycle.

Table 1: Technical Details of the Proposed Hartland Telecommunications Mast

Component	Description/Dimensions
Receiving Environment	• The proposed Hartland Lifestyle Estate is subject to a valid Environmental Authorisation ("EA") issued on 18 August 2009 (as amended). The estate is still in a development phase and the EA has not been concluded. • The proposed site is located within the designated open space area of the estate.
District Municipality	Garden Route District Municipality
Local Municipality	Mossel Bay Local Municipality
Ward Number(s)	Ward 4
Farm name(s) and number(s) of properties affected by the telecommunications mast, incl SG 21 Digit Code (s)	• Remaining Extent of Portion 11 of the Farm Vaale Valley 219 (C05100000000021900011)
Nearest Town(s)	Hartenbos (~3km north)
Current zoning	Agriculture
Site Coordinates (centre of development area)	Lat: 34°5'50.43"S Long: 22°7'22.31"E
Total extent of the Affected Properties, also referred to as the project site[2]	~344.45ha
Total extent of the Development area[3]	Up to ~64m^2
Total extent of the Development footprint[4]	~64m^2
Telecommunication Mast Height	15.0m

[2] The project site is that identified area within which the development area and development footprint are located. It is the broader geographic area assessed as part of the EIA process, within which indirect and direct effects of the project may occur.

[3] The development area is that identified area where the proposed project is planned to be located, within which indirect and direct effects of the project may occur. This area has been selected as a practicable option for the facility, considering technical preference and constraints.

[4] The development footprint is the defined area (located within the development area) where the project and other associated infrastructure for the mixed-use development is planned to be constructed. This is the actual footprint of the facility, and the area which would be disturbed.

Component	Description/Dimensions
Access roads and internal roads	• Existing roads such as the N2 and MR344(Kasuur street)) will be used for site access
Additional Infrastructure	• ”Windmill”: The mast will be camouflaged as a "windmill", where the upper windmill blades will be attached to the mast and will not exceed the 15.0m height. • Antennae: The mast design allows for 12 antennae to be attached to the mast and will not exceed the 15.0m height. • Supporting Structures: Three supporting structures (3 equipment shelters) will be located within the compound. • Fencing: The area will be fenced with 8m x 8m palisade fencing.

.

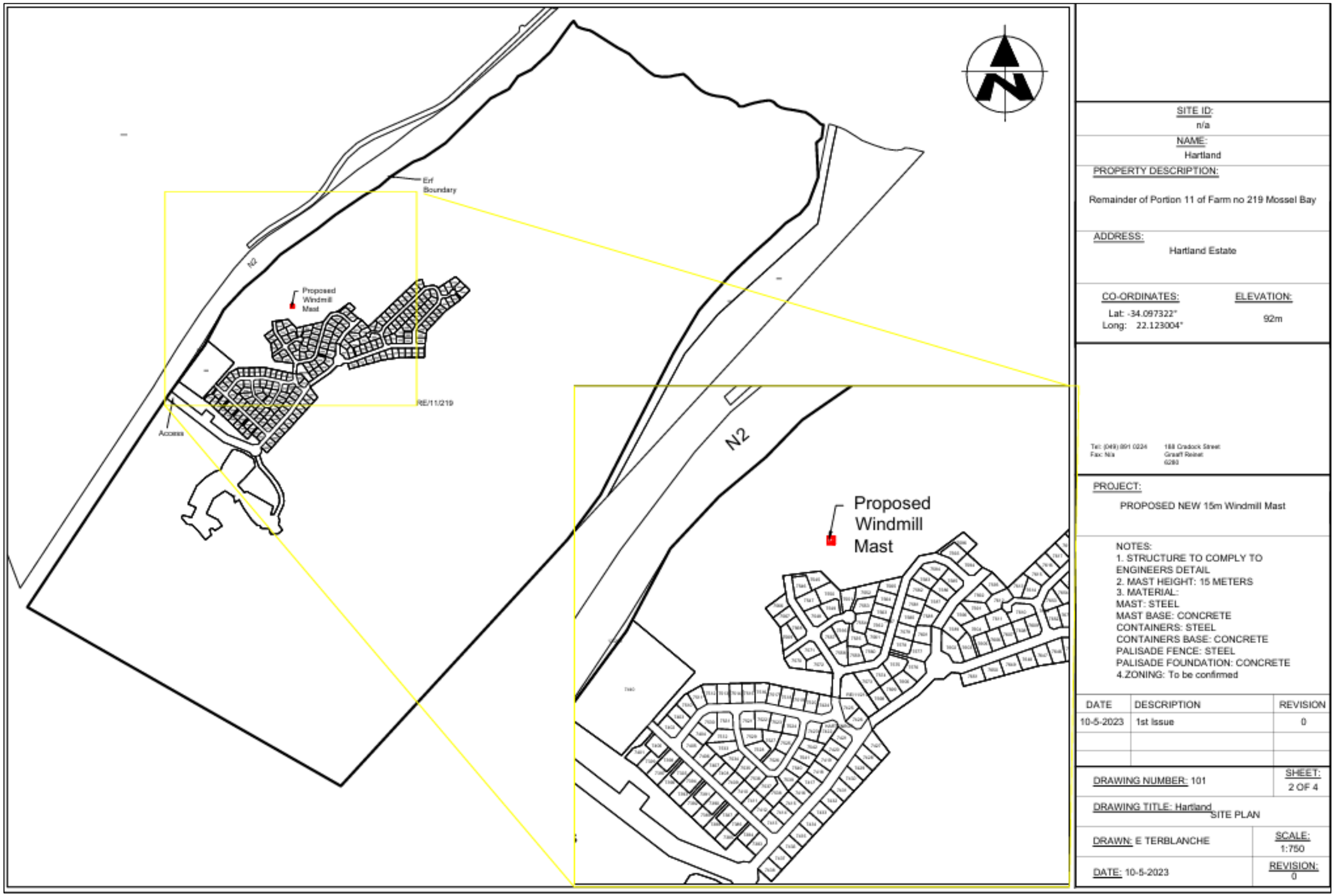


Figure 2: Site Plan

2.3 Assessment Alternatives

2.3.1 Location Alternatives

No alternative locations for the proposed Hartland Telecommunications Mast are being considered. This decision is based on agreements with private landowners and the requirement to address existing telecommunications needs in the area. The selected location within the proposed Hartland Lifestyle Estate has been determined to offer an appropriate balance between visual integration and network coverage.

2.3.2 Technology Alternatives

Two design alternatives are being considered for the proposed 15-meter mast to meet both functional and aesthetic requirements:

- Windmill-Style Design: This alternative includes a traditional windmill-style structure, featuring decorative blades at the top of the mast. This design was initially proposed to reduce the visual impact by mimicking a structure commonly associated with peri-urban landscapes.
- Bare Mast Design: This alternative excludes the windmill-style blades at the top, resulting in a simpler, bare telecommunications mast. This design retains the same technical functionality as the windmill-style design.

Both alternatives share the same height, structural dimensions, and technical capabilities. ..

2.3.3 No-Go Alternative

The ‘no-go’ alternative refers to not proceeding with the development of the telecommunications mast. In this scenario, there would be no change to the existing visual environment. However, the no-go alternative would not address the need for improved telecommunications coverage in the area. This alternative is considered for comparison purposes in the assessment of potential visual impacts.

2.4 Technology Identified

The proposed technology for the Hartland Telecommunications Mast consists of a 15m windmill-style structure, chosen for both its functional role in telecommunications and its design, which is intended to blend with the local landscape.

The mast will be constructed using steel, ensuring the structural integrity required to support telecommunications equipment. It will be anchored with a concrete base for stability. The mast will feature 12 antennas mounted near the top, essential for transmitting and receiving telecommunications signals. These antennas will be strategically positioned to optimise coverage in the surrounding area. Additionally, three supporting structures (equipment shelters) will be located within the compound to house the necessary telecommunications equipment, ensuring smooth operation of the mast.

The windmill design has been selected due to its alignment with the aesthetic of the surrounding rural environment. The mast's appearance resembles that of a traditional windmill, which is a familiar feature in many parts of the Western Cape. This design choice reflects the intention to integrate the mast with the existing character of the region while fulfilling its primary function as a telecommunications tower.

The mast is designed to support the latest advancements in telecommunications technology, including 5G, which requires equipment that can handle higher frequency signals. The inclusion of these antennas ensures that the mast is future-ready, capable of supporting ongoing technological developments in telecommunications.

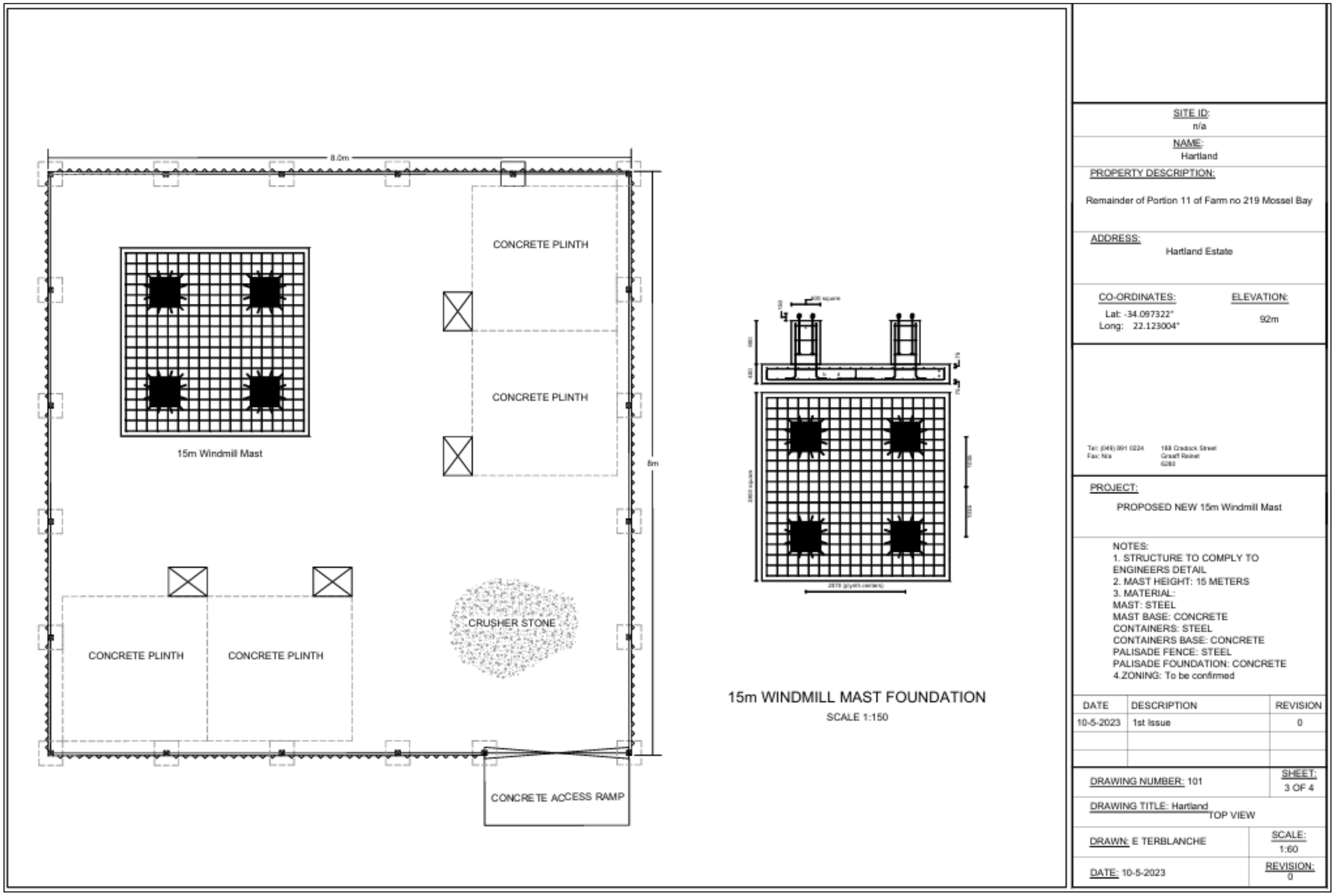


Figure 3: Top View of the Proposed Telecommunications Mast

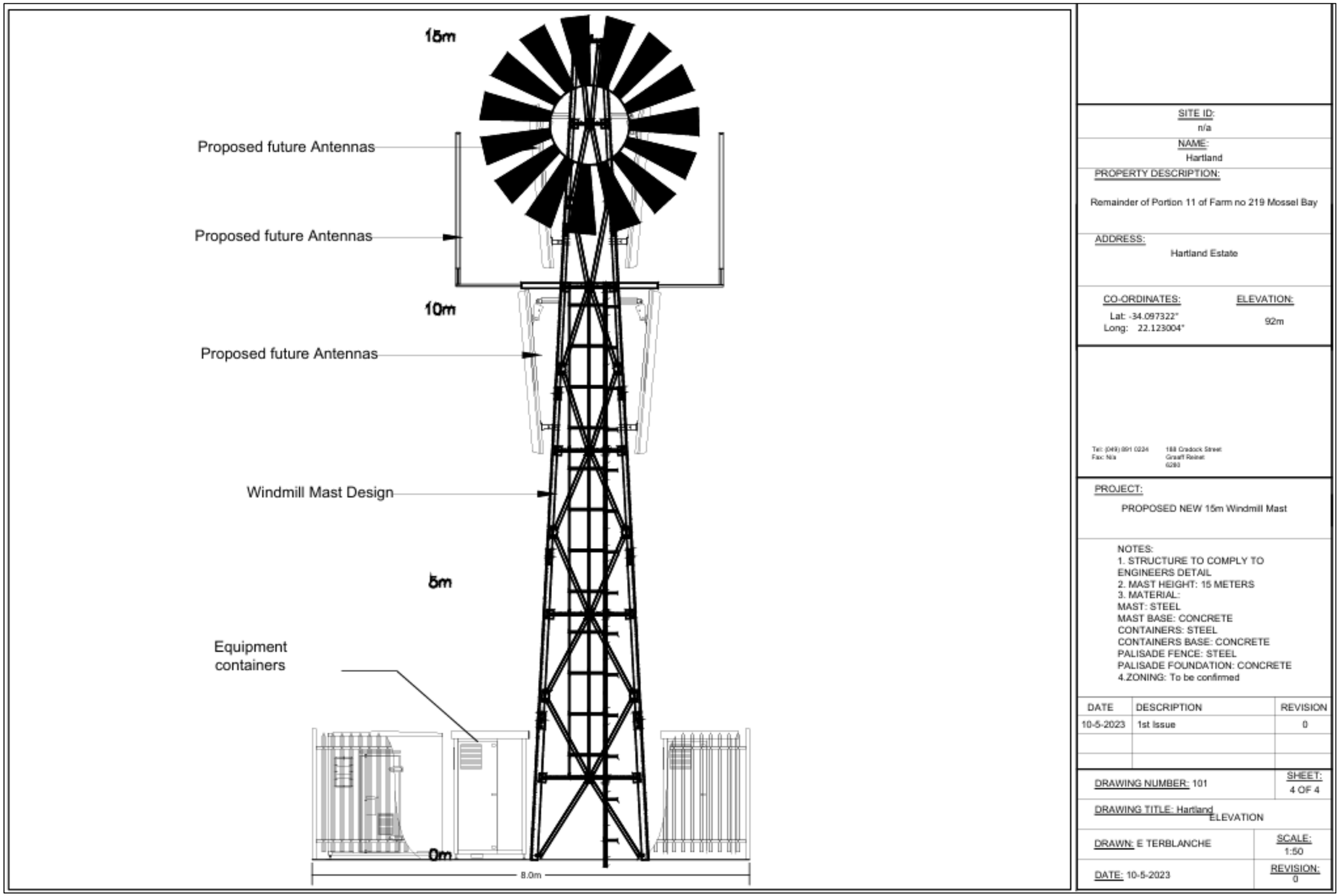


Figure 4: Elevation of Proposed Telecommunications Mast

3 Requirement for a VIA

As outlined in Table 2, the requirement for visual input may arise from the characteristics of both the receiving environment and the project itself. The following indicators are identified as potential signals for the necessity of visual input:

The nature of the receiving environment:

- Areas with protection status, such as national parks or nature reserves;
- Areas with proclaimed heritage sites or scenic routes;
- Areas with intact wilderness qualities, or pristine ecosystems;
- Areas with intact or outstanding rural or townscape qualities;
- Areas with a recognised special character or sense of place;
- Areas lying outside a defined urban edge line;
- Areas with sites of cultural or religious significance;
- Areas of important tourism or recreation value;
- Areas with important vistas or scenic corridors; and
- Areas with visually prominent ridgelines or skylines.

The nature of the project:

- High intensity type projects including large-scale infrastructure;
- A change in land use from the prevailing use;
- A use that is in conflict with an adopted plan or vision for the area;
- A significant change to the fabric and character of the area;
- A significant change to the townscape or streetscape;
- Possible visual intrusion in the landscape; and
- Obstruction of views of others in the area.

These indicators can help determine whether a visual impact assessment is necessary for a particular project. It's important to note that this list is not exhaustive and other factors may also suggest the need for visual input.

3.1 Components of Visual Studies

As per Western Cape Department of Environmental Affairs & Development Planning: Guideline for Involving Visual and Aesthetic Specialists in EIA Processes Edition 1 (CSIR, 2005), the typical components of visual studies according to Box 8 are as follows:

Table 2: Typical Components of Visual Studies

Box 8: Typical Components of Visual Studies
• Identification of issues and values relating to visual, aesthetic and scenic resources through involvement of I&APs and the public. • Identification of landscape types, landscape character and sense of place, generally based on geology, landforms, vegetation cover and land use patterns; • Identification of viewsheds, view catchment area and the zone of visual influence, generally based on topography; • Identification of important viewpoints and view corridors within the affected environment, including sensitive receptors; • Indication of distance radii from the proposed project to the various viewpoints and receptors; • Determination of the VAC of the landscape, usually based on topography, vegetation cover or urban fabric in the area; • Determination of the relative visibility, or visual intrusion, of the proposed project. • Determination of the relative compatibility or conflict of the project with the surroundings; • A comparison of the existing situation with the probable effect of the proposed project, through visual simulation, generally using photomontages.

The approach to visual assessment should be based on both quantitative and qualitative aspects. Quantitative aspects often make use of landscape resource classification methods. These may include combinations of landforms (geomorphology), vegetation cover, and land use mapping.

The actual approach and method used would depend on the level of visual input required in the EIA process. Effective interaction with other specialists should be facilitated by the EIA practitioner to ensure that an integrated approach is adopted, where the various components of the environment are seen.

