ENVIRONMENTAL

PROPOSED FERROCHROME SMELTER PLANT WITHIN THE MUSINA-MAKHADO SPECIAL ECONOMIC ZONE – LIMPOPO PROVINCE

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PROJECT: Proposed Ferrochrome Smelter Plant VIA

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VISUAL IMPACT ASSESSMENT

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Legal Notice:

PROPOSED FERROCHROME SMELTER PLANT WITHIN THE MMSEZ – VISUAL IMPACT ASSESSMENT

DECLARATION OF INDEPENDENCE

I, Nakéla Jobraj , declare that;

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the National Environmental Management Act, Act No. 107 of 1998 (NEMA), as amended, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the NEMA, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing:
  - any decision to be taken with respect to the application by the competent authority; and
  - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
  - all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 48 and is punishable in terms of Section 24G of the NEMA.

2025/04/22

Signature **Date**

Nakéla Jobraj

BSc (Hons) Env

SACNASP (Cert. Sci. Nat.) – Registration Number: 120896

Note: Refer to Appendix A for the CV of the specialist involved in preparing this report

EXECUTIVE SUMMARY

The Kinetic Development Group Limited (the Applicant) intends to develop a Ferrochrome Smelter Plant and associated infrastructure (hereafter referred to as the proposed Project) located approximately 35 kilometres (km) south-west of the town Musina in the Musina Local Municipality, situated within the Vhembe District Municipality, in Limpopo Province, South Africa (SA).

Gudani Consulting CC (the Client) have been appointed by the Applicant as the independent Environmental Assessment Practitioners (EAP) for the proposed Project and will undertake the Environmental Authorisations (EA) application processes necessary for the proposed Project.

The proposed Project is located within the approved Musina-Makhado Special Economic Zone (MMSEZ) and may have adverse effects on the visual characteristics of the surrounding environment. Therefore, the Client has appointed Eco Elementum (Pty) Ltd (EcoE) to conduct the Visual Impact Assessment (VIA) for the proposed Project.

The scope of work for this VIA includes the following:

1. Description of the existing visual characteristics of the proposed Project and its surrounding environment.
2. Site sensitivity verification [1], should the environmental screening tool report determine any landscape sensitivities specific to the proposed Project area.
3. Viewshed and viewing distance determination in relation to the proposed Project.
4. Visual exposure analysis comprising the following aspects:

- Terrain slope.
- Aspect of infrastructure location.
- Landforms.
- Slope position of infrastructure.
- Relative elevation of infrastructure.
- Terrain ruggedness.
- Visual absorption capacity (VAC).
- Viewer sensitivity.
- Overall visual impact.

5. Potential impact identification and significance ratings based on the overall visual impact.
6. Recommendation of suitable mitigation measures for the identified visual impacts.
7. A reasoned opinion, from a visual perspective, as to the approval of the proposed Project.

[1] The Screening Tool Report was not available at the time of this assessment therefore, a site sensitivity verification relating to any landscape sensitivities was not undertaken as part of this assessment.

SUMMARY OF FINDINGS

The VIA analysed the potential visual impacts that the proposed Project may have on the affected environment and visual receptors. A baseline description of the affected environment was completed, and viewshed along with visual exposure analyses were conducted through the use of Geographic Information System (GIS) methods. These results were used to inform the VIA.

The assessment indicated that visual impacts of medium negative significance are expected during the construction phase of the proposed Project as a result of site clearance and project establishment activities. Following the successful implementation of the recommended mitigation measures, the significance of these impacts can be lowered however, will remain of medium negative significance. The medium negative significance is mainly a result of the expected alteration to the total study areas unique sense of place and landscape character. The remaining impacts within the construction phase, relating to construction waste generation and night lighting, are of low to medium negative significance. The significance of the impact relating to construction waste generation can be reduced to a low negative significance following the implementation of the recommended mitigation measures however, the impacts will remain of relevance. Regarding the visual impact from night lighting, the significance of the impact can be reduced post-mitigation, however, will remain of low to medium negative significance due to the introduction of night lighting within a largely undeveloped area.

During the operational phase, impacts of high negative significance are expected on the total study areas unique sense of place and landscape character. With the proper implementation of the recommended mitigation measures, the significance of these impacts can be reduced to a medium to high negative significance. Although the total study area has a moderate level of VAC created by the natural vegetation and topography, impacts of medium to high negative significance are expected post-mitigation due to the proposed Projects location within a mostly natural and undeveloped area. Furthermore, the proposed and taller infrastructure associated with the proposed Project, specifically the exhaust stacks and related emissions, will still protrude above the tree line thereby leading to a change in the total study areas unique sense of place and landscape character, and potentially affect tourism within the total study area and larger Vhembe Biosphere Reserve.

Regarding the visual impact on the identified visual receptors within the total study area during this phase, medium to high negative significance impacts are expected before the implementation of the recommended mitigation measures. The significance of these impacts can be reduced to a medium negative significance post-mitigation. The lower significance rating is attributed to the results of the viewshed and visual exposure analysis where it was determined that majority of the visual receptors are expected to experience low to very low visual exposure levels. The significance rating of this impact post-mitigation also considered the nature and sensitivity of the visual receptors (such as the accommodation areas and tourist routes) thereby lending to a medium negative significance post-mitigation.

The impacts relating to night lighting, and increased human activity, operational vehicles and heavy machinery during the operational phase are of low to medium negative significance. The significance

of these impacts can be reduced following the implementation of the recommended mitigation measures, however, will remain of low to medium negative significance due to the alteration of the total study areas unique sense of place and landscape character.

Lastly, low to medium negative significance impacts are expected from operational waste generation during this phase. The significance of the impact can be reduced to a low negative significance following the implementation of the recommended mitigation measures however, the impacts will remain of relevance.

The visual impacts expected during the decommissioning phase are of low to medium negative significance. The significance of the impacts can be reduced to a low negative significance following the implementation of the recommended mitigation measures. Low significance impacts are expected during this phase mainly due to the time of exposure to these activities being temporary.

The impacts relating to the revegetation and rehabilitation of all disturbed areas within the proposed Project during the decommissioning and post-closure phases are expected to be of medium positive significance. Impacts of positive significance are anticipated due to the removal of infrastructure and the revegetation/rehabilitation of the proposed Project footprint to the resemble the pre-construction landscape.

Regarding cumulative impacts, high negative significance cumulative impacts are expected on the surrounding landscape and visual receptors. This level of visual impact can be reduced after the successful implementation of the recommended mitigation measures to a medium to high negative significance. This level of cumulative impact is anticipated due to the alteration of the total study areas unique sense of place and landscape character created by the proposed Project in conjunction with the phased development of the MMSEZ which will introduce large scale industrial activities in a largely natural and undeveloped landscape.

Detailed mitigation measures and action plans have been outlined and should be adhered to throughout the proposed Project life to reduce visual and landscape impacts as far as practically possible. It is important to note that even with the successful implementation of the recommended mitigation measures, the impact of the proposed Project cannot be entirely mitigated due to the scale and height of the proposed Project. Furthermore, it is recommended that the visual receptors, most importantly the owners of the accommodation areas and recreational facilities, and other affected landowners within the total study area are duly and timeously informed of the details of the proposed Project in order for the visual receptors to anticipate and accommodate for the impact on tourism within the total study area and on the operation of their businesses.

Considering the characteristics of the affected environment, the viewshed and visual exposure results and the impact assessment, the proposed Project is supported from a visual perspective. However, the support of the proposed Project is subject to the strict implementation of the recommended mitigation measures and action plans throughout the proposed Project life. It is further recommended that the environmental authorities consider the results of this assessment before a final decision is made regarding the status of the proposed Project.

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DEFINITION OF TERMS

TERM	TERM DEFINITION
Assessment	A systematic, independent and documented review of operations and practises to ensure that relevant requirements are met.
Construction	The period that corresponds to any event, process, or activity that occurs during the construction phase (e.g., building of site, buildings, and processing units) of a proposed project. This phase terminates when the project goes into full operation or use.
Cumulative Impacts	The summation of the effects that result from changes caused by a development in conjunction with the other past, present or reasonably foreseen actions (The landscape Institute, Institute of Environmental Management & Assessment, 2002).
Decommissioning	To remove or retire (a mine, etc.) from active service.
Environmental Component	An attribute or constituent of the environment (i.e., air quality; marine water; waste management; geology; seismicity; soil; groundwater; marine ecology; terrestrial ecology; noise; traffic; and socio-economic) that may be impacted by the proposed project.
Environmental Impact	A positive or negative condition that occurs to an environmental component as a result of the activity of a project or facility. This impact can be directly or indirectly caused by the project's different phases (i.e., construction, operation, and decommissioning).
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.
Landscape Integrity	The relative intactness of the existing landscape or townscape, whether natural, rural or urban, and with an absence of intrusions or discordant structures.
Mitigation	In the context of Visual Impact Assessments; any action taken or not taken in order to avoid, minimise, rectify, reduce, eliminate, or compensate for actual or potential adverse visual impacts.
Operation	The time period that corresponds to any event, process, or activity that occurs during the operation (i.e., fully functioning) phase of a proposed project or development. The operation phase follows the construction phase, and then terminates when the project or development goes into the decommissioning phase.
Scenic value	Degree of visual quality resulting from the level of variety, harmony and contrast among the basic visual elements.
Sense of place	The unique quality or character of a place, whether natural, rural or urban.
Viewshed	The theoretical area within which an observer is likely to see a specific structure or area in the landscape. It is generated from a Digital Terrain Model (DTM) or Digital Surface Model (DSM) made up of 3D contour lines of the landform. Intervening objects, structures or vegetation will modify the viewshed at ground level.
Visual exposure	Visual exposure is based on distance from the project to selected viewpoints. Visual exposure or visual impact tends to diminish exponentially with distance. The visibility or visual exposure of any structure or activity is the point of departure for the visual impact assessment. It stands to reason that if the proposed activities and associated infrastructure were not visible, no visual impact would occur. Visual exposure is determined by the viewshed or the view catchment being the area within which the proposed development will be visible.

TERM	TERM DEFINITION
Visual impact	A description of the effect of an aspect of the development on a specified component of the visual, aesthetic or scenic environment within a defined time and space.
Visual receptor	Individuals, groups or communities who are subject to the visual influence of a particular project. Also referred to as viewers, or viewer group.