This visual guideline document is therefore an attempt to develop a 'best practice' approach for visual specialists, EIA practitioners and authorities involved in the EIA process.

4 Legislation and Policy Review

A vital aspect of this process involves assessing the suitability of a proposed development in relation to key planning and policy documents.

Although there is limited legislation specifically addressing VIAs, there exist guidelines that offer guidance for conducting visual assessments. Additionally, several laws are in place to safeguard visual resources, as well as regulations applicable to specialists in various fields.

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

- International Good Practice.
- National Legislation and Guidelines; and
- Policy Fit.

4.1 International Good Practice

The following documentation provides good practice guidelines, specifically:

- Guidelines for Landscape and VIA[5].
- Millennium Ecosystem Assessment (MEA);
- United Nations Educational, Scientific and Cultural Organisation (UNESCO); and
- World Heritage Convention (WHC).

4.1.1 Guidelines for Landscape and Visual Impact Assessment, Second Edition

These guidelines establish principles that promote consistency, credibility, and effectiveness in landscape and VIA within the EIA process. According to the guidelines, landscape encompasses the entirety of our external environment, whether in urban or rural areas, including buildings, streets, open spaces, trees, and their interconnected relationships. The guidelines highlight the importance of landscape for various reasons, including being a natural resource, containing archaeological and historical evidence, providing habitats for plants and animals (including humans), evoking sensual, cultural, and spiritual responses, and contributing to our quality of life in urban and rural settings. Additionally, landscapes offer valuable opportunities for recreation and resources.

4.1.2 Millennium Ecosystem Assessment

According to the Ecosystems and Human Well-being document compiled by the MEA in 2005, ecosystems play a vital role in supporting human well-being through their provisioning, regulating, cultural, and supporting services. The document highlights the increasing evidence of human

5 The Western Cape Guidelines are the only official guidelines for VIA reports in South Africa and can be regarded as best practice throughout the country.

activities negatively impacting ecological systems globally, raising concerns about the potential consequences of these ecosystem changes on human well-being.

The MEA defined the following non-material benefits that can be obtained from ecosystems.

- **Inspiration:** Ecosystems provide a rich source of inspiration for art, folklore, national symbols, architecture, and advertising.
- **Aesthetic values:** Many people find beauty or aesthetic value in various aspects of ecosystems, as reflected in the support for parks, scenic drives, and the selection of housing locations.
- **Sense of place:** Many people value the “sense of place” that is associated with recognised features of their environment, including aspects of the ecosystem.
- **Cultural heritage values:** Many societies place high value on the maintenance of either historically important landscapes (“cultural landscapes”) or culturally significant species; and
- **Recreation and ecotourism:** People often choose where to spend their leisure time based in part on the characteristics of the natural or cultivated landscapes in a particular area. (MEA, 2005)

The MEA Ecosystems and Human Well-being: Synthesis report indicates that there has been a “rapid decline in sacred groves and species” in relation to spiritual and religious values, and aesthetic values have seen a “decline in quantity and quality of natural lands”. (MEA, 2005).

4.2 National Legislation and Guidelines

To comply with the Visual Resource Management requirements, it is necessary to clarify which National and Regional planning policies govern the proposed development area to ensure that the scale, density and nature of activities or developments are harmonious and in accordance with the sense of place and character of the area.

4.2.1 National Environmental Management Act (Act 107 of 1998), 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 EMPr and will be in support of the BA and Appendix 6 of the EIA Regulations 2014, as amended on 7 April 2017.

Specialist Screening Protocols are also required by the 2014 EIA Regulations. These were taken into consideration for this project.

4.2.2 NEMA: Protected Areas Act 57 of 2003

- Management of declared World Heritage Sites (WHS) and buffer areas within South Africa;

- The purpose of the National Environmental Management: Protected Areas Act (Act 57 of 2003) (NEMPAA) is to, inter alia, provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes. To this end, it provides for the declaration and management of various types of protected areas;
- Section 39 of NEMPAA requires the preparation and submission of a management plan for a protected area declared in terms of the Act. The objective of a management plan, as stated in Section 41 of NEPAA, is to ensure the protection, conservation and management of the protected area concerned in a manner that is consistent with the objectives of NEMPAA and for the purpose it was declared;
- Section 50(5) of NEMPAA states that "no development, construction or farming may be permitted in a nature reserve or world heritage site without the prior written approval of the management authority;
- The management authority for a WHS is established through a NEMPAA process. The Management Authority (MA) is located within and funded by the DFFE; and
- The MA is tasked with ensuring that activities within the WHS and its buffer area comply with the approved Conservation Management Plan developed for the WHS.

4.2.3 Western Cape DEA: 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, they provide guidance that is appropriate for any EIA process. According to the Western Cape Department of Environmental Affairs & Development Planning's guideline on involving visual and aesthetic specialists in EIA processes, the following information is relevant for our visual impact assessment report:

- Current South African environmental legislation governing the EIA process includes the National Environmental Management Act (NEMA) (Act No. 107 of 1998) and the EIA regulations under the Environment Conservation Act (Act No. 73 of 1989).
- The Protected Areas Act (NEMA) (Act 57 of 2003, Section 17) aims to protect natural landscapes.
- The National Heritage Resources Act (Act No. 25 of 1999) and associated provincial regulations provide legislative protection for listed or proclaimed sites, such as urban conservation areas, nature reserves, and scenic routes.
- Visual pollution is controlled, to a limited extent, by the Advertising on Roads and Ribbons Act (Act No. 21 of 1940), which deals mainly with signage on public roads.
- The Municipal Systems Act (Act 32 of 2000) requires municipalities to undergo an Integrated Development Planning (IDP) process, including the preparation of a five-year strategic development plan. The IDP process, particularly the spatial component known

as the Spatial Development Framework, follows a bioregional planning approach in the Western Cape Province. Bioregional planning aims to achieve landscape continuity, protect natural areas, and integrate social, environmental, and economic criteria in local planning initiatives.

Specialists should refer to the relevant provincial or local authority to determine the existence of policies, by-laws, or other restrictions regarding visual impact or the protection of scenic, rural, or cultural resources.

4.2.4 Telecommunication Mast Infrastructure Policy (2015)

The Telecommunication Mast Infrastructure (TMI) Policy was developed to plan the placement and management of telecommunication mast infrastructure in the City of Cape Town.

The key objectives of the policy include:

- Improve and maintain communication.
- Ensure that the TMI is placed in the best possible location.
- Ensure the co-location or sharing of TMI wherever possible.
- Retain visual integrity, special character and amenity of the City of Cape Town.
- Design with the landscape and use modern mitigation measures to reduce impact.
- Retain and improve the environmental and heritage quality of the public arena.
- Preserve areas of environmental or heritage significance.
- TMI must be situated and operated in a manner so as not to interfere with any other utility functions.
- Where possible TMI should be placed on other structures such as light posts, road signs etc.

The Policy seeks to achieve a balance between the preservation of visual character and the erection of required TMI development. The aim of this policy is to guarantee that the positioning of the TMI conserve the legitimacy of the site where it is placed and does not negatively impact the locality's identity. Wherever feasible, TMI should be positioned to reduce their impact on scenic drives or visual corridors and to blend in best with the surrounding area.

4.3 Policy Fit

Policy fit refers to the extent to which the proposed changes to the landscape align with planning and policy at the International, National, Provincial, and Local levels.

Regarding international best practices, the proposed landscape modifications do not meet the criteria for triggering best practice guidelines, as there are no significant cultural or landscape resources within the site or its immediate surroundings.

ETC followed the United States Bureau of Land Management's Visual Resource Management method (USDI, 2004) to determine the significance of the landscape. This method, based on mapping and Geographical Information System (GIS) techniques, enhances objectivity and consistency by utilising standardised assessment criteria.

5 Approach and Methodology

5.1 Purpose of the Study

The purpose 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 aims to identify scenic resources, and visually sensitive areas or receptors. It also aims to identify key concerns or issues relating to potential visual impacts arising from the Project, and which must be addressed in the assessment phase.

5.2 Approach to Study

Assessing the effects of the development on landscape resources and visual amenity involves a combination of quantitative and qualitative evaluations. Visual impact is evaluated based on the worst-case scenario, while landscape and visual assessments are distinct but interconnected processes. The landscape analysis and assessment of impacts contribute to the baseline for Visual Impact Assessment studies. The assessment of potential landscape impacts focuses on the physical landscape as an environmental resource. In contrast, visual impacts are evaluated as the effects on viewers when an object is introduced into a view or scene.

To conduct the study, Geographic Information System (GIS) software was utilised as a tool for generating viewshed analysis and applying relevant spatial criteria to the proposed infrastructure. A detailed Digital Terrain Model (DTM) of the study area was created using topographical data provided by the Japan Aerospace Exploration Agency (JAXA), specifically the ALOS Global Digital Surface Model "ALOS World 3D - 30m" (AW3D30) elevation model.

The scope of work for this report includes.

- Identify the scope of work/assessment required;
- Establish the baseline profile of the Environment;
- Identify potentially sensitive visual receptors within the receiving environment;
- Determine visual distance/observer proximity to the development;
- Determine viewer incidence/viewer perception;
- Determine the VAC of the landscape;
- Determine significance of identified impacts;
- Propose mitigation to reduce or alleviate potential adverse visual impacts;
- Conclude with an impact statement of significance and a project recommendation; and

The VIA is determined according to the nature, extent, duration, intensity or magnitude, probability, and significance of the potential visual impacts, and will propose management actions and/or monitoring programs and may include recommendations related to the proposed telecommunications mast.

The visual impact is determined for the highest impact-operating scenario (worst-case scenario) and varying climatic conditions (i.e., different seasons, weather conditions, etc.) are not considered.

The VIA considers potential cumulative visual impacts, or alternatively the potential to concentrate visual exposure/impact within the region.

5.3 Site Verification and Specific VIA Approach

Selecting the appropriate approach for a VIA is a crucial step in the process. The method and input for a VIA should be determined based on the expected level of visual impact, the nature of the project, and the characteristics of the receiving environment– that is the baseline landscape and visual conditions.

This in turn will form the basis from which the magnitude and significance of the landscape and visual effects of the development may be identified and assessed.

Table 3 provides the site verification report for an analysis of the existing landscape features, characteristics, the way the landscape is experienced, and the condition and the value or importance of the landscape and visual resources in the vicinity of the proposed development as well as the level of assessment deemed suitable for the Hartland Telecommunications Mast development.

Based on the evaluation conducted, the findings from the site verification report indicate that a Level 4 Visual Assessment will be required.

Table 3: Categorisation of Approaches and Methods Used for Visual Assessment

Approach and Method	**Type of Issue**				
	Little or No Visual Impact Expected	**Minimal Visual Impact Expected**	**Moderate Visual Impact Expected**	**High Visual Impact Expected**	**Very High Visual Impact Expected**
Level of Visual Assessment Recommended	Level 1 Visual Assessment	Level 2 Visual Assessment	Level 3 Visual Assessment	Level 4 Visual Assessment	

5.4 Significance of Visual Impact

Having established the specific type of VIA required, it is now crucial to delve into the generic aspects and themes associated with a VIA. These elements will be examined at a site-specific level within this report, enabling us to accurately identify and understand the unique impacts associated with the site under consideration[6].

A combined quantitative and qualitative methodology, as supplied by the Environmental Practitioner, was used to describe the significance of impacts.

[6] Themes and Elements discussed in 5.4.1 to 5.4.9 will be site specifically addressed in Session 6.

- **Significance** of impact is rated as consequence of impact multiplied by the probability of the impact occurring; and
- **Consequence** is determined using intensity, spatial scale, and duration criteria.

A summary of each of the qualitative descriptions along with the equivalent quantitative rating scale is given in Figure 5 below.

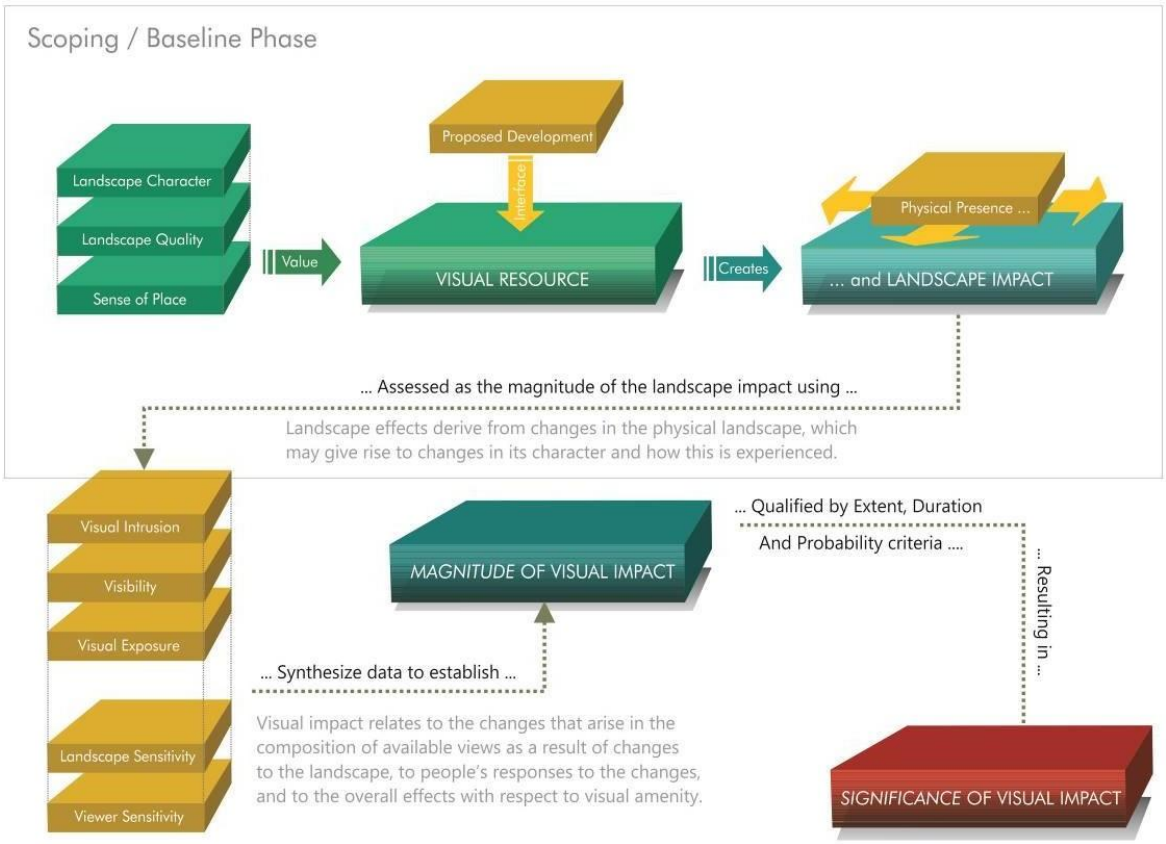


Figure 5: VIA Process

5.4.1 Landform (Topographical) and Micro-Topographical Context

The visibility of a feature within a landscape is significantly influenced by its landform context. Factors such as the feature's placement (e.g., valley bottom or ridge top), the viewer's location, and the slope's morphology can either enhance or obstruct visibility. Micro-topographical elements like buildings or vegetation can also screen views, potentially eliminating visual impact. Therefore, a comprehensive understanding of the topographical context is crucial in assessing visual impact.

5.4.2 Landscape Development Context

The presence/existence of other anthropogenic objects associated with the built environment may influence the perception of whether a new development is associated with a visual impact. Where buildings and other infrastructure exists, the visual environment could be already altered from a

natural context and thus the introduction of a feature into this setting may be considered to be less of a visual impact than if there was no existing built infrastructure visible.

5.4.3 Receptor Type and Nature of the View

Visual impacts can be perceived by various types of receptors, including individuals driving along roads or residing/working in the vicinity where the structural feature is visible. The type of receptor influences the typical "view" of a potential source of visual impact, with views being constant in the case of residences or permanent human habitats, and transient in the case of vehicles moving along a road. The nature of the view encountered directly influences the intensity of the visual impact experienced.

5.4.4 Presence of Receptors

It is important to note that visual impacts are only experienced when there are receptors present to experience the impact; thus, in a context where there are no human receptors or viewers present there are not likely to be any visual impacts experienced.

5.4.5 Viewing Distance

The distance between the viewer or receptor location and an object is the primary factor influencing the perception of visual impacts. Beyond a certain distance, even large structural features become less visible and blend into the surrounding landscape. The visibility of an object tends to decrease exponentially as the distance from the object increases. The maximum impact is typically felt by receptors within a distance of 500 meters or less.

As one moves away from the source of impact, the visual impact diminishes exponentially. At a distance of 1000 meters, the impact is approximately one-quarter of that experienced at 500 meters. At distances of 5000 meters or more, the impact becomes negligible.

5.4.6 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, 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 types described above, their relative ‘intactness’, and their impact on the senses.

Sense of place goes hand in hand with place attachment, which is the sense of connectedness a person/community feels towards certain places. Place attachment may be evident at different geographic levels, e.g., site specific (e.g., a house, burial site, or tree where religious gatherings take place), area specific (e.g., Zululand), and physiography specific (e.g., wetlands). Territorial behaviour is viewed as a set of behaviours and cognition a group exhibits based on perceived ownership. The concept of sense of place attempts to integrate the character of a setting with the personal emotions and memories associated with it.

Much of what is valuable in a culture is embedded in place, which cannot be measured in monetary terms. It is because of a sense of place and belonging that people loath to be moved

from their dwelling place, despite the fact that they will be compensated for the inconvenience and impact on their lives. Places/natural resources should be assessed in terms of its cultural value by studying visiting and consumption patterns, behaviour patterns, etc.

5.4.7 Viewer Perception

The perception of visual impact by viewers is subjective and influenced by various factors, including the aesthetic value, identity, and sense of place associated with a landscape. The way development is perceived can vary; it may be viewed positively if it is seen as linked to progress or human upliftment, or negatively if it disrupts a cherished landscape.

The character of the landscape, its scenic value, and the surrounding land use context all play a role in determining whether new developments are seen as unwelcome intrusions. Areas of natural conservation or scenic beauty are often more sensitive to visual impacts since the natural or scenic character of the landscape contributes to its overall appeal. In such areas, structural features like high voltage power lines may be perceived as incongruous within a natural setting, often resulting in a perceived visual impact.

5.4.8 Visual Character

Visual character is shaped by human perception and the observer's response to the relationships and composition of the landscape, including the land uses and identifiable elements within it. The assessment of visual character involves describing the scenic attractiveness of the landscape, considering the landscape attributes that hold aesthetic value and make significant contributions to the visual quality of the views, vistas, and viewpoints within the study area (ALA, 2013).

5.4.9 Weather and Visibility

Meteorological factors, such as weather conditions like haze or heavy mist, can influence the nature and intensity of a potential visual impact associated with a structural feature. These factors directly impact visibility, potentially altering the way the structural feature is perceived and affecting the extent of its visual impact.

Vegetation, particularly trees and shrubs, can serve as an effective visual screen for the base of the telecommunications mast, helping to mitigate the visual impact on surrounding receptors. By strategically placing vegetation around the base, it can obscure or soften the view of the supporting infrastructure, blending the site more harmoniously into the natural landscape. However, it's crucial to ensure that the vegetation is positioned at an appropriate distance from the development. Therefore, while vegetation can significantly contribute to visual impact mitigation, its placement requires careful planning to balance aesthetic considerations with the operational efficiency of the mast.

5.5 Methodology

The following methodology was employed for the assessment:

- A comprehensive field survey was conducted to accurately document and describe the receiving environment. **Refer to Section 6.**
- The physical characteristics of the project components were described and depicted based on information provided by SES. **See Section 2 and Section 6 for a detailed overview.**
- The visual resource general landscape characterisation, representing the receiving environment, was mapped using data from the field survey, Google Earth imagery, and Mucina and Rutherford's (2006) reference book, *"The Vegetation of South Africa, Lesotho, and Swaziland"*. The landscape description focused on the natural features of the land rather than subjective viewer responses (refer to Appendix A).
- The landscape's character was evaluated and rated based on its aesthetic appeal, utilising established research in perceptual psychology as the foundation, and its sensitivity as a landscape receptor. **See Section 6 for a detailed overview.**
- The unique and distinct sense of place in the study area was described, considering the spatial form and character of the natural landscape, as well as the cultural transformations associated with the historical and current land use. **Section** Error! Reference source not found. **for a detailed overview.**
- Viewshed analysis was conducted from the proposed project site to determine visual exposure and assess the topography's capacity to absorb potential visual impacts. The analysis considered the dimensions of the proposed structures and activities. **See Section** Error! Reference source not found. **. for a detailed overview.**
- The potential impacts of the proposed projects on the visual environment were identified and rated using SES significance rating criteria. **More information can be obtained in Section 8.2.**
- Recommendations were provided for mitigating the negative impacts of the proposed projects. **See Section 8.2 and 0 for a detailed overview.**

5.6 Project Phases and Activities

Activities to be undertaken during each of the phases are described in the following sections.

5.6.1 Environmental Authorisation and Public Participation

The stakeholder consultation process is an essential component of this VIA. Rather than conducting a separate consultation, we have integrated this process with the public participation for the environmental authorisation documents. This integrated approach provides stakeholders, government authorities, and other interested parties with a 30-day period to review the VIA document and provide feedback.

All comments received during this consultation period will be carefully considered and incorporated into the final VIA report. This ensures that the assessment is comprehensive, accurate, and addresses stakeholder concerns effectively.

5.6.2 Design Phase

This phase would include the clearance of vegetation, installation of perimeter fencing and levelling of the site and preliminary earthworks. Thereafter the Project site will be marked out, a construction camp set up and the access road to the site is constructed. The clearance of vegetation is not anticipated to be site wide and will depend on the detailed layout of the proposed project[7].

5.6.3 Construction Phase

During the construction phase of the Hartland Telecommunication Mast, a systematic and comprehensive approach to development construction is followed[8], encompassing a variety of activities:

- Final design and micro-siting of infrastructure based on topographical conditions and environmental permits.
    - Vegetation clearance and construction of access roads, if required.
- Assembly and erection of infrastructure on site.
- Excavation of cable trenches.
    - Ramming or drilling of the mounting structure frames.
    - Installation of the towers onto the frames.
    - Installation of measuring equipment.
    - Laying of cables between the module rows to the inverter stations.

[7] During the design phase it is advisable that landowners and occupiers be engaged to ensure structures are adequately avoided
[8] Please note that the specific sequence and activities may be subject to adjustment based on the project's unique requirements and conditions.

- Construction of operations and maintenance buildings.
- Undertaking of rehabilitation on disturbed areas, as required.
- Testing and commissioning.
  - Thorough testing of the telecommunications mast to ensure proper functionality.
- Continued maintenance.
  - Ongoing maintenance activities to ensure the optimal performance of the telecommunications mast.
- Removal of equipment.
  - Removal of any construction equipment that is no longer needed.

The construction phase of the proposed project is expected to span a period of 6 to 12 months. However, this timeline can be influenced by factors such as weather conditions and unforeseen challenges encountered during construction.

5.6.4 Operational Phase

The proposed project will be operated on a 24 hour, 7 days a week basis. The operation phase of the proposed project will comprise the following activities:

- Regular cleaning of Antennas.
- Vegetation management for optimal operation;
- Maintenance of office and operational buildings;
- Supervision of telecommunications operations;
- Continuous site security monitoring;
- Minimal facility servicing with on-site electrical supply;
- Water usage for sanitation, panel washing, and dust control;
- Temporary water storage, if required;
- Sanitation requirements met with municipal sewage system or alternatives; and
- Management of minimal refuse/solid waste, removed by municipality or private contractor.

5.6.5 Decommissioning Phase

The proposed project is expected to operate for at least 25 years. Once the Hartland Telecommunication Mast reaches the end of its life, the mast and the associated infrastructure will be decommissioned. If decommissioned, all components will be removed, and the site rehabilitated. Where possible all materials will be recycled, otherwise they will be disposed of in accordance with local regulations and international best practice.

6 Baseline Environmental Profile

6.1 Character and Nature of Environment

The proposed Hartland Telecommunications Mast is located ~3km north of Hartenbos within the Mossel Bay Local Municipality, Western Cape Province. The area surrounding the site is characterised by a mix of residential development and natural landscapes, including the Klein Brak River and a range of natural vegetation types such as Albany Thicket, Karoo, and Fynbos, the latter being a distinctive vegetation type primarily found in the Western Cape.

This landscape provides a diverse environmental setting, with both developed and natural areas contributing to the visual character of the region. The proposed mast is positioned within the proposed Hartland Lifestyle Estate, an area that reflects a combination of residential land use and open space.

The existing visual landscape in and around Hartenbos, with its residential areas and natural vegetation, forms the backdrop for assessing the proposed development's visual characteristics. The telecommunications mast will be integrated into this setting, which includes various land uses and natural features that influence how the structure will be perceived.

6.1.1 Climate Conditions

The proposed Hartland Telecommunications Mast is located within the Western Cape, a region characterised by distinct climatic conditions that influence both the natural landscape and the visual environment.

Summer: Summers in the Mossel Bay area are typically warm and dry, with daytime temperatures ranging between 24°C and 27°C. Rainfall is infrequent, averaging around 18 mm per month, contributing to drier conditions and arid landscapes, particularly during heatwaves. These conditions result in longer days and clear skies, which are prominent features of the summer landscape.

Winter: Winters in Mossel Bay are cooler and wetter, with temperatures typically ranging between 11°C and 19°C. Rainfall is more prevalent, with monthly averages between 25 mm and 34 mm, especially in the coastal and higher-altitude areas. The cooler temperatures and increased rainfall result in a greener, more verdant landscape during this season, though the weather can also be windy.

The area surrounding the proposed Hartland Telecommunications Mast is visually diverse, with a combination of residential development and natural landscapes. The region's climate, characterised by distinct seasonal variations in temperature and precipitation, plays a significant role in shaping the visual experience of the landscape. During the dry summer months, the landscape takes on a more arid appearance, while the wetter winter months result in a greener, more lush visual environment.

The proposed mast, designed to blend with the rural aesthetic of the proposed Hartland Lifestyle Estate, will be introduced into this dynamic visual landscape, and its appearance will change in accordance with the seasonal shifts in the area. The visual diversity of the site and its surroundings, combined with the seasonal changes in vegetation and weather, will influence how the mast integrates into the landscape throughout the year.

6.1.2 Topography and Landscape

The proposed Hartland Telecommunications Mast site encompasses diverse terrain types, including level plains and gentle undulations. The overall landscape is relatively flat, with minimal variation in elevation, which provides a visually expansive and open character.

The north-to-south elevation profile of the site reveals a relatively uniform landscape, starting at an elevation of 92.02m and decreasing slightly to 91.82m over a distance of 9m. This minor drop of 0.20m indicates a stable, level terrain, which offers little in the way of natural topographical features to obscure the visibility of the telecommunications mast. As such, the mast will likely be visible when viewed along this axis, given the absence of significant elevation changes that might otherwise serve as visual barriers.

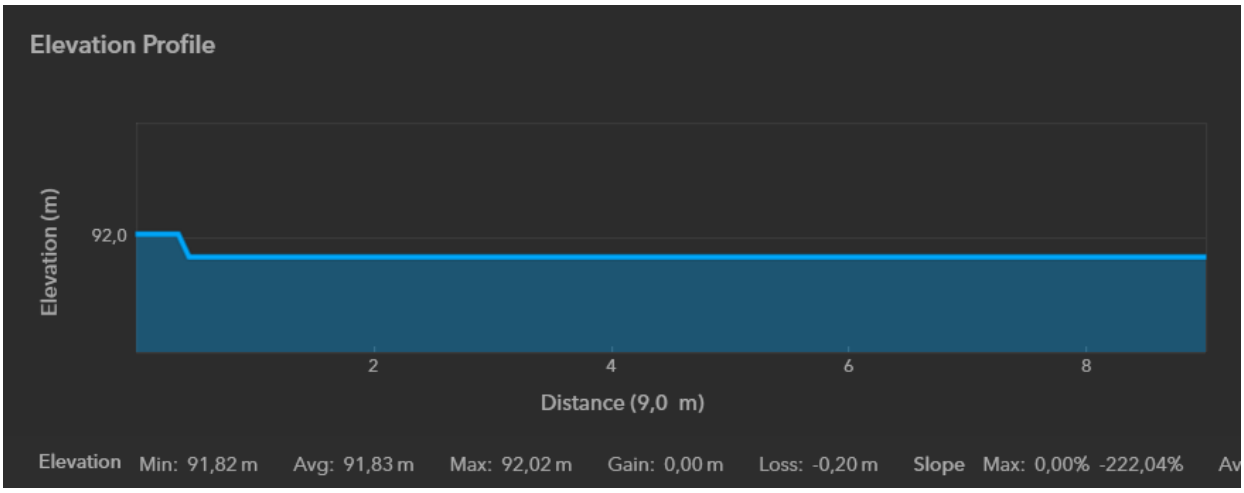


Figure 6: North to South Elevation Profile

The west-to-east elevation profile presents a slightly more varied terrain, beginning at 91.02m and remaining relatively level for the first few meters before experiencing a sharp rise of 0.80m around 4m into the profile. The elevation then stabilises at a height of 91.82m. This sudden change in elevation creates a natural feature that may partially screen the mast from certain viewpoints, depending on the angle of observation. However, the consistent higher elevation that follows the rise suggests that the mast will still be prominently positioned on the elevated section of the terrain.

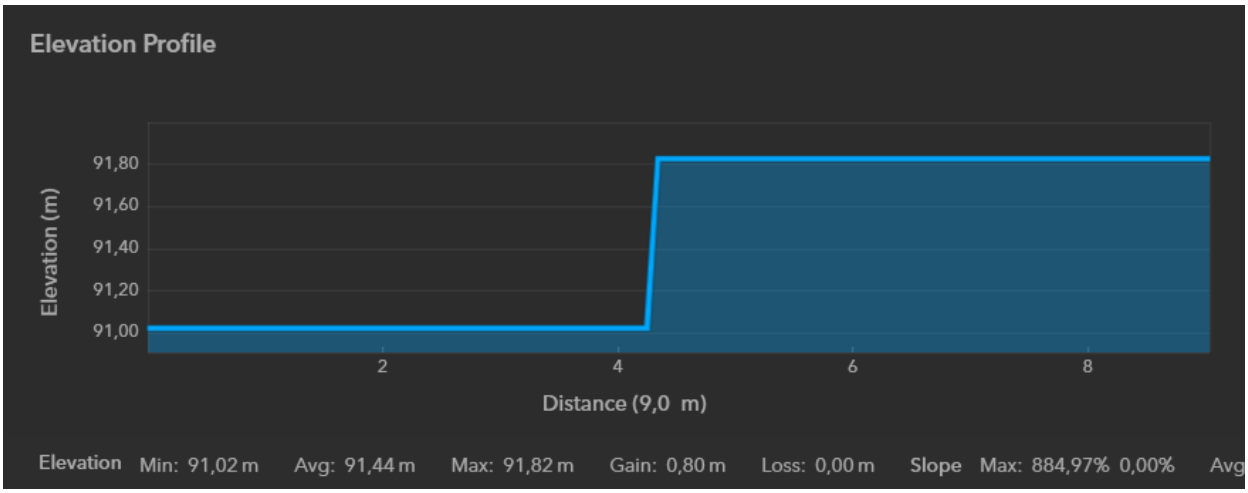


Figure 7: West to East Elevation Profile

The broader landscape surrounding the proposed Hartland Telecommunications Mast site includes both residential areas and natural vegetation, with the nearby Klein Brak River contributing to the hydrological diversity of the region. The area's relatively flat topography, combined with the presence of residential and commercial development, means that the mast will likely be a noticeable feature in the landscape. However, the design, featuring a windmill aesthetic, has been chosen to mitigate its visual impact and integrate the structure into the rural context of the region.

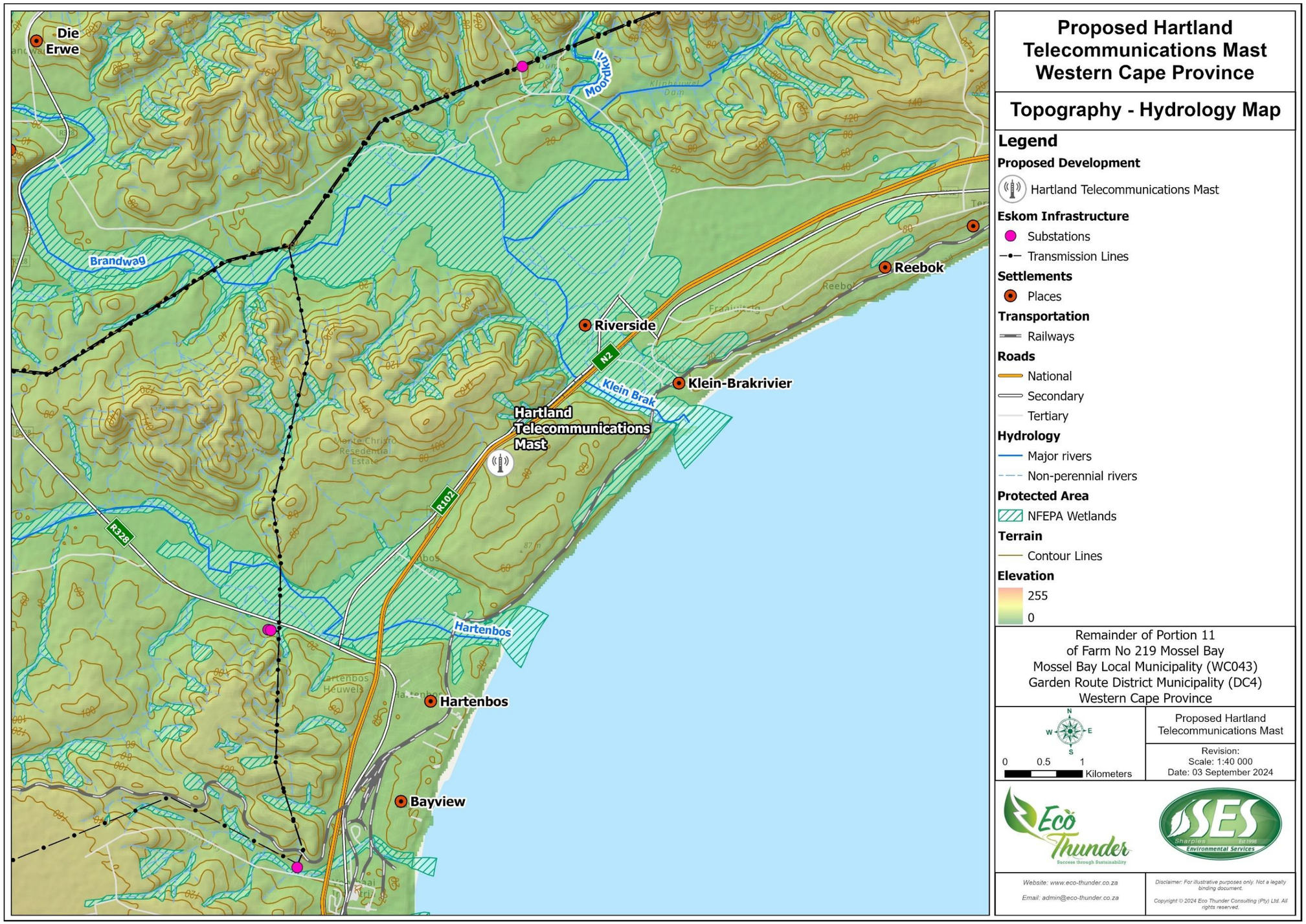


Figure 8: Map of Topographical Profile of the Site

6.1.3 Natural Landscapes

The landscape surrounding the proposed Hartland Telecommunications Mast features a combination of natural elements that contribute to the visual and ecological character of the area. Notably, the site is bordered by two significant rivers, the Klein Brak River and the Hartenbos River, both of which play an important role in shaping the region's natural landscape. These rivers, along with other water features like the Klipheuwel Dam, add dynamic visual elements to the area by creating reflective surfaces and offering visual diversity.

The presence of these water features enhances the visual appeal of the landscape, offering scenic qualities that vary throughout the year with changing light and seasonal fluctuations. The flowing rivers, combined with the dam, act as natural corridors that also support biodiversity, providing habitats for various species and contributing to the ecological complexity of the region. Within 5km proximity to the proposed development site, these water features act as focal points in the landscape, visually breaking up the expanses of open space and adding depth to the region's visual character.

The careful placement of the telecommunications mast within this natural setting will be crucial to maintaining the region's visual integrity. While the mast is designed to integrate with the rural aesthetic through its windmill design, it is important that its placement and construction take into account the visual harmony of the surrounding natural elements, including the rivers and wetlands.

To further protect the visual and ecological value of these water features, it will be essential to establish appropriate buffer zones and exclusion areas as per the aquatic specialist's recommendations. These buffers will not only preserve the natural landscape but also act as visual transitions between the natural environment and the new development, softening the visual impact of the mast.