ABBREVIATIONS

ABBREVIATION	TERM
ALOS	Advanced Land Observing Satellite
DFFE	Department of Forestry, Fisheries, and the Environment
DSM	Digital Surface Model
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EcoE	Eco Elementum (Pty) Ltd
EIA	Environmental Impact Assessment
GIS	Geographic Information System
ha	Hectare
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
km	Kilometre
kV	Kilovolt
kVA	Kilovolt-Amperes
m	Metre
mamsl	Meters above mean sea level
MMSEZ	Musina-Makhado Special Economic Zone
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
SA	South Africa
SANBI	South African National Biodiversity Institute
SAPAD	South African Protected Areas Database
VAC	Visual absorption capacity

SPECIALIST CHECKLIST

The table below indicates the requirements for Specialist Studies as per Appendix 6 of Government Notice 326 as published in Government Notice 40772 of 2017, amendments to the Environmental Impact Assessment (EIA) Regulations, 2014 as it relates to the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). Cross references are included in the table below indicating where the specific reporting requirements have been addressed in this report, if applicable.

NEMA REGULATIONS (2014) - APPENDIX 6		SECTION WITHIN REPORT
1	A specialist report prepared in terms of these Regulations must contain -	
(a)	details of -	
(i)	the specialist who prepared the report; and	Appendix A.
(ii)	the expertise of that specialist to compile a specialist report including a curriculum vitae;	Appendix A.
(b)	a declaration that the specialist is independent in a form as may be specified by the competent authority;	Page 3.
(c)	an indication of the scope of, and the purpose for which, the report was prepared;	Section 1 & Section 2.
(cA)	an indication of the quality and age of base data used for the specialist report;	Section 4.
(cB)	a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 7 & Section 10.
(d)	the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 4.
(e)	a description of the methodology adopted in preparing the report or carrying out the specialized process inclusive of equipment and modelling used;	Section 4.
(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. No site alternatives were proposed.
(g)	an identification of any areas to be avoided, including buffers;	Not applicable.
(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 7. Buffers not applicable.
(i)	a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 6.
(j)	a description of the findings and potential implications	Section 10.

NEMA REGULATIONS (2014) - APPENDIX 6		SECTION WITHIN REPORT
	of such findings on the impact of the proposed activity or activities;	
(k)	any mitigation measures for inclusion in the EMPr;	Section 10.
(l)	any conditions for inclusion in the environmental authorization;	Section 10.
(m)	any monitoring requirements for inclusion in the EMPr or environmental authorization;	Section 10.
(n)	a reasoned opinion -	
(i)	whether the proposed activity, activities or portions thereof should be authorized;	Section 10.7.
(iA)	regarding the acceptability of the proposed activity or activities; and	Section 10.7.
(ii)	if the opinion is that the proposed activity, activities or portions thereof should be authorized, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	Section 10.
(o)	a description of any consultation process that was undertaken during the course of preparing the specialist report;	Not applicable.
(p)	a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Comments and responses that are raised by Interested and Affected Parties (I&APs) will be included in the relevant environmental report compiled by the EAP.
(q)	any other information requested by the competent authority.	No information requested at this time

1 INTRODUCTION

The Kinetic Development Group Limited (the Applicant) intends to develop a Ferrochrome Smelter Plant and associated infrastructure (hereafter referred to as the proposed Project) located approximately 35 kilometres (km) south-west of the town Musina in the Musina Local Municipality, situated within the Vhembe District Municipality, in Limpopo Province, South Africa (SA) (Figure 1-1).

Gudani Consulting CC (the Client) have been appointed by the Applicant as the independent Environmental Assessment Practitioners (EAP) for the proposed Project and will undertake the Environmental Authorisations (EA) application processes necessary for the proposed Project.

The proposed Project is located within the approved Musina-Makhado Special Economic Zone (MMSEZ) and may have adverse effects on the visual characteristics of the surrounding environment. Therefore, the Client has appointed Eco Elementum (Pty) Ltd (EcoE) to conduct the Visual Impact Assessment (VIA) for the proposed Project.

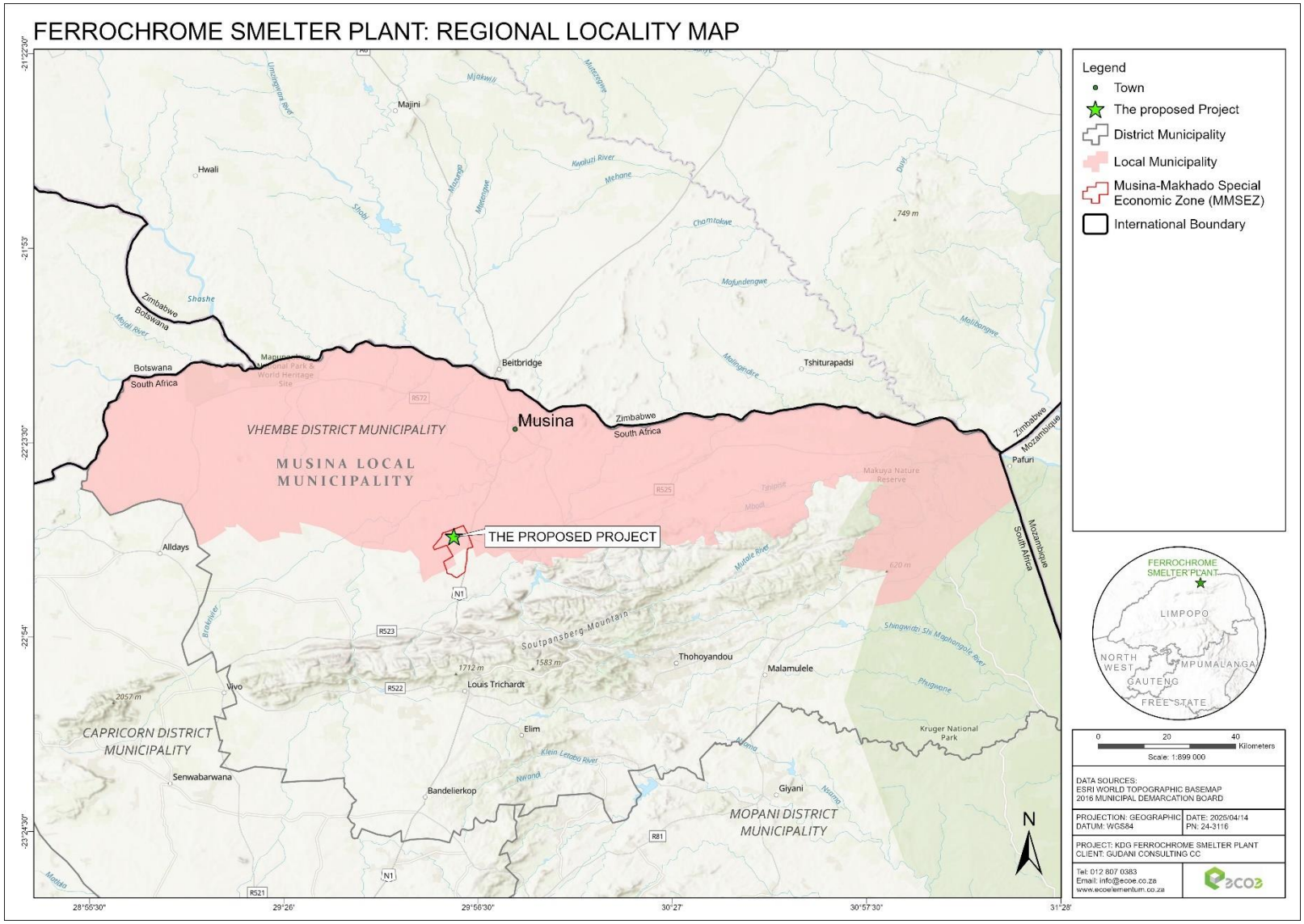

Figure 1-1: Locality Map

2 SCOPE OF WORK

The scope of work for this VIA included the following:

1. Description of the existing visual characteristics of the proposed Project and its surrounding environment.
2. Site sensitivity verification[2], should the environmental screening tool report determine any landscape sensitivities specific to the proposed Project area.
3. Viewshed and viewing distance determination in relation to the proposed Project.
4. Visual exposure analysis comprising the following aspects:
   - Terrain slope.
   - Aspect of infrastructure location.
   - Landforms.
   - Slope position of infrastructure.
   - Relative elevation of infrastructure.
   - Terrain ruggedness.
   - Visual absorption capacity (VAC).
   - Viewer sensitivity.
   - Overall visual impact.
5. Potential impact identification and significance ratings based on the overall visual impact.
6. Recommendation of suitable mitigation measures for the identified visual impacts.
7. A reasoned opinion, from a visual perspective, as to the approval of the proposed Project.

[2] The Screening Tool Report was not available at the time of this assessment therefore, a site sensitivity verification relating to any landscape sensitivities was not undertaken as part of this assessment.

3 PROJECT DESCRIPTION

The proposed Project is divided into two areas/site boundaries, namely the Ferrochrome Plant Area and the Industrial (Ferrochrome Reserved) Area. The scale of the proposed Project is planned to the annual output of 125 000 to 1 000 000 tons, and 2 x 33 000 Kilovolt-Amperes (kVA) electric furnaces and their supporting facilities. The general factory area will be divided into five functional areas, namely the raw material storage area, public and auxiliary facilities area, main plant area, office area, and 132 Kilovolt (kV) substation area. The raw material storage area mainly will include a dry material shed and block material shed. The public and auxiliary facilities area will mainly include a vertical furnace (reserved), production area, canteen, bathroom, block batching room, comprehensive circulating water pump room, air pressing nitrogen room, motor shell processing and a machine repair room. The main plant area will mainly have the main workshop, hot furnace flue gas purification system and dry slag pit; and the office area will mainly include the office building, the living area, canteen, the dormitory building, the comprehensive warehouse, etc.

The main facilities within the proposed Project includes the following:

- High-carbon ferrochrome production workshop.
- Chromium furnace baking workshop (reserved).
- Raw materials, batching and feeding system.
- Charcoal dry.
- Furnace gas purification and dust removal system.
- Dust removal system in the production area.
- Compressed air preparation.
- 132 kV (power supply) substation and the capacitor compensation device.
- Power supply and distribution, electrical control, automation.
- Instruments, telecommunications facilities.
- Whole-plant control system.
- Industrial TV monitoring system.
- Machine repair shop.
- Electrode shell production workshop.
- Water source is connected to the production plant purification.
- Water supply system.
- Net ring water system and turbine water system.
- Production and living water supply and drainage system.
- Whole-plant fire protection system.