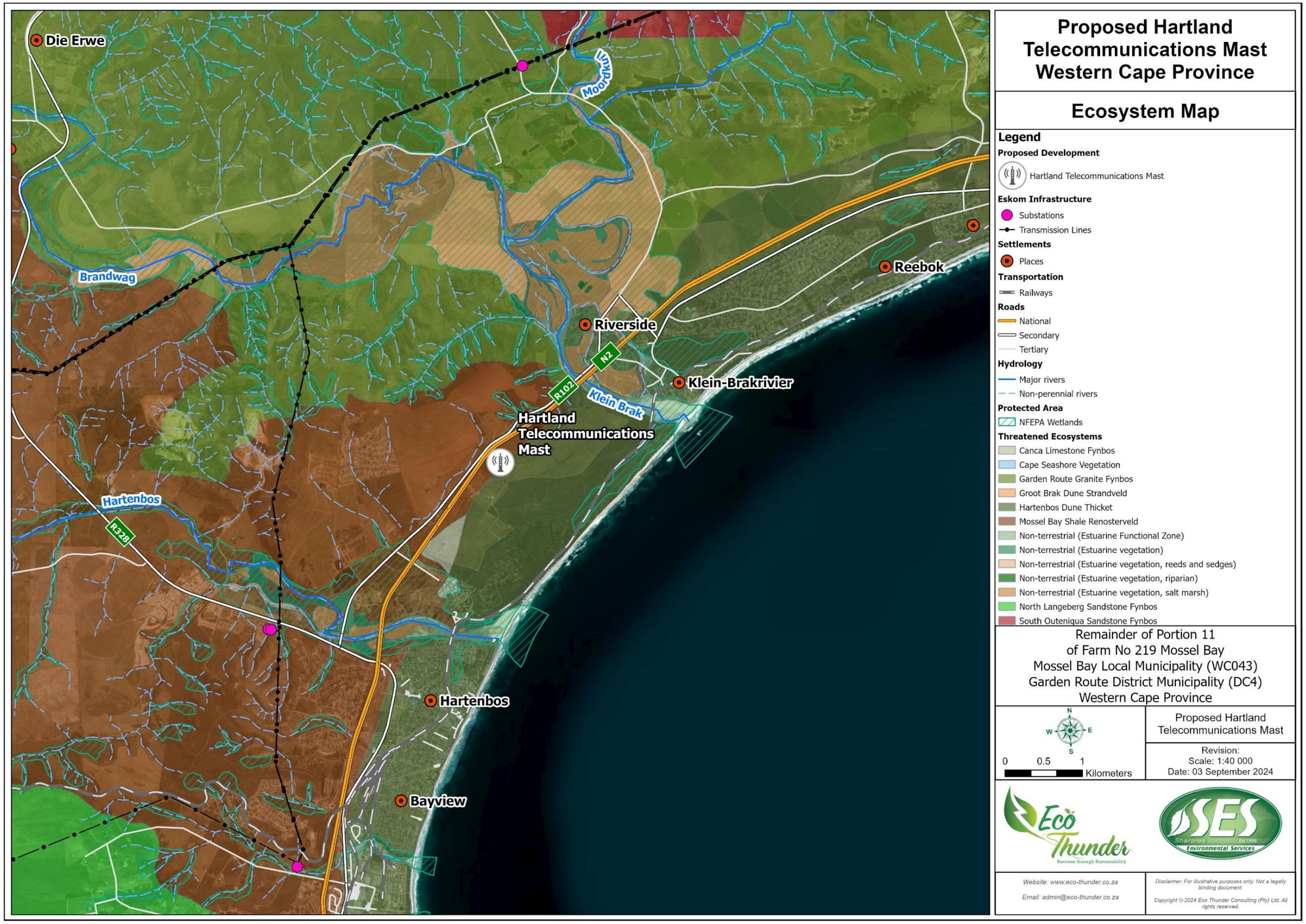
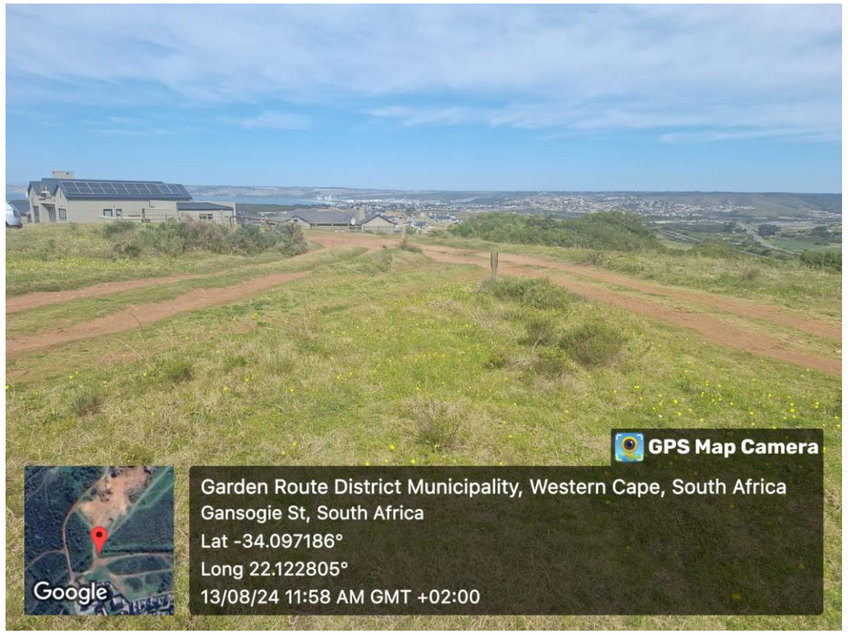
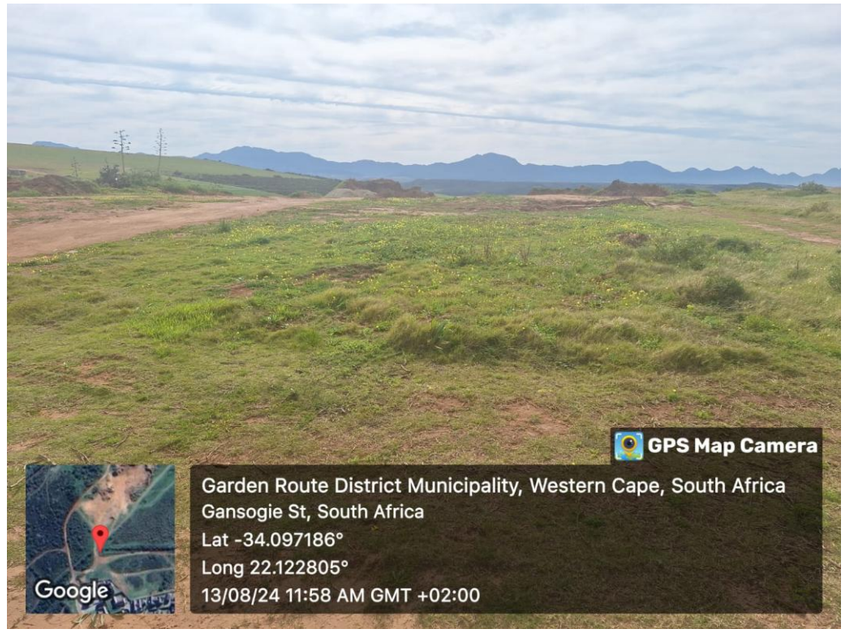


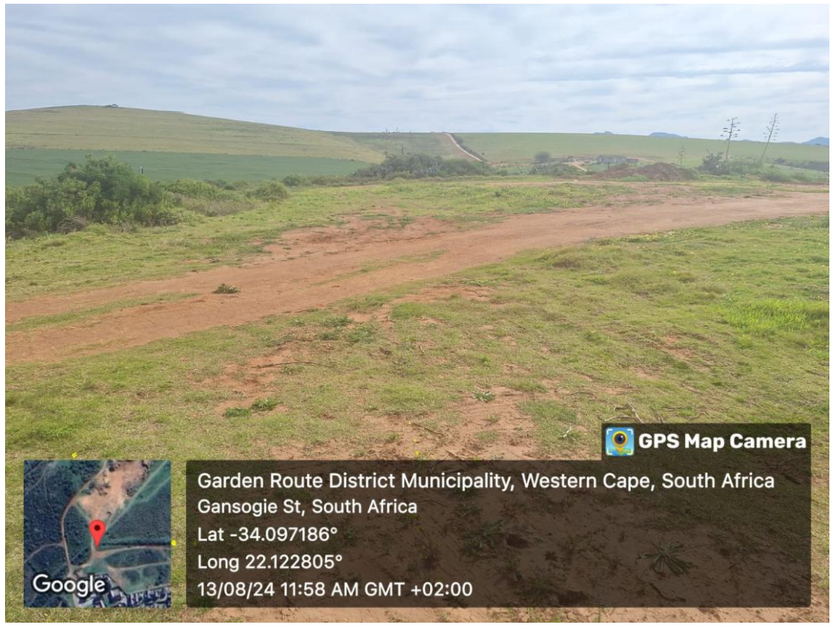
Figure 9: Protected Ecosystems Map



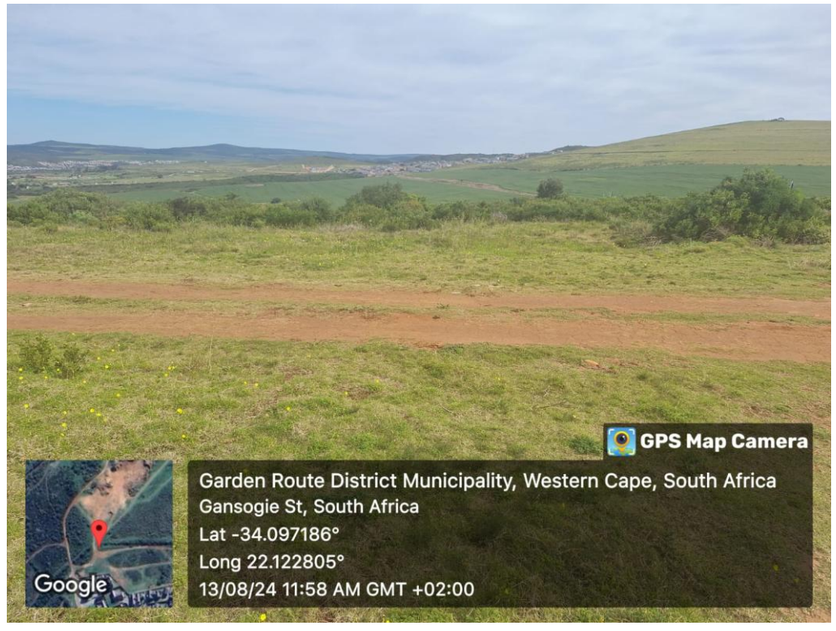
Photograph 1:Landscape within and surrounding the Proposed Development Area: View 1



Photograph 2: Landscape within and surrounding the Proposed Development Area: View 2



Photograph 3: Gravel Road and Landscape within close proximity to the Proposed Development Area: View 1



Photograph 4: Gravel Road and Landscape within close proximity to the Proposed Development Area: View 2

6.1.4 Cultural and Tourism Resource

The proposed Hartland Telecommunications Mast is situated near several noteworthy cultural, recreational, and tourism landmarks in the Hartenbos region. The site is ~3.7km north of Hartenbos, a key local and tourism hub known for its recreational offerings and coastal beauty. Hartenbos, a popular destination along the Garden Route, attracts visitors with its beaches, lagoon, and cultural landmarks.

One significant cultural landmark near the proposed development is the ATKV Hartenbos Museum, located ~3.7km south of the site. The museum, which commemorates the history and legacy of the Afrikaner population, is a vital cultural resource for the area, reflecting the community's heritage. Additionally, Hartenbos Lagoon, ~2.25km south of the proposed site, is a well-known natural and recreational area, noted for its water-based activities and scenic appeal.

Ronn Erasmus Beach, another key recreational spot frequently visited by locals and tourists alike, is located ~1.97km south of the proposed mast site. These locations are integral to the region's cultural and tourism identity, contributing to the visual and recreational character of the broader area. Due to their proximity to the development site, careful consideration must be given to any potential visual impacts that may affect the aesthetic value or character of these tourism and cultural resources.

Furthermore, the N2 highway, which runs near the development area, serves as a historical route, adding another layer of cultural significance to the landscape. This route has played an important role in South Africa's trade and migration patterns, and the surrounding area reflects the intersection of historical, cultural, and economic activities.

The cultural and tourism landscape of Hartenbos is a critical aspect of the region's identity, making it important to ensure that the Hartland Telecommunications Mast integrates harmoniously with the visual and cultural character of the area. This integration will require thoughtful design and planning, ensuring that the mast does not detract from the scenic and cultural qualities that attract both residents and tourists to the region.

6.1.5 Land Use

The land surrounding the proposed Hartland Telecommunications Mast reflects the diverse landscape of the Western Cape's Garden Route, known for its natural beauty, biodiversity, and tourism significance. The region features a mix of residential, agricultural, conservation, and recreational land uses, each contributing to its distinct visual character.

Residential areas, particularly around Hartenbos (~3 km south), consist of single-family homes, vacation resorts, and retirement communities. These areas require careful consideration of the mast's visual impact, especially on skyline views.

Agriculture, including small-scale farming and grazing, plays a secondary role in the surrounding rural areas. These agricultural lands blend with conservation zones, enhancing the scenic quality of the region, while the local climate demands efficient resource management.

Conservation areas near the mast, such as the Klein Brak River and wetlands, are critical ecological corridors that enhance the area's visual appeal. The region's strong focus on conservation supports biodiversity and offers recreational opportunities for residents and tourists alike.

Tourism, conservation, and residential use must be balanced, ensuring that the mast integrates harmoniously into the landscape without disrupting the region's scenic and cultural attributes.

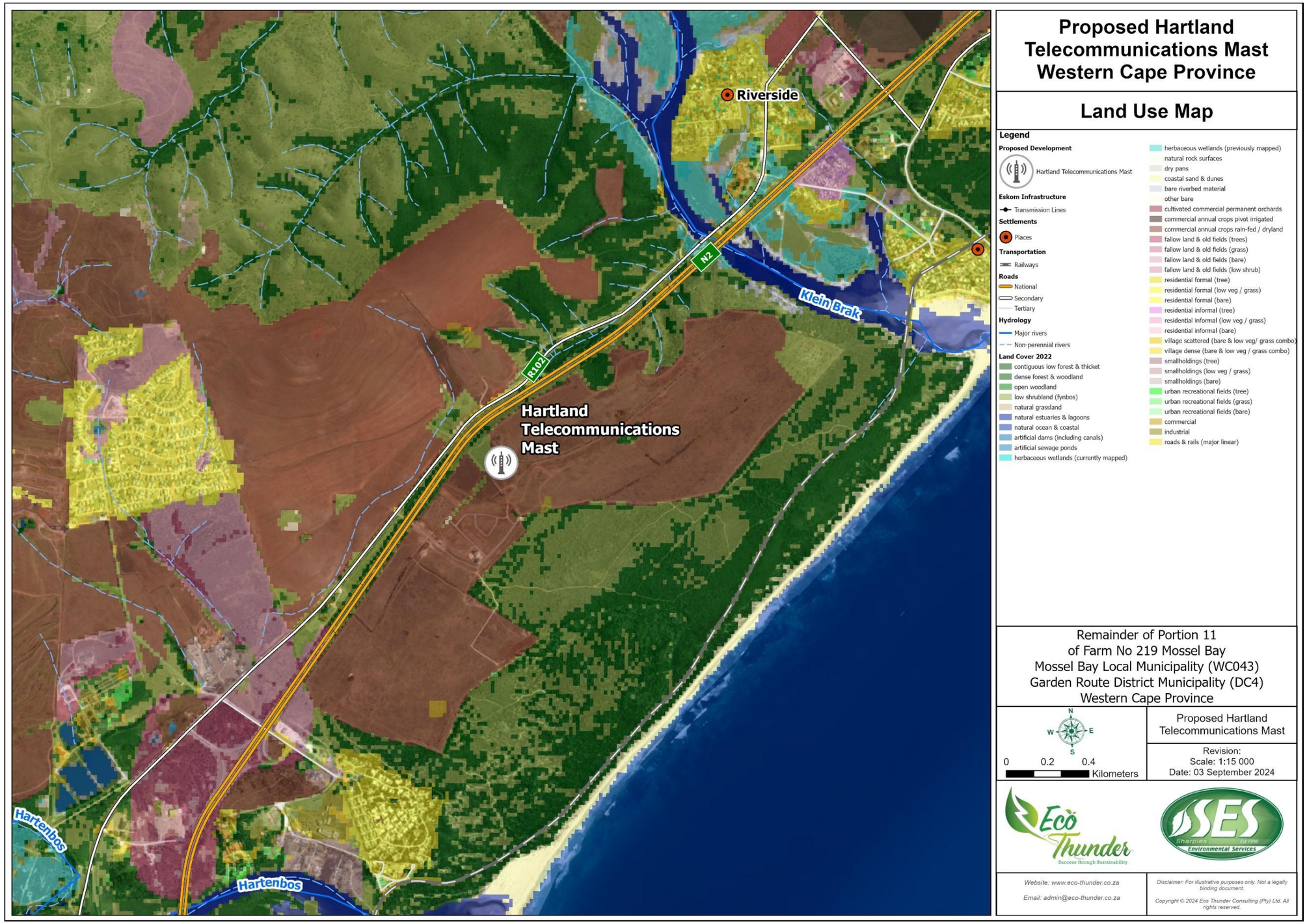


Figure 10: Land Use Map

6.1.5.1 Agricultural Land Use

The land surrounding the proposed Hartland Telecommunications Mast supports a variety of agricultural activities, including fruit orchards, crop cultivation, and animal husbandry. These agricultural operations play a role in shaping the rural aesthetic of the region, blending with other land uses such as conservation and residential development. The agricultural landscape, while secondary to tourism and residential expansion, remains an integral part of the local economy and visual character.

The region's favourable climate supports these activities, though water scarcity and urban encroachment from expanding tourist infrastructure present ongoing challenges. Local farmers have adapted by employing sustainable practices, such as water conservation techniques and soil preservation measures, ensuring that agricultural productivity is maintained without compromising the region's ecological integrity.

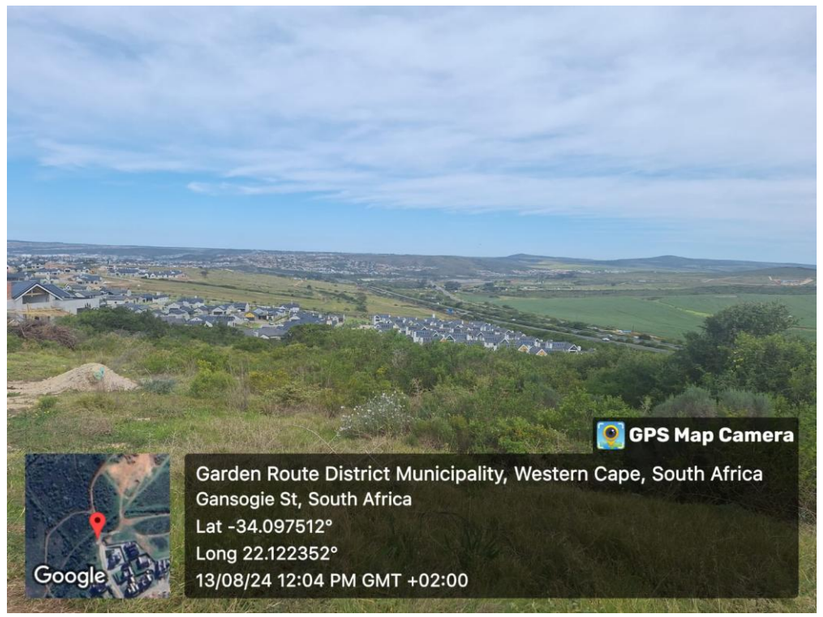
In developing the Hartland Telecommunications Mast, it is crucial to ensure that the mast integrates into the existing agricultural landscape. The visual impact of the mast on these rural areas should be carefully considered, with attention given to maintaining the visual harmony between agricultural fields and the surrounding natural features. By incorporating sustainable design and placement strategies, the project can coexist with the agricultural activities, preserving the region's rural character while accommodating technological advancements.

6.1.5.2 Residential Land Use

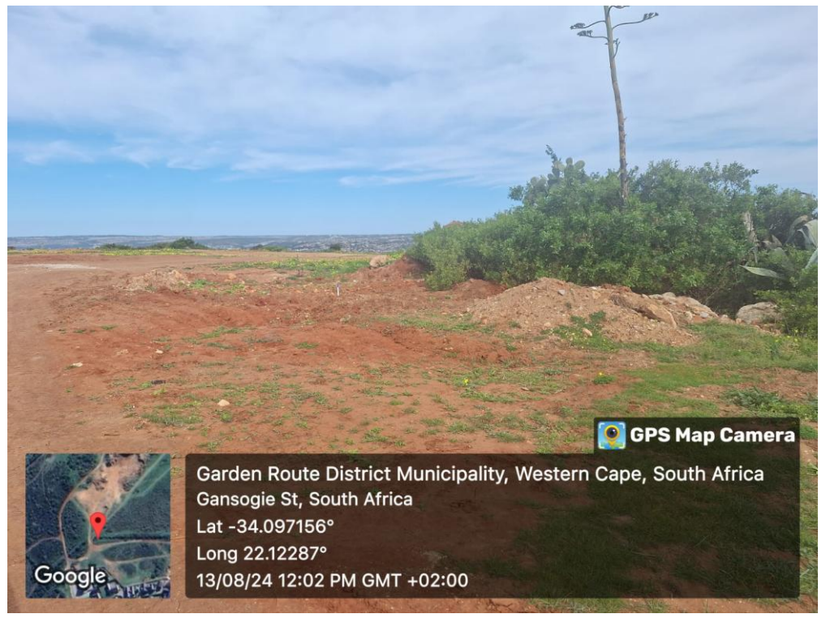
The area surrounding the proposed Hartland Telecommunications Mast is characterised by both residential and recreational land uses. Residential areas are a key component of the local landscape, with several houses located within ~40m of the proposed development site. These residential communities primarily consist of single-family homes, vacation properties, and retirement complexes that cater to both permanent residents and tourists. The presence of these homes in close proximity to the development site highlights the importance of considering potential visual impacts on the residents, particularly in terms of skyline views and local aesthetics.

In addition to residential areas, recreational land use is a prominent feature of the region. The nearby town of Hartenbos, located ~3 km south of the mast site, is a popular coastal destination that attracts visitors for its sandy beaches, water sports, and leisure activities. Public parks and open spaces encourage outdoor recreation, while sports clubs, golf courses, and the ATKV Hartenbos Museum contribute to the cultural and recreational appeal of the area.

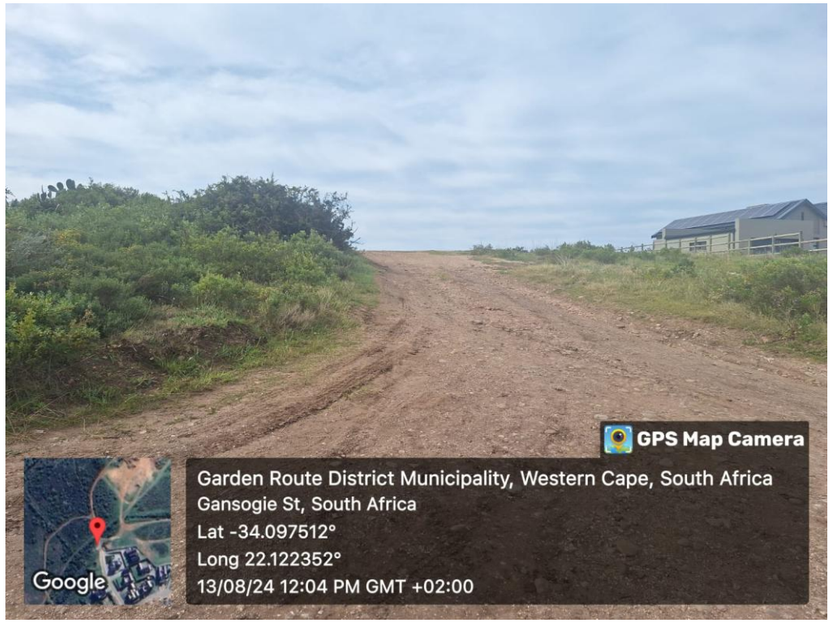
Given the proximity of residential areas and the significance of local recreational spaces, careful planning will be essential to mitigate any potential visual impacts of the telecommunications mast. The mast's design, featuring a windmill aesthetic, is intended to blend with the rural and coastal landscape, but additional visual screening and thoughtful placement will be necessary to minimise any disruptions to the scenic and recreational qualities that define the region.



Photograph 5: Residential Area and Landscape View within the area surrounding the Proposed Development Area



Photograph 6: Gravel Road and Landscape View within close proximity to the Proposed Development Area



Photograph 7: Gravel Road and Residential Area located to the south of the Proposed Development Area

Photograph 8: Construction Site located to the north of the Proposed Development Area

6.1.5.3 Natural and Conservation Areas

The Hartland Telecommunications Mast is situated in a region of high ecological and conservation significance. The site is located within the critically endangered Mossel Bay Shale Renosterveld, which is home to a rare and diverse collection of indigenous shrubs, grasses, and flowering plants. This endangered ecosystem enhances the area's biodiversity and highlights the need for sustainable development practices to minimise both ecological and visual impacts.

The proximity of the site to key conservation areas further emphasises the aesthetic sensitivity of the region. The Inkonzo Wildlife Reserve, located ~3.9km north of the proposed development, is an important refuge for endangered species and supports local conservation through ecotourism and educational programs. To the north, ~7.4km from the site, lies the Botlierskop Private Game Reserve, which is renowned for its conservation efforts and focus on wildlife protection and ecotourism.

Additionally, the proposed mast is near key hydrological features, including the Klein Brak River, the Hartenbos River, and several National Freshwater Ecosystem Priority Areas (NFEPA) wetlands, which serve as vital ecological corridors supporting local biodiversity. These wetlands include channelled valley-bottom wetlands and other critical water bodies. Their presence calls for the establishment of appropriate buffer zones to safeguard their ecological functions and protect the surrounding landscape.

Further south, the popular St. Blaize Trail, located ~10km from the mast site, offers both locals and tourists an opportunity to experience the natural beauty of the coastal landscape. This trail, known for promoting environmental conservation and awareness, provides scenic views of the region's natural assets.

In light of the ecological and conservation importance of the surrounding areas, it is imperative that the development of the Hartland Telecommunications Mast incorporates sustainable and visually sensitive strategies.

6.1.5.4 Roads

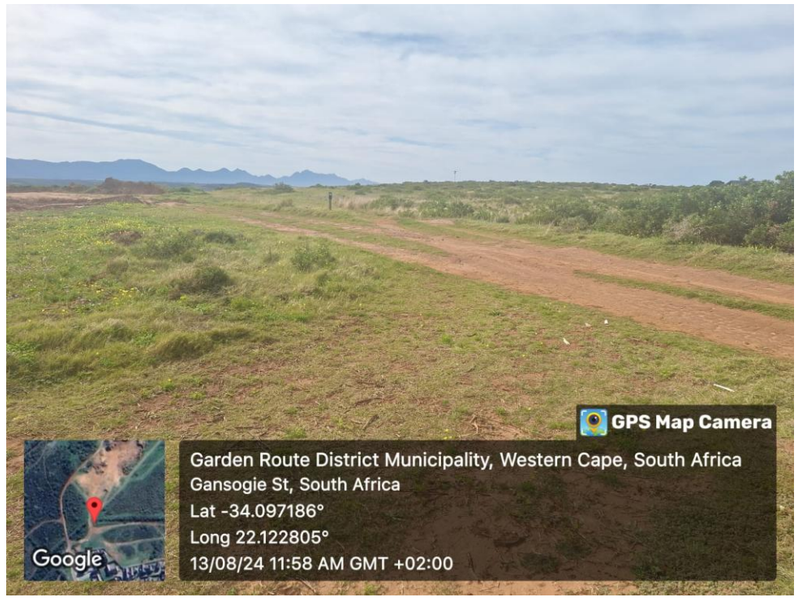
The road network surrounding the proposed Hartland Telecommunications Mast comprises a combination of national highways and regional routes, both of which are key for providing access to the site and influencing the visual experience of the development. The N2 highway, running along the southern coast of South Africa and located ~0.3km to the west and north of the proposed site, is a significant national route for long-distance transportation. Its proximity not only allows easy access for construction trucks and equipment but also reduces the need for new road construction, thereby minimising visual disturbance.

Additionally, MR344 (Kasuur Street) serves as a regional route connecting Hartenbos and its surrounding areas to the N2. This road provides a direct route for local traffic and is anticipated to play a crucial role during the construction and operational phases of the telecommunications mast. The use of these existing roads will help alleviate congestion on other local roads and reduce the overall environmental footprint of the development.

Local roads, such as Salie Cl Street, as well as several gravel access roads, provide more direct access to the proposed site. These roads will be important for daily operations and maintenance, but their visibility and the surrounding landscape will need to be carefully considered.

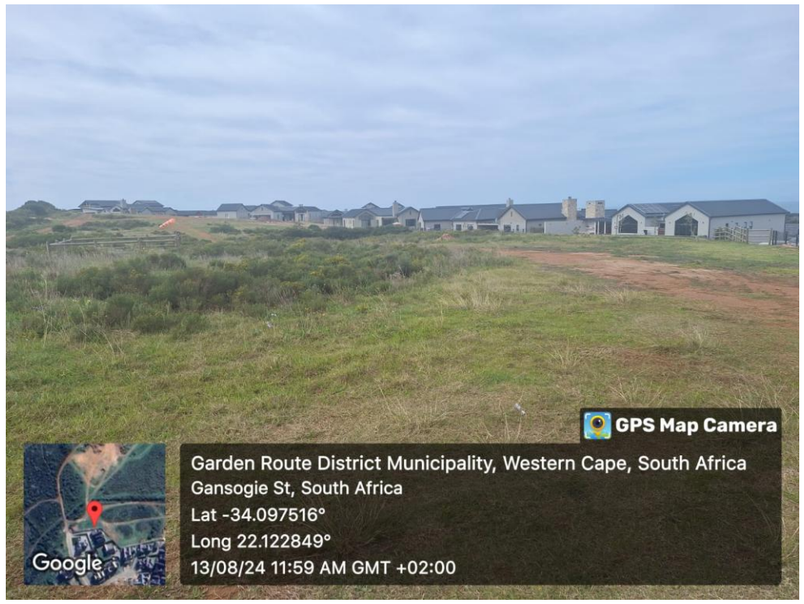
Given the visibility of the proposed mast from both the N2 and MR344, special attention must be paid to ensuring that the structure is visually integrated into the surrounding landscape. This may involve implementing visual mitigation measures such as strategic screening using indigenous vegetation or aligning the mast with existing infrastructure to minimise its visual impact.

In light of these considerations, it is essential that road access and traffic management plans for the development take into account both the operational needs of the mast and its potential visual impact on those using these key routes.

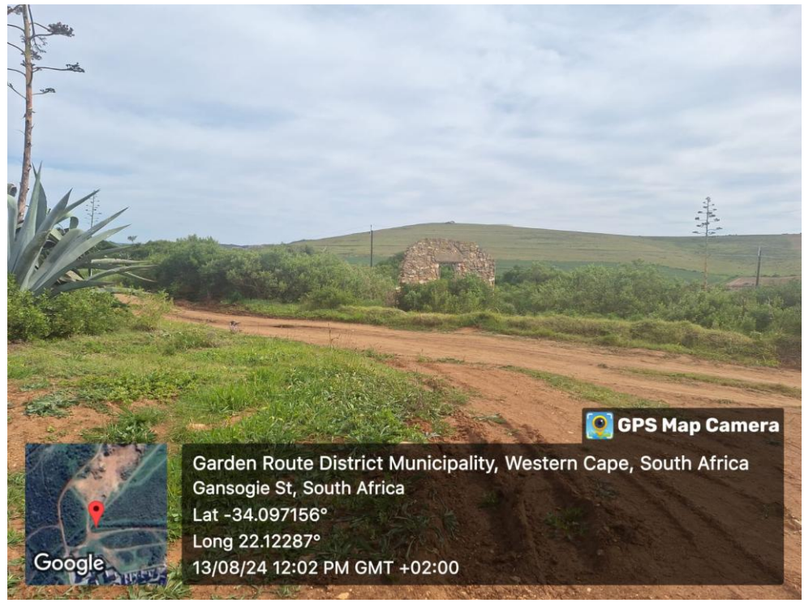


Photograph 9: Gravel Road and Landscape within close proximity to the Proposed Development Area: View 3

Photograph 10: Gravel Road and Landscape within close proximity to the Proposed Development Area: View 4



Photograph 11: Gravel Road and Residential Area located to the south of the Proposed Development Area



Photograph 12: Gravel Road and Infrastructure within close proximity to the Proposed Development Area

6.2 Visual Resource

6.2.1 Visual Receptors

Visual receptors, also known as viewer groups, are individuals or groups of individuals who have the potential to view or perceive the proposed development. The identification of visual receptors is a crucial step in the visual impact assessment process as it helps to understand who will be affected by the visual changes brought about by the project. Visual receptors that have been identified can be assessed in terms of ''beneficiaries and losers[9]'', resulting from the proposed development.

Beneficiaries may include the following:

- Residents or users of a project, such as a resort in a scenic area;
- Individuals or communities who will benefit from infrastructure development, such as power lines or communication masts provided for an area;
- Poor or unemployed individuals who will benefit from economic-type development and related job opportunities.

Losers may include the following:

- National parks, nature reserves, and other protected or pristine areas that rely on a wilderness experience for their visitors;
- Individuals and organisations who depend on scenic and recreation resources for their livelihood;
- Property owners who may rely on uninterrupted views and the absence of visual intrusions.

This comprehensive identification of visual receptors ensures that the assessment considers both the positive and negative visual impacts of the proposed development, taking into account the specific needs and concerns of various stakeholders. For the Hartland Telecommunications Mast project, a general recommendation is made to utilise vegetation screening, landscaping techniques, vegetation covers, or barriers, where applicable, to mitigate the visual impact on highly sensitive receptors, specifically those living in close proximity but not on the affected property.

It is postulated that all structures, homes, or buildings within a 300-meter radius of the buildable area are on land rented by the developer. These structures are deemed to have a lower significance in the context of the visual impact assessment. Conversely, where land or structures

[9] Landowners (those who financial benefit) who have agreed to leasing their land for this development are seen as Beneficiaries and therefore assessed at a lower impact class. Residents, neighbours, tourists, and settlers are identified as losers.

are owned or occupied by a different holder or group, it is assumed that these individuals have been informed of the development, and their properties have been adequately avoided or thoroughly screened, in accordance with the recommendations of the social impact assessment.

- **Local Residents:** This group includes residents living ~40m south of the development site, as well as in nearby areas like Hartenbos and surrounding communities. These residents are likely to experience the visual changes from their homes or while moving through their daily routines, making them a particularly sensitive receptor group.
- **Road Users:** Individuals travelling on the local road network, including major routes like the N2 (~0.3km north and west), MR344 (0.5km south-west), Salie Cl Street (~60m south-west), as well as several gravel access roads, will likely see the telecommunications mast while commuting or travelling for other purposes. These roadways provide views of the mast, especially for regular commuters and tourists.
- **Farmers and Agricultural Workers:** With existing agricultural activity in the surrounding area, farmers and agricultural workers are likely to be visual receptors. They may view the mast while working on their land or moving between agricultural plots. These individuals have a unique relationship with the land, and their sensitivity to visual changes will depend on the degree of integration between the mast and the surrounding landscape.

Each of these visual receptors will have a different level of sensitivity to changes in the visual environment, depending on factors such as their location, the frequency and duration of their views, and their personal or cultural values.