- Ventilation and air-conditioning system.
- General map of transport and roads, walls, gates.
- Factory area office building.
- Laboratory room.
- Raw material storage yard, spare parts warehouse, finished product warehouse, etc.
- Raw materials into the factory, finished products factory.
- Loadometer duty room.
- Fire protection, safety, environmental protection and other basic facilities.
- Slag disposal pit.

The following associated infrastructure is also envisaged:

- Access roads.
- Diesel storage tanks.
- Pipelines to Pollution Control Dams (PCDs).
- Berms to separate dirty/clean water.
- Temporary overburden stockpiles.
- Waste rock dumps.
- Topsoil storage dumps.
- Offices.

From the data available at the time of this assessment, only the proposed plant area and the exhaust stacks associated with the furnace gas purification and dust removal system were considered for the visual analysis. At the time of this assessment, the location of this infrastructure was not available in a usable format therefore, the point locations of the infrastructure were assumed and represent the worst-case scenario. The aboveground heights of the infrastructure were also unavailable; therefore, the heights were extracted from the VIA conducted for the MMSEZ in 2019. Table 3-1 presents the aboveground heights, in meters (m), used in this visual analysis. The proposed site layout, with the assumed infrastructure point locations used in the visual analysis, is shown in Figure 3-1.

Table 3-1: Aboveground heights of the proposed infrastructure

PROPOSED INFRASTRUCTURE	HEIGHT
Plant area	25 m
Exhaust stacks	38 m

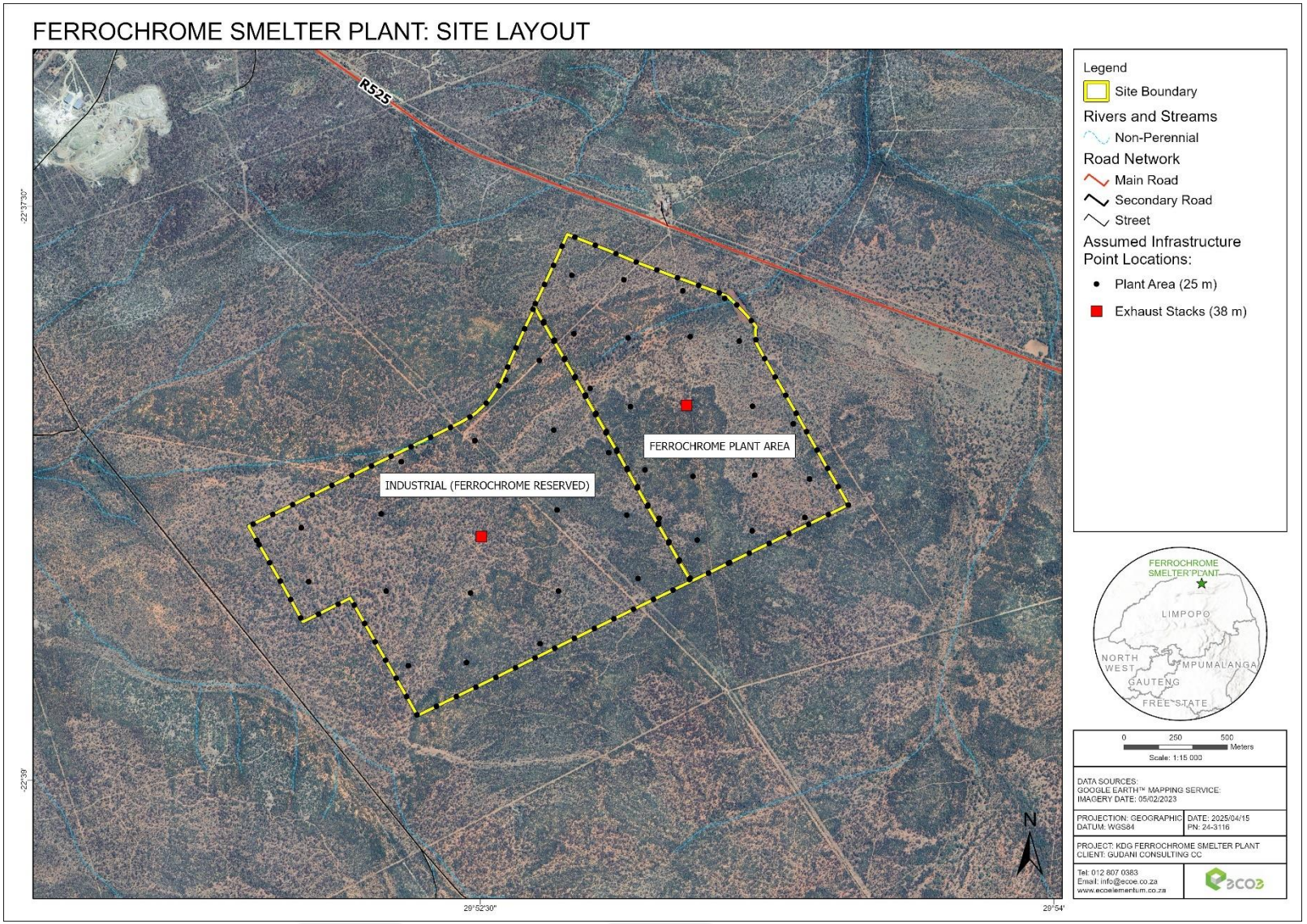

Figure 3-1: Proposed site layout

4 METHODOLOGY

The following methodology was applied to assess and quantify the potential visual impacts that may be associated with the proposed Project.

Visual receptors surrounding the proposed Project were identified using Google Earth™ imagery and available national databases. Visual receptors include, but are not limited to, residential areas, households, farmsteads, recreational facilities, tourist areas, road networks, protected areas and conservation areas and may experience visual impacts from the proposed Project.

Viewshed and viewing distance was modelled using Geographic Information System (GIS) analysis, utilizing ArcGIS Pro 3.0.3 and Spatial Analyst Extension. The key inputs into the GIS analysis included the point locations and the aboveground heights of the proposed Project infrastructure, as well as an elevation model of the surrounding area. The point locations for the plant area was determined by equally subdividing the site boundaries into 5 rows and 5 columns and thereafter creating point features at the centroids of each resulting grid block. Additional point features were then created at 100 m intervals along the site boundaries, also representing the plant area. Regarding the exhaust stacks, two point features were created at the centroid of each site boundary. The respective aboveground heights of the infrastructure was then assigned to the point features which formed part of the visual analysis.

The viewshed and viewing distance was then determined for up to 15 km from the proposed Project. In order to determine the decreasing visual impact of the proposed Project, concentric radii zones from the proposed Project were superimposed on the viewshed to determine the level of visual exposure. The closest zone to the proposed Project designates the area of most significant impact, and the furthest zone from the proposed Project indicates the area of least impact. The visual ratings of the zones have been defined as follows:

- < 1 km (very high).
- 1 - 2 km (high).
- 2 - 5 km (moderate).
- 5 - 10 km (low).
- 10 - 15 km (very low).

A quantitative visual exposure analysis was conducted, which included the following parameters:

- Terrain slope:
  - Slope angle was determined from a Digital Surface Model (DSM) and the location of the proposed Project given a ranking depending on the steepness of the slope.
  - Infrastructure built on steep slopes are typically more visible and exposed than those located on flat surfaces.
- Slope aspect:

- Aspect of the slope, where the infrastructure will be built, was calculated from the DSM and given a ranking determined by the sun angle.
- Infrastructure placed on flat surfaces are illuminated by the sun the entire day and thus visible from all directions. In the southern hemisphere, infrastructure on north facing slopes are less visible from the south, infrastructure on east and west facing slopes are only illuminated during half of the day thus less visible, where infrastructure on the southern slopes are mostly in the shade.

- Landforms:
  - The landform underlying the proposed Project was determined from the DSM and ranked according to the type of landform.
  - Infrastructure built at certain landforms, e.g. on ridges, will be more visible than others e.g. in valleys.
- Slope position:
  - Using GIS analysis, the slope position of the proposed Project was determined.
- Relative elevation:
  - Using the DSM, the elevation of the proposed Project relative to the surrounding elevation was determined.
  - Infrastructure built higher in relation to the surroundings is typically more visible than infrastructure built on lower lying areas in relation to the surroundings.
- Terrain ruggedness:
  - The terrain ruggedness was determined from the DSM and given a ranking based on the homogeneousness of the terrain.
  - Rugged terrain tends to visually screen infrastructure from surrounding receptors.
- Visual absorption capacity (VAC):
  - To simulate the VAC of the landscape, land cover data of the area was assigned a VAC ranking based on specialist knowledge. The visual exposure results and VAC rankings of the landscape was used in an algorithm to determine a quantitative visual exposure level for the surrounding area.
- Overall visual impact:
  - Combining the above datasets through GIS methods, a final visual exposure ranking was determined for each of the identified visual receptors.

The significance of the potential visual impacts was rated based on the result of the abovementioned overall visual impact, according to an impact and aspects rating methodology formalized by EcoE. Cumulative visual impacts of the proposed Project in conjunction with other existing developments

(associated with or separate to it), or by actions that occurred in the past, present or are likely to occur in the foreseeable future were also assessed.

Feasible mitigation measures were recommended based on the impact ratings and specialist knowledge, whereafter a reasoned opinion, from a visual perspective, is provided as to the acceptability of the proposed Project based on the results.

The following data sources were used in this report:

- 30 m Advanced Land Observing Satellite (ALOS) Digital Surface Model (DSM) (Japan Aerospace Exploration Agency, 2021).
- 2018 National Vegetation Map (South African National Biodiversity Institute, 2018).
- 2022 National Landcover Map (Department of Forestry, Fisheries, and the Environment, 2022).
- Google Earth™ imagery: imagery ranging between 2021 and 2024.
- South African Protected Areas Database Quarter 3 2024 (Department of Forestry, Fisheries, and the Environment, 2024).
- South African Conservation Areas Database Quarter 3 2024 (Department of Forestry, Fisheries, and the Environment, 2024).
- The Chief Directorate: National Geo-Spatial Information Road Network (Department of Agriculture, Land Reform and Rural Development).
- Guideline for involving visual & aesthetic specialists in Environmental Impact Assessment (EIA) processes: Edition 1 (Oberholzer, 2005).
- Site visit findings:
  - A site visit was conducted on the 08th of April 2025.
  - The site visit was conducted during clear weather conditions to allow the specialist to easily identify key landscape features.
  - The main objectives of the site visit were to familiarise the specialist with the proposed Project site and its surroundings, as well as to verify the desktop findings.