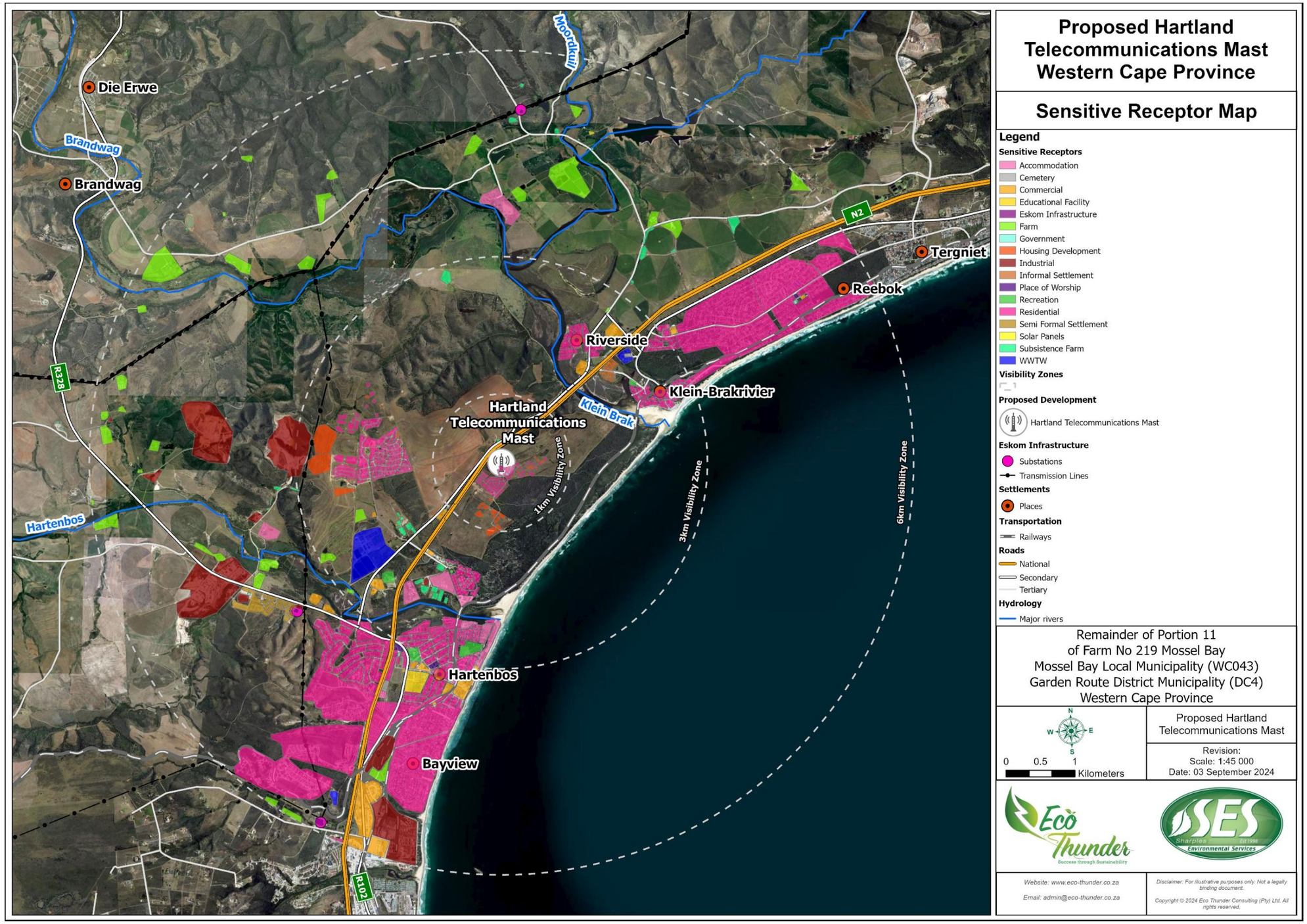


Figure 11: Visual Receptors for the broader study area

6.2.2 Visual Absorption Capacity

The Visual Absorption Capacity (VAC) of the landscape surrounding the proposed Hartland Telecommunications Mast is essential to understanding how the development will visually integrate with its surroundings. VAC refers to the landscape's ability to assimilate visual changes without substantial detriment to its aesthetic or ecological character. Key factors influencing VAC include the area's topography, existing vegetation, land use, and the presence of anthropogenic modifications.

The project site, situated near the N2 highway and surrounded by various residential, agricultural, and conservation areas, features a mix of topographical forms, including level plains and mild undulations. These factors, combined with the scattered settlements and agricultural activities, suggest a moderate capacity to absorb the visual changes introduced by the telecommunications mast. The presence of existing infrastructure, such as roads and nearby power lines, provides visual cues that help contextualise the proposed development, reducing its perceived contrast with the landscape.

In terms of vegetation, the surrounding areas feature a combination of natural fynbos vegetation and agricultural landscapes, which can provide some natural screening. The indigenous fynbos, characteristic of the Western Cape’s Garden Route, contributes to the natural aesthetic of the region and can be used strategically to screen or soften the visual impact of the mast from certain viewpoints. However, areas closer to settlements, particularly residential areas within ~40m of the site, may have reduced visual absorption capacity due to the proximity of receptors and the lack of dense vegetation for screening.

The nearby conservation zones, including the Klein Brak River and Mossel Bay Shale Renosterveld, are critical in terms of both ecological and visual integrity. While these areas enhance the scenic value of the landscape, they also demand careful design strategies to ensure the development does not detract from the visual and environmental quality of the region.

Views from key receptor points, including local roads and residential areas, will vary depending on the proximity and elevation of the observer. From higher vantage points, such as from nearby hills, the telecommunications mast may be more visible, especially in the absence of sufficient vegetation to act as a visual buffer.

In summary, the landscape's visual absorption capacity is evaluated as moderate. While the site has a degree of anthropogenic modification, the presence of conservation areas, residential proximity, and the region’s natural beauty require sensitive design and planning. To mitigate the visual impact, it is recommended that natural screening through indigenous vegetation be incorporated, and that the mast’s design be aligned with existing infrastructure to minimise visual intrusion.

7 Viewshed Analysis

7.1 Overview of the Viewshed

The viewshed analysis for the Hartland Telecommunications Mast was conducted to identify areas from which the proposed structure would be visible. This was achieved by mapping potential visibility from various vantage points within the study area. The analysis factored in topographical features, land cover (including buildings and vegetation), and distance, as visibility typically diminishes with increased distance from the site.

7.2 Zones of Visual Influence

The primary tool used for this analysis was Geographic Information System (GIS) software, which, coupled with Digital Terrain Models (DTMs), allowed for the generation of visibility zones. These zones were categorised as:

- Very Low Visibility: Areas where the mast would likely be hidden due to topographical obstructions or vegetation.
- Low Visibility: Regions where the mast would be partially obscured, or where the visual impact would be minimal.
- Medium Visibility: Areas where the mast would be visible but would not dominate the landscape.
- High Visibility: Zones where the mast would be a noticeable element within the landscape, contributing to a moderate level of visual intrusion.
- Very High Visibility: Locations where the mast would dominate views and be highly prominent in the skyline.

The attached map illustrates these visibility zones clearly, highlighting areas in proximity to residential developments like Hartenbos and Riverside, as well as key transport corridors such as the N2 highway, where the mast will be most visible. Additionally, the zones of potential visual influence indicate that the mast would have a significant visual impact within a 2 km radius, with diminishing influence beyond this range.

7.3 Visual Receptors and Sensitivity

The receptors most likely to be affected by the proposed development include residents in the nearby settlements of Klein-Brak River, Bayview, and Reebok. These areas fall within medium to high visibility zones. The analysis suggests that while the mast would be visible, particularly in open areas and where vegetation is sparse, the landscape’s ability to absorb this structure is moderate, given the presence of other man-made elements, such as transmission lines and urban developments.

Further from the mast, areas such as Die Erwe and Brandwag, which are located outside of the immediate viewshed, would experience little to no visual impact due to the mast being obscured by intervening topography and vegetation.

7.4 Mitigation Measures

Mitigating the visual impact of the telecommunications mast is crucial, particularly in areas where the visibility is rated as high or very high. Some proposed mitigation measures include:

- Vegetation Screening: Planting indigenous trees and shrubs around the mast's base to soften the visual impact. The strategic placement of vegetation can help reduce the mast's prominence, particularly from key visual receptors along the N2 highway and in residential areas like Hartenbos and Riverside.
- Colour and Material Selection: Choosing colours and materials that blend with the natural surroundings, such as matte finishes and neutral colours, can reduce the visual intrusion of the structure.
- Avoidance of Reflective Surfaces: Ensuring that the mast does not include highly reflective surfaces to prevent glare and minimise its visual footprint during peak sunlight hours.

The viewshed analysis reveals that while the Hartland Telecommunications Mast will be visible from several locations, the landscape's visual absorption capacity is moderate. With appropriate mitigation, particularly in the high and very high visibility zones, the visual impact of the mast can be reduced to a level that aligns with existing development patterns and the natural character of the region.

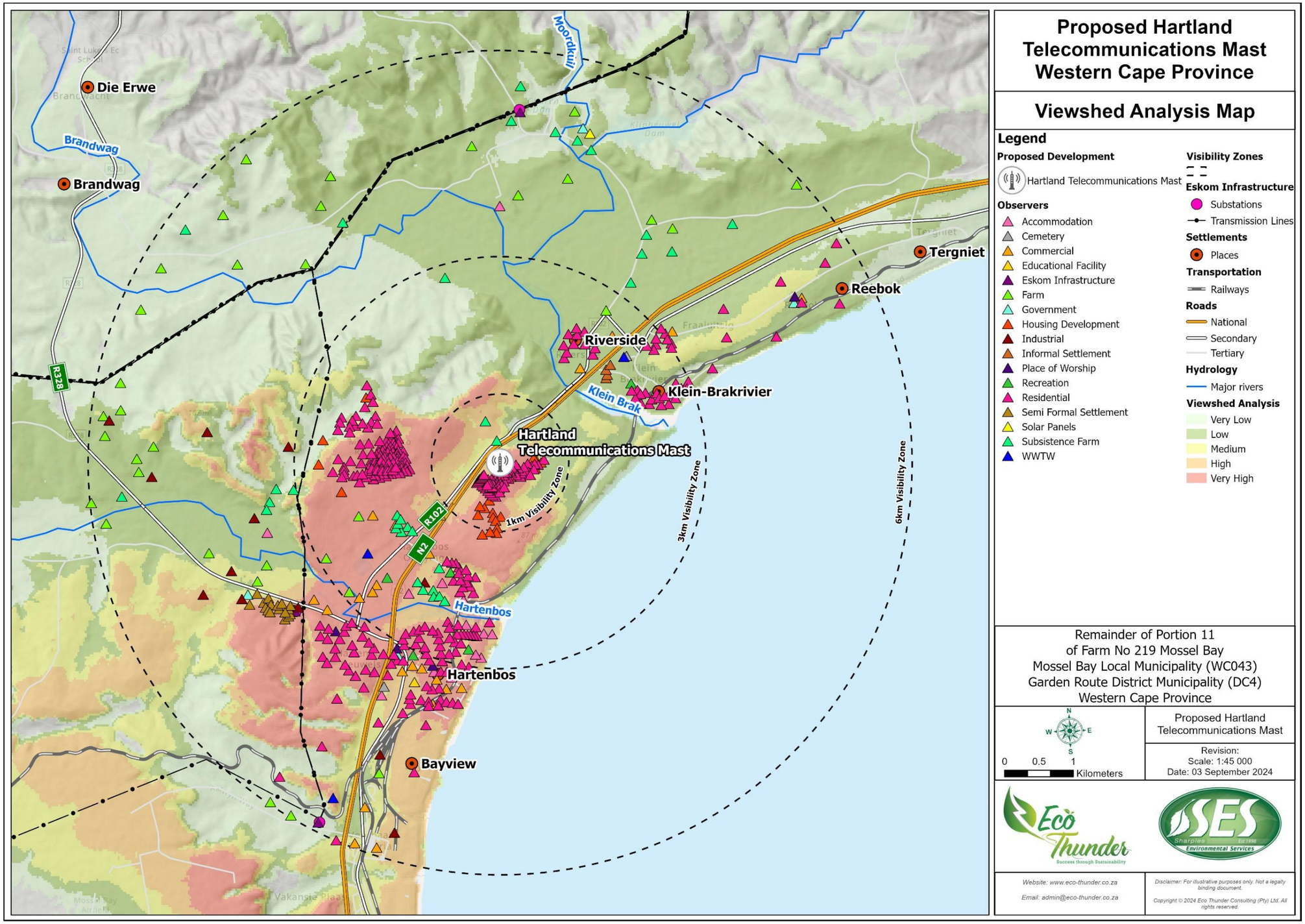


Figure 12: Viewshed Analysis for the Proposed Hartland Telecommunications Mast

8 Impacts and Risks Assessment

This section aims to rate the significance of the identified potential impacts pre-mitigation and post-mitigation. The potential impacts identified in this section are a result of both the environment in which the Project activity takes place, as well as the activity itself. The identification of potential impacts is performed by determining the potential source, possible pathways and receptors. In essence, the potential for any change to a resource or receptor (i.e., environmental aspect) brought about by the presence of a Project component or by a Project-related activity has been identified as a potential impact.

The potential impacts are discussed per environmental feature/aspect and according to each phase of the Project i.e., the Construction, Operational and Decommissioning/Post Closure Phases. The significance, probability and duration of these potential impacts have been assessed based on the detailed specialist studies undertaken on the sensitivity of the receiving environment.

8.1 Impacts and Risk Methodology

The EIA Methodology assists in evaluating the overall effect of a proposed activity on the environment. Determining of the significance of an environmental impact on an environmental parameter is determined through a systematic analysis.

8.1.1 Determination of Significance of Impacts

Significance is determined through a synthesis of impact characteristics which include context and intensity of an impact. Context refers to the geographical scale (i.e. site, local, national or global), whereas intensity is defined by the severity of the impact e.g. the magnitude of deviation from background conditions, the size of the area affected, the duration of the impact and the overall probability of occurrence.

Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

8.1.2 Impact Rating System

The impact assessment must take account of the nature, scale and duration of effects on the environment and whether such effects are positive (beneficial) or negative (detrimental). Each issue/impact is also assessed according to the various project stages, as follows:

- Planning;
- Construction;
- Operation; and

- Decommissioning.

The rating system is applied to the potential impact on the receiving environment and includes an objective evaluation of the possible mitigation of the impact. Impacts have been consolidated into one (1) rating. The impact assessment undertaken for the Hartland Telecommunications Mast was done as per the methodology provided by SES and is briefly outlined in Table 4 below.

- The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The **extent**, wherein it will be indicated whether:
  - **Site specific -** On site or within 100 m of the site boundary, but not beyond the property boundaries (1).
  - **Local -** The impacted area includes the whole or a measurable portion of the site and property, but could affect the area surrounding the development, including the neighbouring properties and wider municipal area (2).
  - **Regional -** The impact would affect the broader region (e.g., neighbouring towns) beyond the boundaries of the adjacent properties (3).
  - **National -** The impact would affect the whole country (if applicable) (4).
- The **duration**, wherein it will be indicated whether:
  - **Temporary -** The impact will be limited to the construction phase (1).
  - **Short term -** The impact will either disappear with mitigation or will be mitigated through a natural process in a period shorter than 8 months after the completion of the construction phase (2).
  - **Medium term -** The impact will last up to the end of the construction phase, where after it will be entirely negated in a period shorter than 3 years after the completion of construction activities (3).
  - **Long term -** The impact will continue for the entire operational lifetime of the development but will be mitigated by direct human action or by natural processes thereafter (4).
  - **Permanent -** This is the only class of impact that will be non-transitory. Such impacts are regarded to be irreversible, irrespective of what mitigation is applied (5).
- The **consequence of significance (magnitude)**, wherein it will be indicated whether:
  - **Negligible -** The impact would result in negligible to no consequences (2).
  - **Low -** The impact would result in insignificant consequences (4).

- **Medium -** The impact would result in minor consequences (6).
- **High -** The impact would result in significant consequences (8).

- The **probability** of occurrence, which shall describe the likelihood of the impact actually occurring:
  - **Improbable -** The possibility of the impact occurring is very low, due either to the circumstances, design or experience (1).
  - **Probable -** There is a possibility that the impact will occur to the extent that provisions must therefore be made (2).
  - **Highly probable -** It is most likely that the impacts will occur at some stage of the development. Plans must be drawn up to mitigate the activity before the activity commences (4).
- the **significance**, which shall be determined through a synthesis of the characteristics described above and can be assessed as no significance, low, medium or high; and
- the **status**, which will be described as either positive, negative or neutral.
- the degree to which the impact can be reversed.
- the degree to which the impact may cause irreplaceable loss of resources.
- the degree to which the impact can be mitigated.

The significance is calculated by combining the criteria in the following formula:

S=(E+D+M)P

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- < 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- 30-60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),

- > 60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).

8.2 Impacts and Mitigation

8.2.1 Construction Phase

Table 4 to Table 6 summarise the consequence and significance of the visual impact of the Project. These results are based on worst-case scenario when the impacts of all aspects of the Project are taken together. Consequence of impact is a function of magnitude, duration, and spatial extent. Magnitude of impact is taken from the worst-case situation.

Table 4: Potential Impacts during the Construction Phase

Impact: Altered Landscape and Sense of Place during Construction		
Nature: The introduction of construction activities and infrastructure at the proposed Hartland Telecommunications Mast will temporarily alter the visual character of the landscape. The current open landscapes, with residential housing in close proximity, will be interspersed with construction equipment, temporary storage and the emerging structure of the mast. This could evoke feelings among local residents and visitors of a landscape in transition.		
	Before Mitigation	**After Mitigation**
Extent	Local (2)	Local (2)
Duration	Short-Term (2)	Short-Term (2)
Magnitude	Moderate (6)	Low (4)
Probability	Highly Probable (4)	Probable (3)
Significance	Medium (40)	Low (24)
Status Negative - The construction phase will introduce temporary visual disturbances that could be perceived as out of harmony with the existing landscape.		
Reversibility Partly Reversible - The impact is partly reversible but more intense mitigation measures		
Loss of resources? Marginal loss of resource - The impact will result in marginal loss of resources.		
Can impacts be mitigated? Can be partly mitigated - The impact is partly reversible but more intense mitigation measures.		
Mitigation/Enhancement Measures		

- Minimise Land Disturbance: Limit the construction footprint to the minimum necessary for the Hartland Telecommunications Mast project. Use only the required area to preserve the existing grassland landscape and unique sense of place.
- Use of Natural Colours and Materials: Use materials and colours that blend with the natural grassland landscape for any temporary structures or construction materials. Mimic the texture and colours of the natural environment.
- Vegetative Screens: At key vantage points, plant or retain native vegetation around the construction site to act as a natural screen, thereby reducing the visual impact of the mast and construction activities.
- Revegetation for Restoration: Post-construction, prioritise revegetation efforts, especially in areas where native vegetation was disturbed. This can help in restoring the site's original visual character.
- Community Engagement: Engage with the local communities, to keep them informed about construction progress and the measures being taken to reduce visual impacts.
- Minimise Night-time Activities: Limit construction activities during the night to reduce light pollution.

Cumulative Impact

Medium - The visual impact during construction, when combined with existing or planned infrastructure, could be more noticeable. However, with the implementation of mitigation measures, this impact can be effectively managed.

Residual Risk

Low to Medium - With the proposed mitigation measures, the residual visual impact during the construction phase is expected to be reduced. However, some temporary visual disturbances will be unavoidable.

Impact: Visibility of the Mast to Residents during Construction

Nature: The construction of the Hartland Telecommunications Mast within the proposed Hartland Lifestyle Estate will temporarily alter the visual landscape, particularly for residents within close proximity. Given the rural nature of the area, the introduction of construction equipment, temporary structures, and the emerging mast may stand out against the natural backdrop. For residents, 1 km away, this could be akin to watching a new development rise in what was once a familiar peri-urban setting.

	Before Mitigation	**After Mitigation**
Extent	Local (2)	Local (2)
Duration	Short-Term (2)	Short-Term (2)
Magnitude	Moderate (6)	Low (4)
Probability	Highly Probable (4)	Probable (3)
Significance	Medium (40)	Low (24)
Status:		

Negative - The visibility of construction activities could be perceived as a visual intrusion into the daily lives of nearby residents.
Reversibility Partly Reversible - The impact is partly reversible but more intense mitigation measures
Loss of resources? Marginal loss of resource - The impact will result in marginal loss of resources.
Can impacts be mitigated? Can be partly mitigated - The impact is partly reversible but more intense mitigation measures.
Mitigation/Enhancement Measures • Site Screening: Use natural topography, existing vegetation, or temporary screens to shield construction activities from viewers. Use screens made of materials that blend with the natural environment. • Minimise Structure Heights: Keep temporary structure heights to a minimum to reduce their visibility. Use materials and colours that blend with the surrounding landscape. • Lighting Control: Minimise light pollution by directing lights downwards, using shields to prevent light spill, and turning off lights when not in use. • Vegetative Barriers: Enhance and fast-track the planting of native vegetation barriers, especially in areas facing major residential zones, to provide a natural screen. • Community Workshops: Organise workshops for residents to explain the project's scope, benefits, and visual changes they can expect. This can help in building understanding and reducing potential apprehensions.
Cumulative Impact Medium - The visual impact during construction, combined with other nearby infrastructure, could be more noticeable for residents. However, with mitigation measures, this cumulative impact can be managed.
Residual Risk Medium - Even with mitigation measures, the visibility of certain construction activities to residents will be evident. However, as the construction phase progresses and residents become more accustomed to the changes, the perceived impact may reduce.

Impact: Dust and Construction Impact during Construction
Nature: The construction activities for Hartland Telecommunications Mast will inevitably disturb the soil, leading to potential dust generation, especially in an area characterised by open vegetation. This dust can be carried by winds, affecting the immediate surroundings. Residents nearby might experience a temporary increase in dust levels. Additionally, the movement of construction vehicles, machinery operations, and groundwork can cause noise and vibrations, further adding to the disturbances experienced by nearby residents.

	Before Mitigation	After Mitigation
Extent	Local (2)	Site Specific (1)
Duration	Short-Term (2)	Short-Term (2)
Magnitude	Moderate (6)	Low (4)
Probability	Highly Probable (4)	Probable (3)
Significance	Medium (40)	Low (21)
Status: Negative - The dust and other disturbances from construction activities can be perceived as nuisances by nearby residents.		
Reversibility Partly Reversible - The impact is partly reversible but more intense mitigation measures		
Loss of resources? Marginal loss of resource - The impact will result in marginal loss of resources.		
Can impacts be mitigated? Can be partly mitigated - The impact is partly reversible but more intense mitigation measures.		
Mitigation/Enhancement Measures • Dust Suppression: Regularly water down the construction site, especially during dry and windy conditions, to minimise dust generation. • Vehicle Speed Limits: Implement strict speed limits for construction vehicles within the site to reduce dust kick-up. • Use of Dust Screens: Install dust screens or barriers around the construction site, particularly in areas close to sensitive receptors, to contain dust within the site. • Rehabilitation of Disturbed Areas: Promptly rehabilitate areas where construction activities have ceased. Re-vegetate with native species or suitable ground cover to stabilise the soil and reduce dust generation. • Regular Monitoring: Implement a monitoring program to assess the effectiveness of dust control measures and adjust if required. • Machinery Maintenance: Ensure construction machinery is well-maintained to minimise excessive noise and vibrations. • Work Hours: Restrict the noisiest construction activities to daytime hours and avoid work during early mornings, late evenings, or weekends when residents are more likely to be at home. • Community Communication: Keep the local community informed about construction schedules, especially during particularly disruptive activities. This allows residents to prepare or adjust their schedules accordingly.		
Cumulative Impact		

Medium - The combined impact of dust, noise, and other construction-related disturbances, along with existing activities in the area, would be more noticeable for residents. However, with mitigation measures, this cumulative impact can be managed.
Residual Risk Low to Medium - With the proposed mitigation measures, the residual impact of dust and construction disturbances should be significantly reduced. However, occasional spikes in dust or noise might still be experienced during certain construction activities.

8.2.2 Operation Phase

Table 5: Potential Impacts during the Operation Phase

Impact: Altered Landscape and Sense of Place during Operation		
Nature: The operational phase of the Hartland Telecommunications Mast will introduce a new visual element to the landscape, characterised by a windmill housing a telecommunications mast. This change will be a departure from the undulating terrains that currently define the area. While the mast serves an essential purpose in enhancing communication infrastructure, its presence may alter the visual harmony and sense of place that residents and visitors associate with the region. As a permanent feature in the landscape during its operational lifespan, the mast could influence perceptions and experiences of the area.		
	Before Mitigation	**After Mitigation**
Extent	Local (2)	Local (2)
Duration	Long-Term (4)	Long-Term (4)
Magnitude	Low (4)	Negligible (2)
Probability	Probable (3)	Probable (3)
Significance	Medium (30)	Low (24)
Status: Negative - The introduction of the telecommunications mast could be perceived as a visual intrusion by some, especially those who value the natural aesthetics of the region.		
Reversibility Partly Reversible - The impact is partly reversible but more intense mitigation measures		
Loss of resources? Marginal loss of resource - The impact will result in marginal loss of resources.		
Can impacts be mitigated? Can be partly mitigated - The impact is partly reversible but more intense mitigation measures.		
Mitigation/Enhancement Measures		

- Landscaping: Introduce native vegetation around the mast's base and in the surrounding area to soften its visual impact and help it blend more seamlessly into the natural environment. This can include planting trees or shrubs that partially obscure the mast from key viewpoints.
- Design Considerations: Ensure the mast design continues to incorporate camouflage elements, such as a windmill appearance, to reduce visual intrusion. Additionally, consider the use of non-reflective materials and colours that complement the surrounding landscape, if feasible.
- Ongoing Monitoring: Regularly assess the condition of the mast over time, and keep it well maintained.

Cumulative Impact

Medium - The proposed mast, in combination with other developments and infrastructure in the area, contributes to a changing landscape character. However, with mitigation measures, the cumulative visual impact can be managed.

Residual Risk

Low to Medium - With the proposed mitigation measures, the residual impact on the landscape and sense of place should be significantly reduced. However, the presence of the mast will still be a noticeable change in the landscape during its operational phase.

Impact: Visibility of the Mast to Residents during Operation

Nature: During the operational phase, the Hartland Telecommunications Mast will become a prominent feature in the landscape. Given its height and the nature of the area, the mast will be visible from various nearby residences and public spaces. This visibility could influence residents' daily visual experiences, potentially altering their sense of place and connection to the landscape. While the mast is designed to resemble a windmill to reduce visual impact, its presence could still be perceived as a visual intrusion, particularly by those who value the natural, unobstructed views that currently characterise the area.

	Before Mitigation	**After Mitigation**
Extent	Local (2)	Local (2)
Duration	Long-Term (4)	Long-Term (4)
Magnitude	Low (4)	Negligible (2)
Probability	Probable (3)	Probable (3)
Significance	Medium (30)	Low (24)

Status:

Negative - For residents who value the landscape, the visibility of the telecommunications mast can be perceived as a visual intrusion.

Reversibility

Partly Reversible - The impact is partly reversible but more intense mitigation measures

Loss of resources? Marginal loss of resource - The impact will result in marginal loss of resources.
Can impacts be mitigated? Can be partly mitigated - The impact is partly reversible but more intense mitigation measures.
Mitigation/Enhancement Measures • Vegetative Screening: Plant native trees and shrubs at key points of sensitivity to create natural screens that can obscure or soften the view of the mast from residential areas. This can help the structure blend more naturally into the environment. • Community Involvement: Involve the community in discussions related to the mast's design and placement, where possible. • Informational Campaigns: Educate residents about the benefits of improved telecommunications infrastructure, such as enhanced connectivity and safety, to build understanding and acceptance of the mast's presence, if feasible or required.
Cumulative Impact Medium - The mast's visibility, combined with other infrastructural elements in the area, contributes to a changing visual landscape. However, with mitigation measures in place, the cumulative visual impact can be moderated.
Residual Risk Low to Medium - Implementing the proposed mitigation measures should significantly reduce the mast's visibility impact on residents. However, some level of visibility will remain, especially from certain vantage points.

Impact: Potential Visual Impact of Operational, Safety, and Security Lighting during Operation		
Nature: Operational, safety, and security lighting are essential components of the Hartland Telecommunications Mast to ensure safe and efficient operations, especially during nighttime hours. However, this lighting can introduce a new source of light in the area, potentially causing light pollution. This can be particularly noticeable in areas that previously had minimal artificial lighting, altering the nocturnal landscape and potentially affecting the night sky visibility for nearby residents and wildlife.		
	Before Mitigation	**After Mitigation**
Extent	Local (2)	Site Specific (1)
Duration	Long-Term (4)	Long-Term (4)
Magnitude	Low (4)	Negligible (2)
Probability	Probable (3)	Probable (3)
Significance	Medium (30)	Low (21)
Status:		

Negative - The introduction of artificial lighting can be perceived as a visual disturbance, especially if it contrasts starkly with the existing ambient light levels.
Reversibility Partly Reversible - The impact is partly reversible but more intense mitigation measures
Loss of resources? Marginal loss of resource - The impact will result in marginal loss of resources.
Can impacts be mitigated? Can be partly mitigated - The impact is partly reversible but more intense mitigation measures.
Mitigation/Enhancement Measures • Downward-facing Lights: Use fixtures that direct light downwards to minimise upward light spill, preserving the night sky. • Motion Sensors: Install motion sensors so that lights are only activated when necessary, reducing the duration of light emissions. • Low-intensity Lighting: Opt for low-intensity lighting that provides sufficient illumination for safety without being overly bright. • Shielding: Use shields on lights to direct illumination to the intended areas and prevent light spill into unintended areas. • Periodic Reviews: Conduct periodic reviews of lighting practices to identify and rectify any unnecessary light emissions.
Cumulative Impact Medium - The mast's lighting, when combined with other light sources in the area (like from the nearby towns), could contribute to an overall increase in light pollution. However, with effective mitigation, this cumulative impact can be managed.
Residual Risk Low - With the proposed mitigation measures in place, the residual risk of significant light pollution from the mast should be minimised. Some localised light spill might still occur, but its impact should be limited.

8.2.3 Decommissioning Phase

Table 6: Potential Impacts during Decommissioning Phase

Impact: Landscape Character and Visual Amenity during Decommissioning
Nature: The decommissioning phase of the telecommunications mast involves the removal of the mast, its supporting structures, and any associated infrastructure. This process will temporarily disrupt the landscape, potentially leading to a transient alteration in the visual character of the area. The removal process may expose previously altered grounds, resulting in a temporary visual contrast in the landscape. However, the ultimate goal is to restore the site to its pre-construction state or a state that harmonises with the surrounding environment.

	Before Mitigation	After Mitigation
Extent	Local (2)	Local (2)
Duration	Short-Term (2)	Short-Term (2)
Magnitude	Moderate (6)	Low (4)
Probability	Highly Probable (4)	Probable (3)
Significance	Medium (40)	Low (24)

Status:

Negative initially, transitioning to Neutral – The initial stages of decommissioning will involve dismantling, which might appear disruptive. However, as the site is restored, the visual amenity will gradually return to its pre-construction state.

Reversibility

Partly Reversible - The impact is partly reversible but more intense mitigation measures

Loss of resources?

No loss of resources - The impact will result in no loss of resources.

Can impacts be mitigated?

Can be partly mitigated - The impact is partly reversible but more intense mitigation measures.

Mitigation/Enhancement Measures

- Gradual Dismantling: Consider a phased approach to removing the mast and infrastructure, gradually transitioning the landscape back to its original state. This reduces the visual impact of sudden change.
- Community Engagement: Engage with the local community and stakeholders to understand their views and preferences, guiding the decommissioning process in a way that is sensitive to local visual preferences.
- Re-use of Infrastructure: Where possible, consider re-using some of the infrastructure for other purposes. For example, access roads could be left in place for use by local landowners, if appropriate and agreed upon.
- Site Restoration: Prioritise the immediate restoration of areas once the infrastructure is removed, including re-vegetation with native species to help the site blend back into the natural landscape.
- Waste Management: Ensure all materials, especially non-biodegradable ones, are properly disposed of or recycled, leaving no remnants behind.
- Community Communication: Keep the local community informed about the decommissioning timeline and restoration efforts to manage expectations and address concerns.
- Monitoring: Post-decommissioning, monitor the site's recovery and implement any necessary interventions to ensure successful landscape restoration.

Cumulative Impact

Low - Given that the goal of decommissioning is to restore the site, the cumulative visual impact is expected to be minimal, especially when combined with other existing structures and developments.
Residual Risk Low - With the proposed mitigation measures and a focus on site restoration, the residual risk of significant visual disruption from the decommissioning process should be minimal.

Impact: Site Restoration during Decommissioning		
Nature: Site restoration during the decommissioning of the telecommunications mast involves returning the site to its original or near-original state. This process includes the removal of the mast and associated infrastructure, remediation of any disturbed soils, and re-establishment of native vegetation. The objective is to ensure that the land can revert to its prior use, whether that be natural habitat, agricultural use, or another purpose relevant to the local community.		
	Before Mitigation	**After Mitigation**
Extent	Site Specific (1)	Site Specific (1)
Duration	Long-Term (4)	Long-Term (4)
Magnitude	Negligible (2)	Low (4)
Probability	Probable (3)	Highly Probable (4)
Significance	Low (21)	Medium (36)
Status: Positive - The intention behind site restoration is to benefit the environment by rehabilitating the land and minimising long-term visual impacts.		
Reversibility Partly Reversible - The impact is partly reversible but more intense mitigation measures		
Loss of resources? No loss of resources - The impact will result in no loss of resources.		
Can impacts be mitigated? Can be partly mitigated - The impact is partly reversible but more intense mitigation measures.		
Mitigation/Enhancement Measures • Native Vegetation: Use native and local plant species for re-vegetation to ensure ecological compatibility and enhance biodiversity. • Soil Conservation: Employ techniques to prevent soil erosion and promote soil health during and after restoration. • Regular Monitoring: Conduct regular site inspections to assess the success of restoration efforts and intervene where necessary.		

• Community Engagement: Engage with the local community to gather feedback on restoration efforts and address any concerns. • Waste Management: Ensure all decommissioned materials are properly disposed of or recycled, leaving no remnants behind.
Cumulative Impact Low - The restoration process aims to negate the impacts of the telecommunications mast, resulting in minimal cumulative effects when combined with other developments or natural features.
Residual Risk Low - With diligent restoration efforts and ongoing monitoring, the residual risk of negative impacts from the restoration process should be minimal.

8.3 Cumulative Impact Assessment

The potential cumulative impacts that were identified for the construction, operational and decommissioning phases, are discussed in Table 7.

Table 7: Cumulative Impacts identified for the Construction, Operational and Decommissioning Phases

Impact: Cumulative Impact		
Nature: The potential cumulative visual impact of the Hartland Telecommunications Mast on the visual quality of the landscape when considered alongside other existing or planned infrastructure projects within the area.		
	Overall impact of the proposed project considered in isolation (with mitigation)	**Cumulative impact of the project and other projects within the area (with mitigation)**
Extent	Local (2)	Regional (3)
Duration	Long-Term (4)	Long-Term (4)
Magnitude	Low (4)	Moderate (6)
Probability	Probable (3)	Probable (3)
Significance	Medium (30)	Medium (39)
Status (positive, neutral, or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No

Can impacts be mitigated?	No, only best practise measures can be implemented
Generic best practise mitigation/management measures	
Planning: • Retain/re-establish and maintain natural vegetation (if present) immediately adjacent to the development footprint where possible. Operations: • Maintain the general appearance of the mast as a whole. Decommissioning: • Remove infrastructure not required for the post-decommissioning use. • Rehabilitate all affected areas. Consult an ecologist regarding rehabilitation specifications.	
Residual Impacts	
The visual impact will be removed after decommissioning, provided the mast infrastructure is removed. Failing this, the visual impact will remain.	

The proposed Hartland Telecommunications Mast is situated in an area with several existing telecommunications masts, as illustrated in the cumulative impact map. These installations, within a 6km proximity buffer of the proposed site, contribute to the evolving visual landscape of the Mossel Bay Local Municipality, Western Cape.

Existing Telecommunication Installations include:

- eNB ID 51353: ~500m west, located along the N2 corridor.
- eNB ID 89651: ~2km north-east, close to Klein Brakrivier.
- eNB ID 7088/823821: ~2km south-west, situated along the N2 corridor.
- eNB ID 51359: ~2km south-west, located along the N2 corridor.
- eNB ID 816361: ~2.5km south-west, close to Hartenbos River.
- eNB ID 55309/825161: ~3km south-west, located along the N2 corridor.
- eNB ID 55494: ~3.5km north-east of the proposed site, situated near the N2 corridor.
- eNB ID 857521: ~3.5km north-east of the proposed site, located along the N2 corridor.
- eNB ID 4970: ~4km north-east, situated near Reebok.
- eNB ID 55485/846741: ~4km south-west, situated near the existing railway.
- eNB ID 100253: ~4.8km south-west, located near the existing railway.
- eNB ID 821151: ~5km south-west, situated to the west of the N2 corridor.
- eNB ID 820721: ~5km south-west, located to the west of the N2 corridor.

- eNB ID 55292/820722: ~5km south-west, situated near the existing railway.
- eNB ID 55483/820881: ~5km south-west, located near the existing railway.
- eNB ID 51103: ~5.2km south-west, situated near the existing railway.

The presence of these installations within a relatively concentrated area creates a noticeable visual impact. The proposed mast, while adding to the infrastructure, will need to align with the surrounding visual environment and existing installations to minimise cumulative effects.

The proximity of masts, particularly along the N2 corridor, creates a linear pattern of visible infrastructure. Elevated viewpoints and open landscapes in the area enhance the visibility of these installations, particularly from natural features such as the Klein Brak and Hartenbos Rivers. The semi-urban and rural characteristics of the surrounding environment are gradually being transformed by the increasing density of telecommunications infrastructure.

Recommended Mitigation Measures:

- Strategic Placement: Avoid clustering new infrastructure within visible proximity to existing installations.
- Design Consistency: Ensure that new masts are visually compatible with existing structures to minimise aesthetic disruption.
- Landscaping Buffers: Implement vegetation around mast bases to reduce visual prominence.
- Monitoring and Planning: Regular assessments of cumulative impacts will ensure that infrastructure development remains aligned with the region’s visual and environmental goals.