5 LEGAL REQUIREMENTS

There are no specific legal requirements for VIA's in SA. However, the following legislation and guidelines are applicable and have been considered:

1. The National Environmental Management Act, 1998 (Act No. 107 of 1998), hereafter referred to as NEMA:
   a) This report is in line with Appendix 6 of NEMA: Environmental Impact Assessment Regulations (2014, as amended) which details the minimum requirements a specialist report must contain for an EIA.
   b) Screening Tool as per Regulation 16 (1)(v) of the EIA Regulations (2014, as amended): The screening report was not made available to the specialist at the time of this assessment. Therefore, it is assumed that a VIA was identified as one of the required specialist studies for the proposed Project. No specific assessment protocols are prescribed for VIA's in SA therefore, the report is in line with Appendix 6 of NEMA.
2. The National Environmental Management Protected Areas Act (Act No. 57 of 2003): This act was developed in 2003 and is intended for the protection and conservation of ecologically viable areas representative of SA's biological diversity and its natural landscapes and seascapes. The Act states that no person may conduct commercial prospecting or mining activities in a special nature reserve, national park or nature reserve, in a protected environment without written permission from the relevant authorities, or in a protected areas referred to in section 9(b), (c) or (d) of the Act. No development, construction or farming may also be permitted in a national park, nature reserve or world heritage site without prior written approval of the management authority: According to the 2024 Quarter 3 SA Protected Areas Database, the proposed Project is not located within any of the abovementioned areas. The closest protected area to the proposed Project is the Avarel Private Nature Reserve located approximately 3 km north-east of the proposed Project.
3. The Municipal Systems Act (Act 32 of 2000): It is compulsory for all municipalities to go through an Integrated Development Planning (IDP) process to prepare a five-year strategic development plan for the area under their control. The IDP process, specifically the spatial component, is based in certain areas and provinces on a bioregional planning approach to achieve continuity in the landscape and to maintain important natural areas and ecological processes. Bioregional planning involves the identification of priority areas for conservation and their placement within a supportive planning framework of buffer and transition areas (i.e. creating integrated landscapes). These could include reference to visual and scenic resources and the identification of areas of special significance, together with visual guidelines for the area covered by these plans: The final 2024/2025-2027/2028 IDP for the Musina Local Municipality was referred to for this assessment.

6 ASSUMPTIONS AND LIMITATIONS

The following assumptions and limitations apply to this VIA report:

- This VIA was undertaken during the planning stage of the proposed Project and is based on the information available at that time. It is assumed that all information regarding the proposed Project details provided by the Applicant and Client is correct and relevant to the proposed Project.
- Visual impacts beyond 10 km from the proposed Project are considered to be so reduced that it is almost negligible even if there is direct line of sight. Therefore, the core study area for the proposed Project is defined as the area with a radius of not more than 10 km from the proposed Project and the total study area is defined as the area with a radius of 15 km from the proposed Project.
- Where infrastructure heights were not available, the heights were extracted from the VIA conducted for the MMSEZ in 2019.
- Due to the lack of available and usable spatial data at the time of this assessment relating to the proposed Project, only the plant area and exhaust stacks were included in the visual analysis. Only this infrastructure was included in the visual analysis since these infrastructure types are expected to represent the tallest components of the proposed Project.
- At the time of this assessment, the location of the infrastructure within the proposed Projects site boundaries was not available in a usable GIS format for the visual analysis. Therefore, the point locations were assumed using GIS methods:
  - To represent the worst-case scenario, the point locations of the plant area covered the site boundaries.
  - The exhaust stack point locations were located only at the centroid of each site boundary as it is assumed that there will be minimal exhaust stacks as compared to the plant infrastructure. Furthermore, since the topography underlying the site boundaries is relatively flat, the expected viewshed of the exhaust stacks located at the centre of the site boundaries is expected to be similar to the resulting viewshed should the exhaust stacks be located elsewhere within the site boundaries.
  - Additionally, it was ensured that the point locations were distributed systematically across the site boundaries to ensure that the entire area of the site boundaries were represented.
- The Screening Tool Report as per Regulation 16 (1)(v) of the EIA Regulations (2014, as amended) was not available at the time of this assessment therefore, a site sensitivity verification relating to any landscape sensitivities was not undertaken as part of this assessment.
- Comments regarding landscape and visual impacts raised by Interested and Affected Parties (I&APs) during the scoping phase of the proposed Project related mostly to the impact of the proposed Project on the tourism and the natural beauty of the land and environment of the area. While this VIA does not directly address each comment, the VIA does consider and address the

potential visual and landscape impacts of the proposed Project on the total study areas sense of place, landscape character and surrounding visual receptors.

- This VIA and all associated mapping have been undertaken for the worst-case scenario with the layout and data provided.
- It is assumed that there are no alternative locations for the infrastructure, therefore only the proposed Project site was assessed.
- Visual perception is by nature a subjective experience, as it is influenced largely by personal values. For instance, what one viewer experiences as an intrusion in the landscape, another may regard as positive. Such differences in perception are greatly influenced by culture, education, and socio-economic background. A degree of subjectivity is therefore bound to influence the identification of visual impacts. To limit such subjectivity, a combination of quantitative and qualitative assessment methods were used. A high degree of reliance has been placed on GIS-based analysis viewsheds, visibility analyses, and on making transparent assumptions and value judgements, where such assumptions or judgements are necessary.
- The GIS tools used to quantify the overall visual exposure levels only incorporates the variables as described in this report. Factors such as real time and micro scale vegetation are not considered, thus the actual level of visual exposure may be lower or higher depending on the updated land use in the vicinity or latest vegetation growth/height on a micro and macro scale. The results are by no means a rating of visual quality; it is rather used to determine the likelihood of the proposed Project being visible from the visual receptors.
- The results generated in GIS cannot be guaranteed as 100% accurate. Some critical viewpoints/receptors, which are indicated on the viewshed as being inside of the viewshed, can be outside of the viewshed. This is due to the change of the natural environment by surrounding activities as well as natural vegetation that play a significant role and can have a positive or negative influence on the viewshed.
- The modelling of visibility is merely conceptual. Being based on the ALOS DSM, it does not fully consider the real-world effect of buildings, trees etc., that could shield the structures from being visible or could have changed over time. The viewshed analysis therefore signifies a worst-case scenario.
- The identified visual receptors in the area may differ from those present as some areas may not have been successfully identified from the imagery.

Any uncertainties resulting from the assumptions and limitations do not substantially affect the results/findings so as to make the VIA fatally flawed.

7 DESCRIPTION OF THE AFFECTED ENVIRONMENT

This section describes the status of the affected environment and serves as the baseline for the assessment of the potential visual impacts of the proposed Project. Various desktop data sources are referenced in the analysis of the affected environment, and photos from the site visit undertaken on the 08th of April 2025 were used to verify the desktop findings where applicable.

7.1 Topography

The total study area comprises of flat to undulating terrain, with hills and ridges located mainly across the southern and northern areas of the total study area. Surface elevations within the total study area varies between 528 meters above mean sea level (mamsl) and 927 mamsl, with an average slope degree of 2.11. The proposed Project activities are located on flat terrain, with an average slope degree of 0.78 degrees. Figure 7.1 indicates the topography of the total study area as per the desktop analysis, and Photo 7.1 to Photo 7.7 shows the landscape features observed during the site visit.

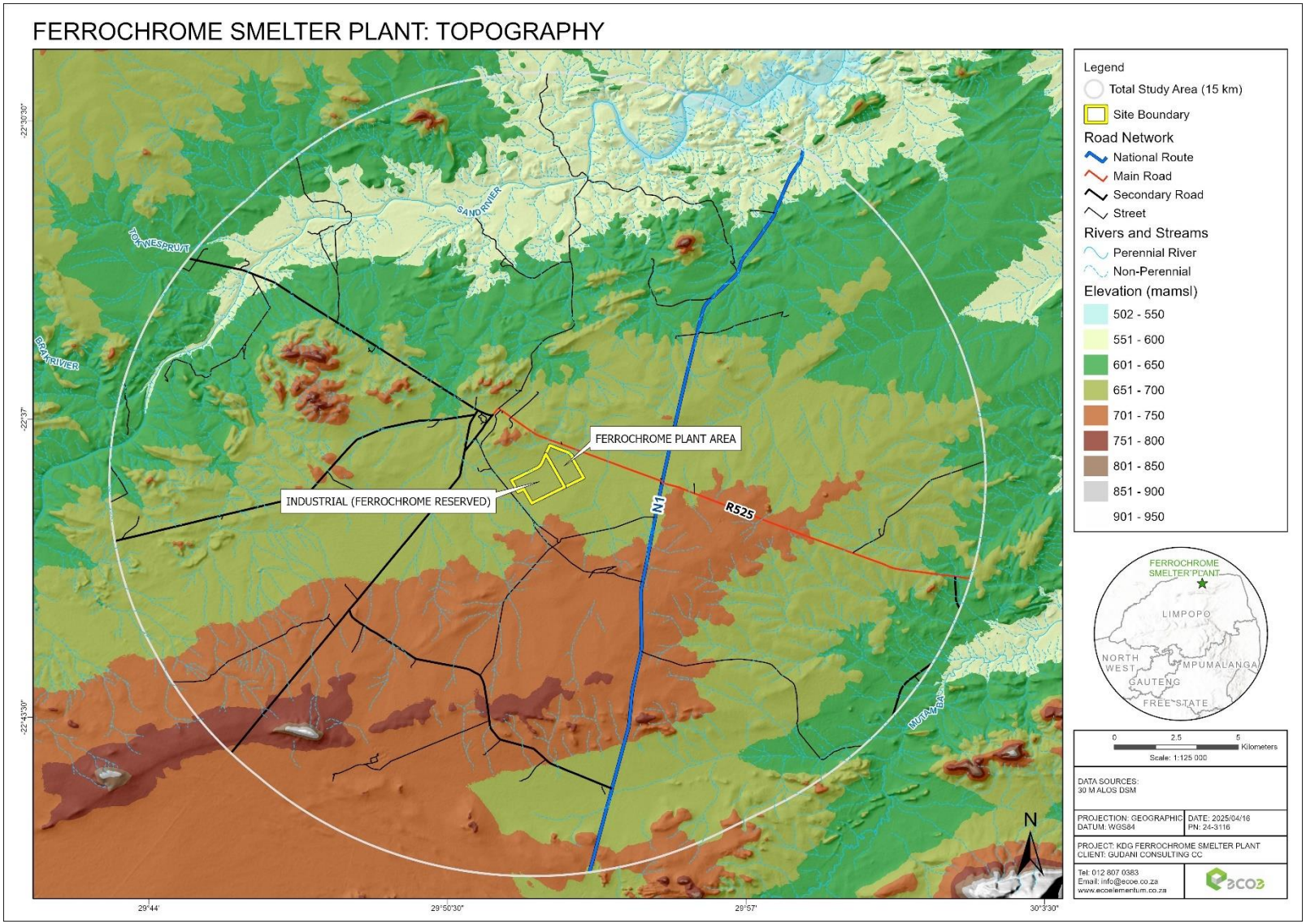

Figure 7-1: Topography of the total study area

Photo 7.1: Topography of the Industrial (Ferrochrome Reserved) Area, with a view of the hills and ridges within the southern regions of the total study area. This photo was captured from the R525 main road, approximately 1.2 km north of the Industrial (Ferrochrome Reserved) site boundary