While telecommunications infrastructure is critical for modern connectivity, the cumulative visual impact of multiple masts in this area necessitates a carefully managed approach. The objective is to balance the need for infrastructure with the preservation of the scenic character of the Mossel Bay region, ensuring sustainable development that respects the area's visual integrity.

.

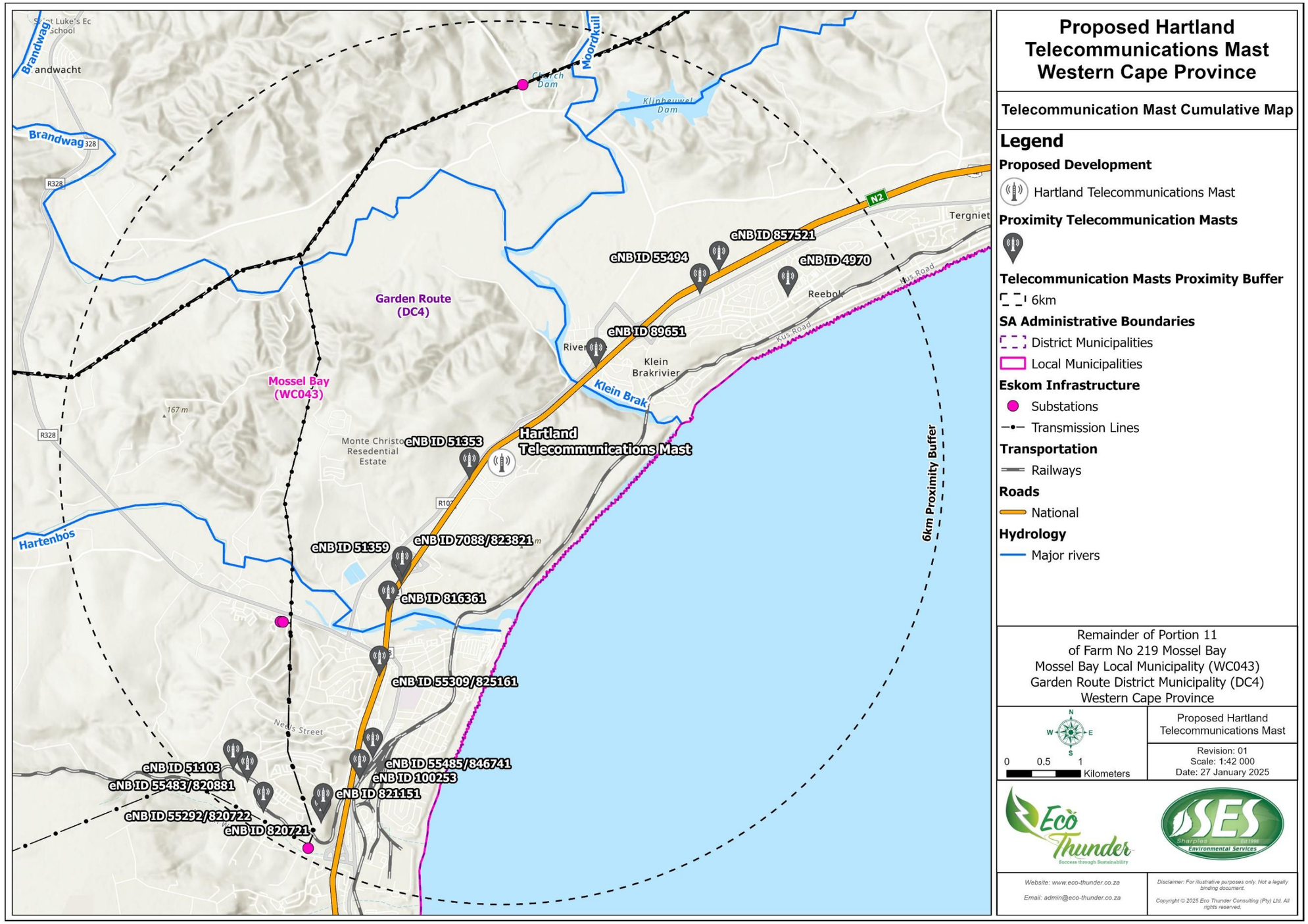


Figure 13: Cumulative Map

8.4 Environmental Management Programme

Table 8's management plan tables aim to summarise the key findings of the visual impact report and suggest possible management actions in order to mitigate the potential visual impacts.

Table 8: Management Programme during Construction and Operational Phase

Project Component/s	Construction site and activities		
Potential Impact	**Altered Landscape and Sense of Place during Construction**		
Activity/Risk Source	The introduction of construction activities and the installation of the telecommunications mast will temporarily alter the visual character of the landscape. This includes the viewing of the landscape by observers on or near the site (i.e., within 1km of the site) as well as within the broader region.		
Mitigation: Target/Objective	Optimal construction of infrastructure to minimise the visual impact.		
Mitigation: Action/control		**Responsibility**	**Timeframe**
Minimise Land Disturbance: Limit the construction footprint to the minimum necessary for the Hartland Telecommunications Mast. Use only the required area to preserve the existing grassland landscape and unique sense of place.		Project proponent/contractor	Early in the construction phase.
Use of Natural Colours and Materials: Use materials and colours that blend with the natural landscape for any temporary structures or construction materials. Mimic the texture and colours of the natural environment.		Project proponent/contractor	Early in the construction phase.
Vegetative Screens: Plant native vegetation around the construction site's perimeter to act as a natural screen, reducing the visual impact. This will help the mast blend into the landscape.		Project proponent/contractor	Early in the construction phase.
Revegetation: Post-construction, prioritise revegetation efforts, especially in areas where native grasslands were disturbed. This can help in restoring the site's original visual character.		Project proponent/consultant	Early in the construction phase.

Community Engagement: Engage with the local communities, to keep them informed about construction progress and the measures being taken to reduce visual impacts.	Project proponent/consultant	Early in the construction phase.
Minimise Night-time Activities: Limit construction activities during the night to reduce light pollution.	Project proponent/consultant	Early in the construction phase.
Performance Indicator	Well-maintained and neat construction site with minimal visual impact and intact vegetation in the vicinity of the site.	
Monitoring	Ongoing monitoring of the entire site (by the project operator) to ensure compliance with visual impact mitigation measures.	

Project Component/s	Construction site and activities	
Potential Impact	**Visibility of the Mast to Residents during Construction**	
Activity/Risk Source	The construction of the Hartland Telecommunications Mast will introduce various structures and activities that will be visible to nearby residents. Given the rural setting and open landscape, these construction activities might stand out prominently, potentially affecting the visual amenity of the area for local residents.	
Mitigation: Target/Objective	Optimal construction of infrastructure to minimise the visual impact.	
Mitigation: Action/control	**Responsibility**	**Timeframe**
Site Screening: Use natural topography, existing vegetation, or temporary screens to shield construction activities from viewers. Use screens made of materials that blend with the natural environment.	Project proponent/design contractor	Early in the construction phase.
Minimise Structure Heights: Keep temporary structure heights to a minimum to reduce their visibility. Use materials and colours that blend with the surrounding landscape.	Project proponent/design consultant	Early in the construction phase.
Lighting Control: Minimise light pollution by directing lights downwards, using shields to prevent light spill, and turning off lights when not in use.	Project proponent/design contractor	Early in the construction phase.

Vegetative Barriers: Enhance and fast-track the planting of native vegetation barriers, especially in areas facing major residential zones, to provide a natural screen.	Project proponent/design consultant	Early in the construction phase.
Community Workshops: Organise workshops for residents to explain the project's scope, benefits, and visual changes they can expect. This can help in building understanding and reducing potential apprehensions.	Project proponent/consultant	Early in the construction phase.
Performance Indicator	Well maintained and neat construction site with intact vegetation on and in the vicinity of the mast.	
Monitoring	Monitoring of the entire site on an ongoing basis (by operator).	

Project Component/s	Construction site and activities	
Potential Impact	**Dust and Construction Impact**	
Activity/Risk Source	The construction activities for the Hartland Telecommunications Mast will inevitably disturb the soil, leading to potential dust generation, especially in an area characterised by open landscapes. This dust can be carried by winds, affecting the immediate surroundings. Nearby residents might experience a temporary increase in dust levels. Additionally, the movement of construction vehicles, machinery operations, and groundwork can cause noise and vibrations, further disturbing nearby residents.	
Mitigation: Target/Objective	Minimise dust generation and construction-related disturbances to reduce their impact on residents and the environment.	
Mitigation: Action/control	**Responsibility**	**Timeframe**
Dust Suppression: Regularly water down the construction site, particularly during dry and windy conditions, to minimise dust generation.	Project proponent/contractor	During the construction phase.
Vehicle Speed Limits: Implement strict speed limits for construction vehicles within the site to reduce dust kick-up from vehicle movement.	Project proponent/consultant	Early in the construction phase.
Use of Dust Screens: Install dust screens or barriers around the construction site, particularly in areas close to sensitive receptors, to contain dust within the site.	Project proponent/contractor	During the construction phase.

Rehabilitation of Disturbed Areas: Promptly rehabilitate areas where construction activities have ceased. Re-vegetate with native species or suitable ground cover to stabilise the soil and reduce dust generation.	Project proponent/consultant	Early in the construction phase.
Regular Monitoring: Implement a monitoring program to assess the effectiveness of dust control measures. This could involve visual inspections and, if necessary, air quality monitoring.	Project proponent/consultant	Early in the construction phase.
Machinery Maintenance: Ensure construction machinery is well-maintained to minimise excessive noise and vibrations.	Project proponent/consultant	During the construction phase.
Work Hours: Restrict the noisiest construction activities to daytime hours and avoid work during early mornings, late evenings, or weekends when residents are more likely to be at home.	Project proponent/consultant	During the construction phase.
Community Communication: Keep the local community informed about construction schedules, especially during particularly disruptive activities. This allows residents to prepare or adjust their schedules accordingly.	Project proponent/design consultant	Early and during the construction phase.
Performance Indicator	Well maintained and neat construction site with intact vegetation on and in the vicinity of the mast.	
Monitoring	Ongoing monitoring of the entire site by the operator to ensure compliance with dust and noise mitigation measures, with adjustments made as necessary based on community feedback or environmental conditions.	

Project Component/s	Operational activities
Potential Impact	**Altered Landscape and Sense of Place during Operation**
Activity/Risk Source	The operational phase of the telecommunications mast will introduce a new visual element to the landscape, characterised by the tall, windmill-designed mast. This change will be a departure from the natural or rural landscape that currently defines the area. The presence of the mast can alter the visual harmony and the intrinsic sense of place that residents and visitors associate with the region.

Mitigation: Target/Objective	Optimal construction of infrastructure to minimise the visual impact.		
Mitigation: Action/control		**Responsibility**	**Timeframe**
Landscaping: Introduce native vegetation around the mast's base and surrounding areas to soften the visual impact and help the mast blend into the natural surroundings.		Project proponent/design contractor	During the latter construction phase.
Design Considerations: Ensure the mast's design, including the windmill appearance, minimises visual intrusion by using non-reflective materials and colours that blend with the surrounding landscape.		Project proponent/design consultant	During the construction phase.
Ongoing Monitoring: Regularly assess the condition of the mast over time, and keep it well maintained.		Project proponent/consultant	During the operational phase.
Performance Indicator	A well-maintained and aesthetically integrated telecommunications mast with intact vegetation around the site, minimising its visual impact on the surrounding landscape.		
Monitoring	Monitoring of the entire site at regular intervals (by operator).		

Project Component/s	Operational activities		
Potential Impact	**Potential Visual Impact of Operational, Safety, and Security Lighting during Operation**		
Activity/Risk Source	During the operational phase, the Hartland Telecommunications Mast will become a prominent feature in the landscape. Given its height and the nature of the area, the mast will be visible from various nearby residences and public spaces. This visibility could influence residents' daily visual experiences, potentially altering their sense of place and connection to the landscape. While the mast is designed to resemble a windmill to reduce visual impact, its presence could still be perceived as a visual intrusion, particularly by those who value the natural, unobstructed views that currently characterise the area.		
Mitigation: Target/Objective	Optimal construction of infrastructure to minimise the visual impact.		
Mitigation: Action/control		**Responsibility**	**Timeframe**

Downward-facing Lights: Use fixtures that direct light downwards to minimise upward light spill, preserving the night sky.	Project proponent/design contractor	Operational Phase
Motion Sensors: Install motion sensors so that lights are only activated when necessary, reducing the duration of light emissions.	Project proponent/design consultant	Operational Phase
Low-intensity Lighting: Opt for low-intensity lighting that provides sufficient illumination for safety without being overly bright,	Project proponent/design consultant	Operational Phase
Shielding: Use shields on lights to direct illumination to the intended areas, preventing light spill into unintended areas and reducing the visual impact of the lighting.	Project proponent/design consultant	Operational Phase
Periodic Reviews: Conduct periodic reviews of lighting practices to identify and rectify any unnecessary light emissions.	Project proponent/consultant	Operational Phase
Performance Indicator	Minimal Light Pollution.	
Monitoring	Monitoring of the entire site at regular intervals (by operator).	

Project Component/s	Operational activities		
Potential Impact	**Visibility of the Mast to Residents during Operation**		
Activity/Risk Source	During the operational phase, the Hartland Telecommunications Mast will become a prominent feature in the landscape. Given its height and the nature of the area, the mast will be visible from various nearby residences and public spaces. This visibility could influence residents' daily visual experiences, potentially altering their sense of place and connection to the landscape. While the mast is designed to resemble a windmill to reduce visual impact, its presence could still be perceived as a visual intrusion, particularly by those who value the natural, unobstructed views that currently characterise the area.		
Mitigation: Target/Objective	Optimal construction and screening of infrastructure to minimise the visual impact.		
Mitigation: Action/control		**Responsibility**	**Timeframe**

Vegetative Screening: Plant native trees and shrubs at key points of sensitivity to create natural screens that can obscure or soften the view of the mast from residential areas. This can help the structure blend more naturally into the environment.	Project proponent/design contractor	Early and during in the construction phase and maintained during operational phase.
Community Engagement: Involve the community in discussions related to the mast's design and placement, where possible.	Project proponent/consultant	During the construction phase.
Performance Indicator	A well-maintained and visually integrated telecommunications mast with intact vegetation, ensuring minimal visual impact on the surrounding landscape.	
Monitoring	Monitoring of the entire site at regular intervals (by operator).	

9 Environmental Impact Statement and Conclusion

The proposed Hartland Telecommunications Mast aims to enhance telecommunications services in the Hartenbos region. The location for the mast, set within a varied landscape consisting of open high hills, plains, and undulating terrain, reflects the diverse topography of the area. Key water features such as the Klein Brak River, Hartenbos River, and Klipheuwel Dam contribute to the region's visual and ecological character.

A VIA was conducted to assess how the mast would integrate into this landscape. The assessment acknowledges that the mast will introduce a new visual element to the area. However, it also indicates that this change can be managed through appropriate design and mitigation measures. The selected design of the mast, which incorporates elements reminiscent of traditional rural infrastructure, assists in blending it with the surrounding environment.

The landscape around the proposed site has varying degrees of natural screening and VAC. The hills offer natural screening, reducing the visibility of the mast from certain perspectives. The water features in the area, such as the nearby rivers and dam, provide a visual contrast that complements the natural landscape.

The windmill-inspired design of the telecommunications mast was chosen to harmonise with the existing peri-urban character of the area, reducing its visual presence. This design, combined with the natural topography, will help to integrate the mast into the landscape, allowing it to coexist with the natural features of the region.

The VIA analysis has concluded that while the mast will be visible from various vantage points, the landscape's inherent ability to absorb visual changes, along with the project's strategic placement and design, will ensure that any visual impact is mitigated. The site does not feature any highly sensitive visual resources that would be adversely affected by the development, and the surrounding natural features will be maintained through careful management.

The development of the Hartland Telecommunications Mast is consistent with environmental best practices and is visually compatible with the surrounding landscape. The design and mitigation measures have been carefully developed to reduce visual impacts while improving telecommunications infrastructure in the area. The project is expected to contribute positively to local development without compromising the visual of integrity of the region.

From a visual specialist's perspective there are no fatal flaws and no reason that the project cannot be authorised provided that the recommended mitigation measures are implemented and adhered to.

10 References

Australian Government Department of Infrastructure, Transport, Regional Development and Communications. (n.d.). Environmental Assessments.

Civil Aviation Authority, UK. (n.d.). Visual Impact.

Department of Agriculture, Land Reform and Rural Development (n.d.). Department of Agriculture, Land Reform and Rural Development.

Department of Environmental Affairs (DEA), South Africa. (2010). Environmental Impact Assessment Regulations.

Department of Environmental Affairs (2017). Environmental Impact Assessment Regulations, 2017.

Department of Environmental Affairs (2017). Environmental Impact Assessment Regulations Listing Notice 1, 2017.

Department of Environmental Affairs (2017). Environmental Impact Assessment Regulations Listing Notice 2, 2017.

Department of Environmental Affairs (2017). Environmental Impact Assessment Regulations Listing Notice 3, 2017.

Department of Environmental Affairs (DEA), South Africa. (2017). Environmental Impact Assessment Guideline for Renewable Energy Projects.

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

Federal Highway Administration. (n.d.). Visual Impact Assessment for Highway Projects.

Garden Route District Municipality (n.d.). Garden Route District Municipality.

Landscape Institute and Institute of Environmental Management and Assessment. (2013). Guidelines for Landscape and Visual Impact Assessment. 3rd Edition.

Ministry for the Environment, New Zealand. (n.d.). Quality Planning - Landscape.

Mossel Bay Local Municipality (n.d.). Mossel Bay Local Municipality.

Scottish Government. (n.d.). Landscape and Visual Impact Assessment.

South African Civil Aviation Authority (n.d.). South African Civil Aviation Authority.

South African Council for the Landscape Architectural Profession (SACLAP). (n.d.). Guidelines and Policies.

South African Heritage Resources Agency (n.d.). South African Heritage Resources Agency.

South African National Biodiversity Institute (n.d.). Vegetation Map of South Africa.

South African National Parks (n.d.). GIS Data.

South African National Parks (n.d.). South African National Parks.

South African National Parks (SANParks). (n.d.). GIS Data.

U.S. Environmental Protection Agency. (n.d.). National Environmental Policy Act (NEPA) Review Process.

UK Government. (n.d.). Environmental Impact Assessment.

Appendix A: Specialist CV

Appendix B: Site Sensitivity Verification

Appendix C: VIA Best Practice Guideline