Photo 7.2: Topography of the Ferrochrome Plant Area. This photo was captured from the R525 main road, approximately 450 m north of the Ferrochrome Plant Area site boundary. The dense vegetation screens the Ferrochrome Plant Area however, no hills or ridges were noted within the area

Photo 7.3: Topography of the Ferrochrome Plant Area. This photo was captured from the R525 main road, approximately 300 m north of the Ferrochrome Plant Area site boundary. The dense vegetation screens the Ferrochrome Plant Area however, no hills or ridges were noted within the area

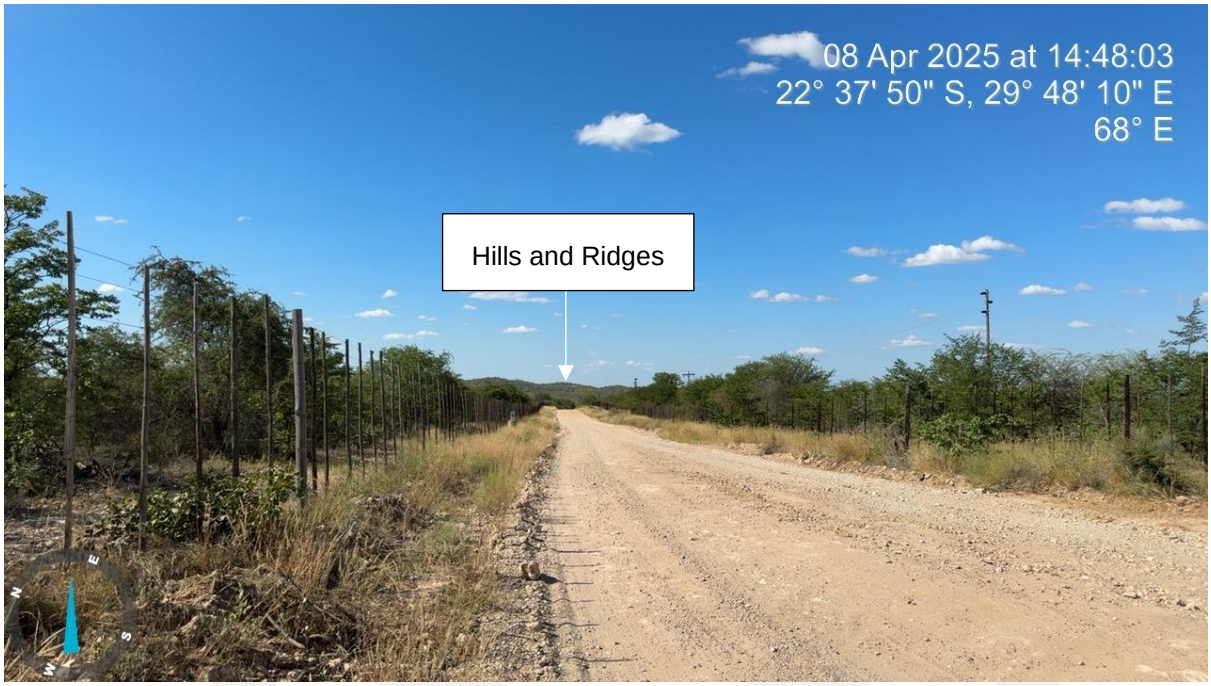

Photo 7.4: Hills/ridges within the northern region of the total study area. This photo was captured from the secondary road approximately 6.5 km west of the proposed Project

Photo 7.5: Hills/ridges within the southern region of the total study area. This photo was captured from the secondary road approximately 2 km west of the proposed Project

Photo 7.6: Hills/ridges within the southern region of the total study area. This photo was captured from the secondary road approximately 9 km south of the proposed Project

Photo 7.7: Flat to undulating topography within the total study area

7.2 Vegetation

Figure 7.2 shows the 2018 national vegetation of the total study area, available from the South African National Biodiversity Institute (SANBI). The figure indicates the total study area comprises mainly of the Musina Mopane Bushveld vegetation type, with the Limpopo Ridge Bushveld vegetation type occurring on some of the hills and ridges within the total study area. Mucina *et al.* (2006) describes the vegetation and landscape features of the Musina Mopane Bushveld as undulating to very irregular plains, with some hills. In the western section, open woodland to moderately closed shrubveld and in the eastern section, on basalt, moderately closed to open shrubveld. Furthermore, the field layer of this vegetation type is well developed and open during the dry season, with the herbaceous layer being poorly developed in certain areas (Mucina *et al.* 2006).

From the site visit, it was noted that the natural vegetation within the total study area is largely intact, with minimal transformation by human activity. Photo 7.8 to Photo 7.12 shows the vegetation within the proposed Project site and total study area, observed during the site visit. Photo 7.13 shows the vegetation disturbed by human activity, such as road networks, railway lines, buildings and fences.

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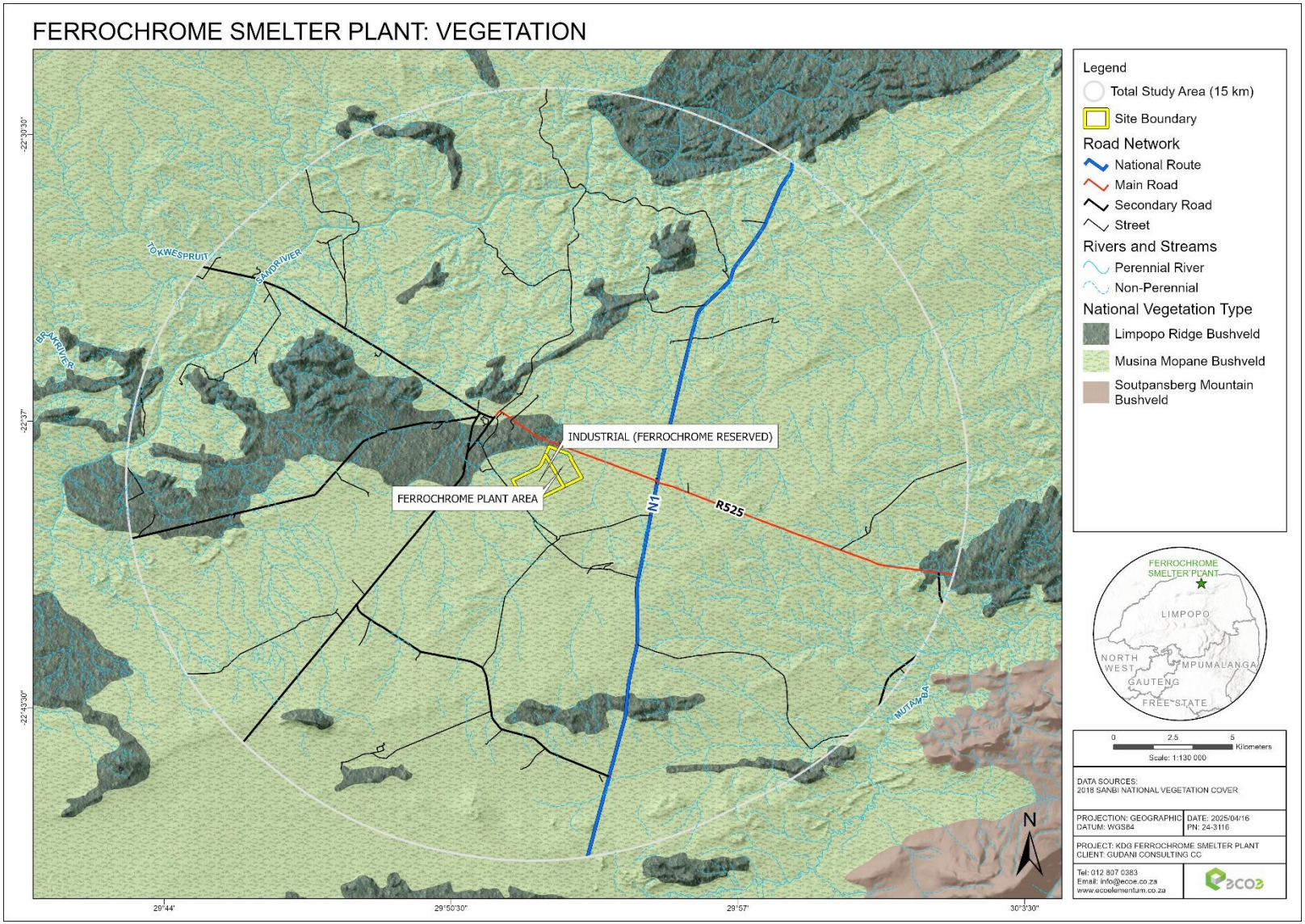

Figure 7-2: National vegetation cover of the total study area (SANBI, 2018)

Photo 7.8: Vegetation within the proposed Project. This photo was captured from the R525 main road, approximately 240 m north of the Ferrochrome Plant Area site boundary

Photo 7.9: Vegetation within the proposed Project. This photo was captured from the R525 main road, approximately 240 m north-west of the Ferrochrome Plant Area site boundary

Photo 7.10: Vegetation on the hills and ridges. This photo was captured from the R525 main road, approximately 1.8 km north-west of the proposed Project, looking north-west of the proposed Project

Photo 7.11: Vegetation occurring within the total study area. This photo was captured from the secondary road, approximately 2.6 km north-west of the proposed Project, looking towards the proposed Project

Photo 7.12: General vegetation within the total study area

Photo 7.13: Vegetation disturbed by human activities within the total study area

7.3 Landcover/Land-use

Figure 7.3 shows the landcover of the total study area as per the 2022 National Landcover Dataset, available from the Department of Forestry, Fisheries, and the Environment (DFFE). The figure indicates that the total study area comprises predominantly of open woodland, with areas of fallow land and old fields, commercial annual crops and natural grassland scattered within the total study area. Additional landcover and land-use types within the total study area include a formal residential area and mining activities located approximately 2 km north-west of the proposed Project, along with road and railway infrastructure. From a review of satellite imagery and from the site visit, the formal residential area was identified as the Mopane settlement, and the mining activities are associated with the existing Syferfontein Mine. Households and farmsteads, accommodation areas, recreational facilities and a school were also noted within the total study area during the site visit.

Regarding the landcover within the proposed Project site, Figure 7-3 indicates that the dominant landcover type is open woodland, with some areas of natural grassland. Furthermore, from the 2024 final scoping report for the proposed Project, it was noted that a large proportion of the land-use of the proposed Project comprises of subsistence cattle farming.

Photo 7.14 shows the landcover within the proposed project and Photo 7.15 to Photo 7.17 shows the surrounding landcover observed during the site visit.

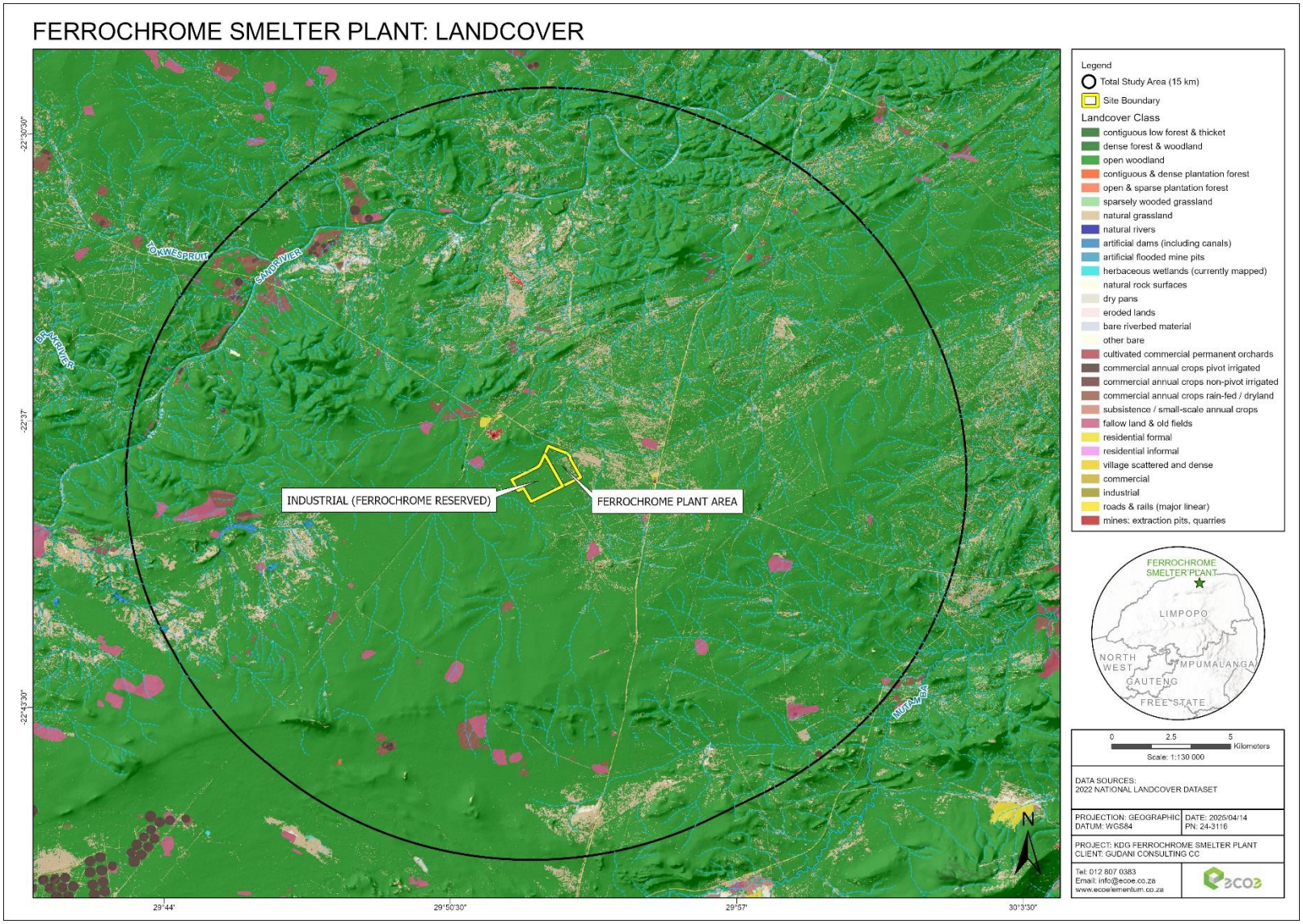

Figure 7-3: National landcover of the total study area (DFFE, 2022)

Photo 7.14: Landcover within the proposed Project. This photo was captured from the R525 main road, approximately 240 m north-west of the Ferrochrome Plant Area site boundary

Photo 7.15: Syferfontein mining area located approximately 2 km north-west of the proposed Project

Photo 7.16: Existing railway line and the Mopane settlement. This photo was captured from the gravel access road, approximately 2.5 km north-west of the proposed Project

Photo 7.17: Some of the households, accommodation areas, school and recreational facilities observed during the site visit

7.4 Visual absorption capacity (VAC)

VAC is the capacity of the landscape/receiving environment to absorb the potential visual impact of the proposed Project. The VAC is a function of the surrounding vegetation, topography and/or landcover. For instance, VAC will be high if the vegetation is tall, dense and continuous. Conversely, low growing, sparse and patchy vegetation will have a low VAC. Oberholzer (2005) categorises VAC as follows:

- High VAC - effective screening by the landscape/receiving environment.
- Moderate VAC - partial screening by the landscape/receiving environment.
- Low VAC - little screening by the landscape/receiving environment.

Based on the topography, vegetation and landcover characteristics of the total study area, the VAC of the total study area is categorised as moderate. This assessment stems from the ability of the surrounding vegetation and topography, specifically the hills and ridges, to partially screen and mitigate the visual impacts of the proposed Project. Nevertheless, the mostly natural and undeveloped nature of the total study area lacks the capability to effectively absorb the potential landscape impacts from the proposed Project; and taller infrastructure, specifically the exhaust stacks and related emissions, will still protrude above the tree line. Photo 7.18 to Photo 7.21, captured during the site visit, shows the ability of the surrounding vegetation and topography to partially screen the existing activities within the total study area.

Photo 7.18: Partial screening, by the surrounding vegetation, of the buildings associated with the Syferfontein Mine. This photo was captured from the secondary road approximately 2.6 km north-west of the proposed Project

Photo 7.19: Partial screening of the mine dump at the Syferfontein Mine by the surrounding vegetation. The mine dump will also be screened, by the hill/ridge, from the areas behind the hill/ridge. This photo was captured from the secondary road approximately 3.5 km north-west of the proposed Project

Photo 7.20: Partial screening, by the surrounding vegetation, of the railway line located approximately 2.5 km west of the proposed Project. This photo was captured from the secondary road approximately 2.6 km north-west of the proposed Project

Photo 7.21: Partial screening, by the surrounding vegetation, of the overhead power lines within the total study area

7.5 Visual receptors

7.5.1 Potential visual receptors

Visual receptors refer to individuals, groups or communities who are subject to the visual influence of a particular project (Oberholzer, 2005). Visual receptors include, but are not limited to, residential areas, households, farmsteads, recreational facilities, tourists, users of the road networks and visitors of protected areas and conservation areas. The following datasets were used to identify the visual receptors within the total study area and are presented in Figure 7-4:

- 2022 National Landcover Map (Department of Forestry, Fisheries, and the Environment, 2022).
- Google Earth™ imagery - imagery ranging between 2021 and 2024.
- South African Protected Areas Database Q3 2024 (Department of Forestry, Fisheries, and the Environment, 2024).
- South African Conservation Areas Database Q3 2024 (Department of Forestry, Fisheries, and the Environment, 2024).
- National Geo-Spatial Information Road Network.

For the proposed Project, households and farmsteads, an intermediate school, users of the surrounding road networks, visitors to protected areas, users of accommodation areas and recreational facilities and tourists were noted within the total study area and are considered potential visual receptors due their potential to experience momentary or static views of the proposed Project. The sections below describe the identified visual receptors and Photo 7.22 to Photo 7.29 shows the visual receptors as observed during the site visit.

7.5.1.1 Households and farmsteads

Households and farmsteads were noted to be sparsely scattered within the total study area. The highest concentration of households and farmsteads occur within the Mopane settlement, located approximately 2 km north-west of the proposed Project, and within the agricultural area approximately 13 km north-west of the proposed Project. The closest household is located approximately 300 m of the proposed Project, north of the R525 main road. Residents within the households and farmsteads may experience static views of the proposed Project.

7.5.1.2 Schools

The Mopane Intermediate School is located approximately 2.6 km north-west of the proposed Project and may experience static views of the proposed Project.

7.5.1.3 Road users

The identified road network within the total study area includes the N1 national route, which runs north to south and is located approximately 3 km east of the proposed Project. A main road, namely the R525, runs from west to east and is located approximately 200 m north of the proposed Project. Several

secondary roads and streets are also located within the total study area and are mostly concentrated within the northern, southern and western regions. Users of the road network are expected to experience momentary views of the proposed Project.

7.5.1.4 Protected areas

Two national protected areas were identified from the 2024 South African Protected Areas Database (SAPAD), namely the Avarel Private Nature Reserve located approximately 3 km north-east of the proposed Project, and the Baobab Private Nature Reserve located approximately 5 km north-west of the proposed Project.

7.5.1.5 Accommodation areas and recreational facilities

Accommodation areas and recreational facilities are present within the total study area. These include, but are not limited to, lodges, guesthouses, game farms, game lodges, hunting safaris, farm shops and helicopter tours. The closest accommodation area, Maseri Cabins, is located approximately 3.2 km east of the proposed Project. Furthermore, the accommodation areas and recreational facilities are sparse within the eastern portion of the total study area, and more concentrated within the western portion of the total study area.

7.5.1.6 Tourists

Visitors to the identified protected areas, accommodation areas and recreational facilities are classified as tourists and may experience both momentary and static views of the proposed Project. Tourists may experience static views of the proposed Project from these areas if there is a direct line of sight between the visual receptor and the proposed Project, and especially if using optical instruments to view distant objects.

Additionally, according to the 2024 South African Conservation Areas Database, the proposed Project is located within the larger Vhembe Biosphere Reserve which is a destination for eco-tourism, cultural tourism and related activities such as hunting amongst both the local and international visitors. Tourists travelling to destinations within the larger Vhembe Biosphere Reserve and to destinations within the total study area are likely to utilise the road networks within the total study area, therefore are expected to experience momentary views of the proposed Project from within their moving vehicles. Furthermore, a gas station is located at the intersection of the N1 national route and R525 main road, approximately 2.8 km east of the proposed Project, which tourists may utilise thereby experiencing additional static views of the proposed Project.

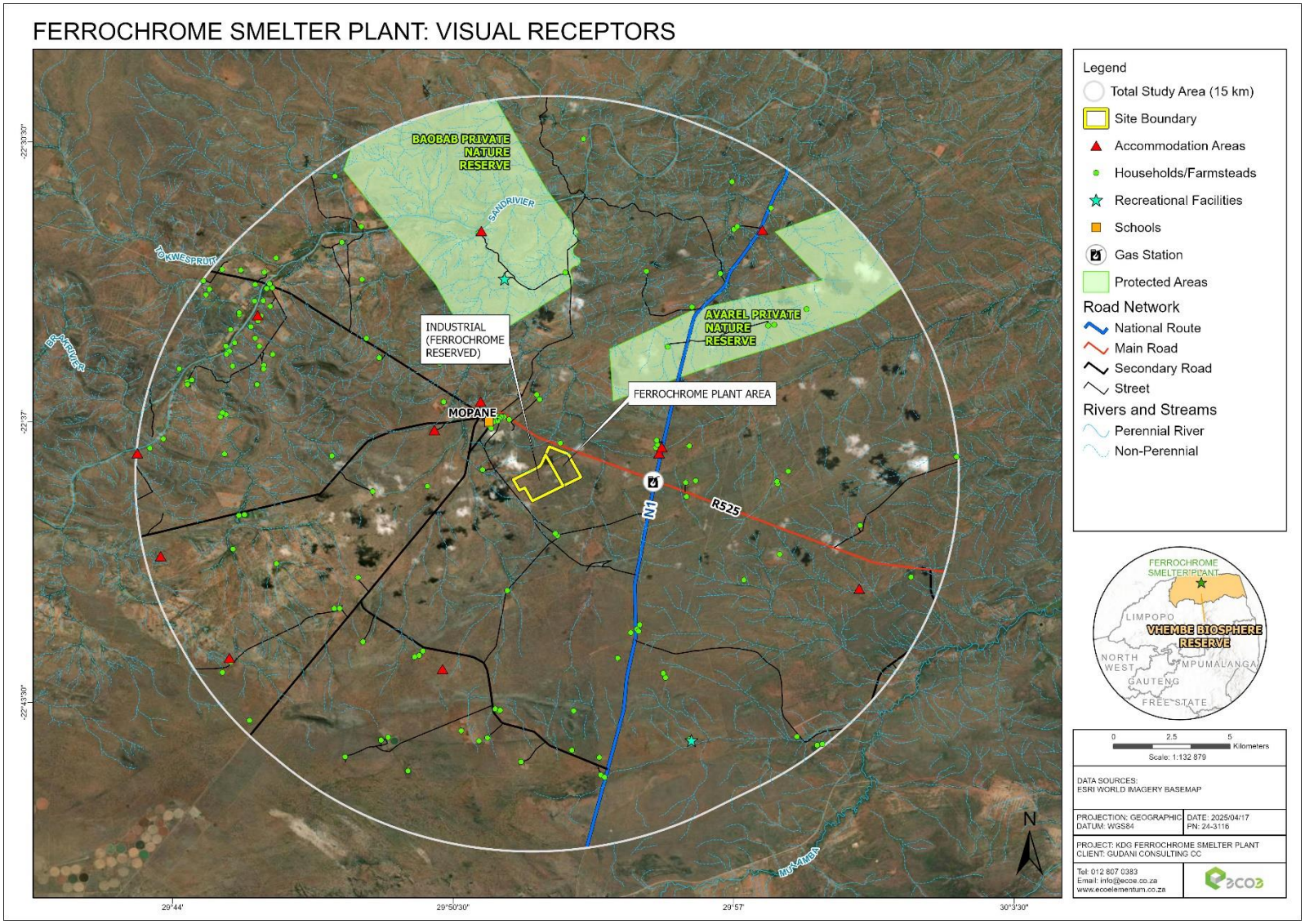

Figure 7-4: Identified visual receptors within the total study area

Photo 7.22: Households within the Mopane settlement. These photos were captured from within the Mopane settlement, approximately 2 km north-west of the proposed Project

Photo 7.23: The household approximately 300 m north of the proposed Project. This photo was captured from the R525 main road

Photo 7.24: The entrance to the Mopane Intermediate School. These photos were captured from a secondary, approximately 3 km north-west of the proposed Project

Photo 7.25: The R525 main road. This photo was captured from approximately 670 m north-east of the proposed Project, looking west

Photo 7.26: The N1 national route. This photo was captured from approximately 3 km east of the proposed Project, looking north

Photo 7.27: Secondary roads within the total study area

Photo 7.28: The Avarel Private Nature Reserve. These photos were captured from Google Earth™ Street View, imagery dated March 2024, from the N1 national route approximately 6.5 km north-east of the proposed Project

Photo 7.29: Accommodation areas and recreational facilities within the total study area

7.5.2 Sensitivity of the visual receptors

The expected sensitivity of the identified visual receptors was also be considered. Oberholzer (2005) categorizes the sensitivity of visual receptors as follows:

- High sensitivity – e.g. residential areas, nature reserves and scenic routes or trails.
- Moderate sensitivity – e.g. sporting or recreational areas, or places of work.
- Low sensitivity – e.g. industrial, mining, or degraded areas.

According to the abovementioned categories, the identified households and farmsteads, school, visitors to the protected areas and users of the accommodation areas are categorized as high sensitivity visual receptors and are expected to experience high levels of visual impacts from the proposed Project. Users of the identified road network and recreational facilities are categorized as moderate sensitivity visual receptors as the views from these visual receptors will be sporadic and short.

Furthermore, the expected sensitivity of the identified visual receptors was considered in relation to existing visual disturbances within the total study area such as existing infrastructure, industrial activities and mining activities. From a desktop analysis of national databases and satellite imagery, and from the site visit, it was noted that the total study area is in a largely natural state with limited visual disturbances sparsely occurring within the total study area. Figure 7-5 shows the identified visual receptors in relation to the existing visual disturbances with the total study area. The figure indicates that an existing mine, namely the Syferfontein Mine, is located approximately 2 km north-west of the proposed Project, with the Mopane settlement and Mopane Intermediate School located within 350 m of the mine. Evidence of historical mining is also noted approximately 3.5 km south-east of the proposed Project. Regarding electrical infrastructure, a substation is located approximately 5 km east of the proposed Project, with electrical overhead power lines occurring mainly along the surrounding road networks and traversing the Avarel Private Nature Reserve. A railway line is also located approximately 2.5 km west of the proposed Project, which runs in a north-east to south-west direction and between the Mopane settlement and Syferfontein Mine. Additionally, a telecommunication tower was observed within the area approximately 10 km south-east of the proposed Project, and road lights occur on the N1 national route. Photo 7.30 to Photo 7.36 shows some of the existing visual disturbances within the study area as observed during the site visit and from Google Earth™ Street View.

Regarding the sensitivity of the visual receptors, it was noted from the satellite imagery and the site visit that the existing visual disturbances within the total study area are largely surrounded by existing natural vegetation which screen the visual disturbances from the surrounding visual receptors. Except for the taller infrastructure, such as overhead power lines and road lights, that protrude above the tree line and remain visible to the visual receptors. Furthermore, majority of the identified visual receptors visited during the site visit are interspersed and surrounded by the existing natural vegetation which assists in partially screening the surrounding visual disturbances from the identified visual receptors. The N1 national route, R525 main road and all secondary roads within the total study area were also traversed during the site visit. A moderate number of motorists were observed on the N1 national route, and a low number of motorists were observed on the R525 main road and secondary roads.

Overall, although the identified visual receptors are categorized as moderate to high sensitivity visual receptors, given the ability of the natural vegetation to partially screen the existing visual disturbances from the visual receptors, it is expected that the identified visual receptors will be moderately sensitive to the proposed Project.

The visual sensitivity of the employees of the existing mining and industrial activities, along with the road network servicing these areas must also be considered. These receptors are categorized as low sensitivity visual receptors as their attention is focused on the mining or industrial activities and not on the surrounding landscape.

Regarding the impact of the proposed Project on the surrounding landscape, due to the scale of the proposed Project, the height of the proposed Project's infrastructure, as well as the largely natural state of the total study area and the presence of many accommodation areas and recreational facilities, it is anticipated that the way in which the landscape is perceived by the visual receptors will be negatively affected by the proposed Project. This is relevant especially since the proposed Project will be viewed by tourists or individuals who visit the area for its scenic value, and if the visual exposure analysis determines that the proposed Project will be visible from the surrounding protected areas, accommodation areas and recreational facilities.

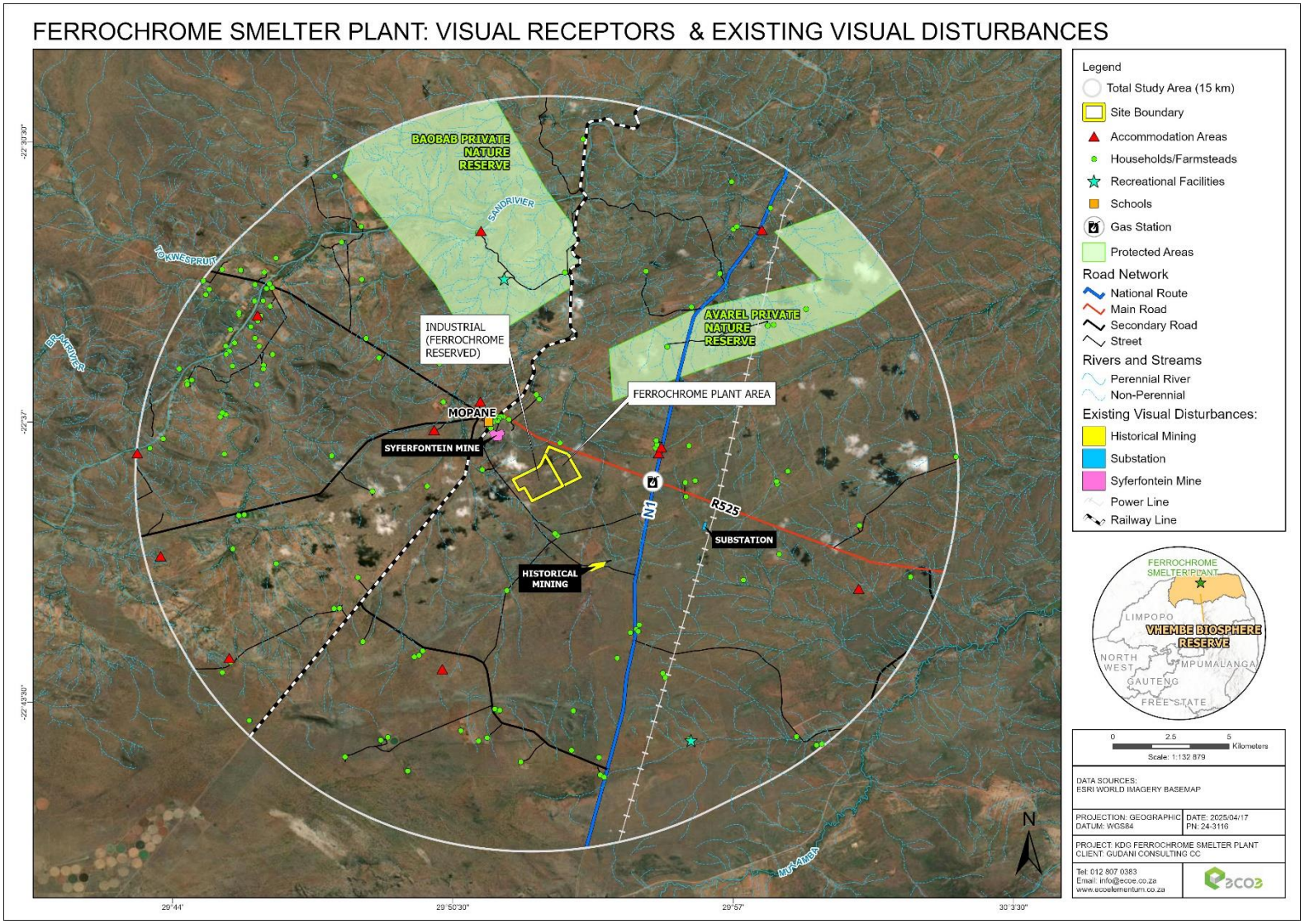

Figure 7-5: Identified visual receptors in relation to existing visual disturbances within the total study area

Photo 7.30: Syferfontein mining area

Photo 7.31: Mine dump at the Syferfontein Mine

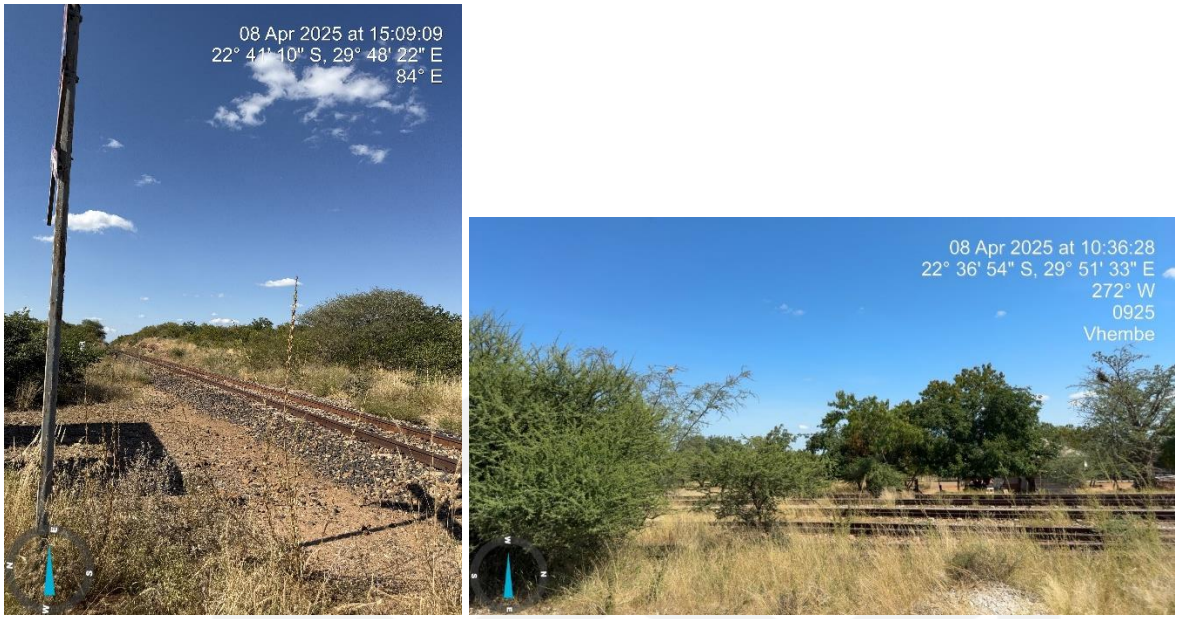

Photo 7.32: Existing railway line

Photo 7.33: Overhead power lines within the total study area

Photo 7.34: Overhead power lines alongside the boundary of the Avarel Private Nature Reserve (Google Earth™ Street View, imagery dated March 2024)

Photo 7.35: Lighting infrastructure along the N1 national route

Photo 7.36: Telecommunication tower

Photo 7.37: Natural vegetation surrounding the existing visual disturbances

Photo 7.38: Visual receptors interspersed and surrounded by the natural vegetation

Photo 7.39: Overhead power lines protruding above the tree line

7.6 Sense of place

The concept of “a Sense of Place” does not equate simply to the creation of picturesque landscapes or aesthetically pleasing buildings but recognising the importance of a sense of belonging. Embracing uniqueness, as opposed to standardization, attains quality of place. In terms of the natural environment, it requires the identification, a response to and the emphasis of the distinguishing features and characteristics of landscapes. Different natural landscapes suggest different responses. The current sense of place of the study area was established from the desktop analysis.

From the baseline description of the affected environment, the total study area has a unique sense of place originating from the largely natural state of the area, limited visual disturbances, abundant natural vegetation and unique topographic landscape comprising of flat to undulating terrain, with hills and ridges located mainly across the southern and northern areas of the total study area.

The total study areas sense of place further interlinks with the level of visual intrusion expected from the proposed Project. Visual intrusion refers to the level of compatibility of the proposed Project with the particular qualities of the area, which is related to the idea of context and maintaining integrity of the landscape (Oberholzer, 2005). Visual intrusion is categorized by Oberholzer, 2005 as follows:

- High visual intrusion – results in a noticeable change or is discordant with the surroundings.
- Moderate visual intrusion – partially fits into the surroundings, but clearly noticeable.
- Low visual intrusion – minimal change or blends in well with the surroundings.

Considering the total study areas current sense of place, the proposed Project is expected to create a high level of visual intrusion where the proposed Project is expected result in noticeable changes and is discordant with the surroundings.

8 CRITERIA USED IN THE ASSESSMENT OF IMPACTS

8.1 Visual Receptors

Visual receptors have been identified as indicated under Section 7.5. The identified visual receptors were used as a basis for determining potential visual impacts of the proposed Project.

8.2 Visual exposure

Visual exposure is based on the distance from the proposed Project to the identified visual receptors. Visual exposure impacts tend to diminish exponentially with distance. The visibility of any infrastructure or activity is the foundation for the VIA. It stands to reason that if the proposed Project were not visible, no significant visual impact would occur. Visual exposure was determined using the following variables:

- Slope angle.
- Aspect of slope.
- Landforms.
- Slope position of structure.
- Relative elevation of structures.
- Terrain ruggedness.

8.3 Viewshed

The viewshed is defined as the area of land surrounding and beyond the proposed Project which may be affected by the proposed Project. The overall viewshed has been determined using GIS and DSM data for the total study area, as mentioned in Section 4.

8.4 Landscape integrity

Landscape integrity are visual qualities represented by the following aspects, which enhance the visual and aesthetic experience of the total study area:

- Intactness of the natural and cultural landscape.
- Lack of visual intrusions or incompatible structures.
- Presence of a ‘sense of place’.

8.5 Visual absorption capacity (VAC)

Topography and built structures, such as buildings and other man-made structures, have the capacity to absorb visual impacts. The DSM utilised in the calculation of the visual exposure of the proposed Project does not fully incorporate potential VAC. Therefore, it is necessary to determine the VAC by means of the interpretation of the vegetation cover, landcover, topography and/or existing structures within the total study area. Landcover was used in the ranking of the VAC for this study.

9 VIEWSHED AND VISUAL EXPOSURE RESULTS AND DISCUSSION

Figure 9-1 to Figure 9-11 shows the viewshed and visual exposure results for the proposed Project.

9.1 Terrain slope

Figure 9-1 indicates the slope angles of the total study area. The results indicate that the proposed Project will be built on flat terrain, with an average slope of 0.78 degrees. The steeper slope angles occurring within the southern and northern regions of the total study area will assist in screening the proposed Project from the areas beyond these slopes. Furthermore, due to the proposed Projects position on a flat surface, it is expected that the proposed Project will be less visible to surrounding areas than if it were built on steeper slopes.

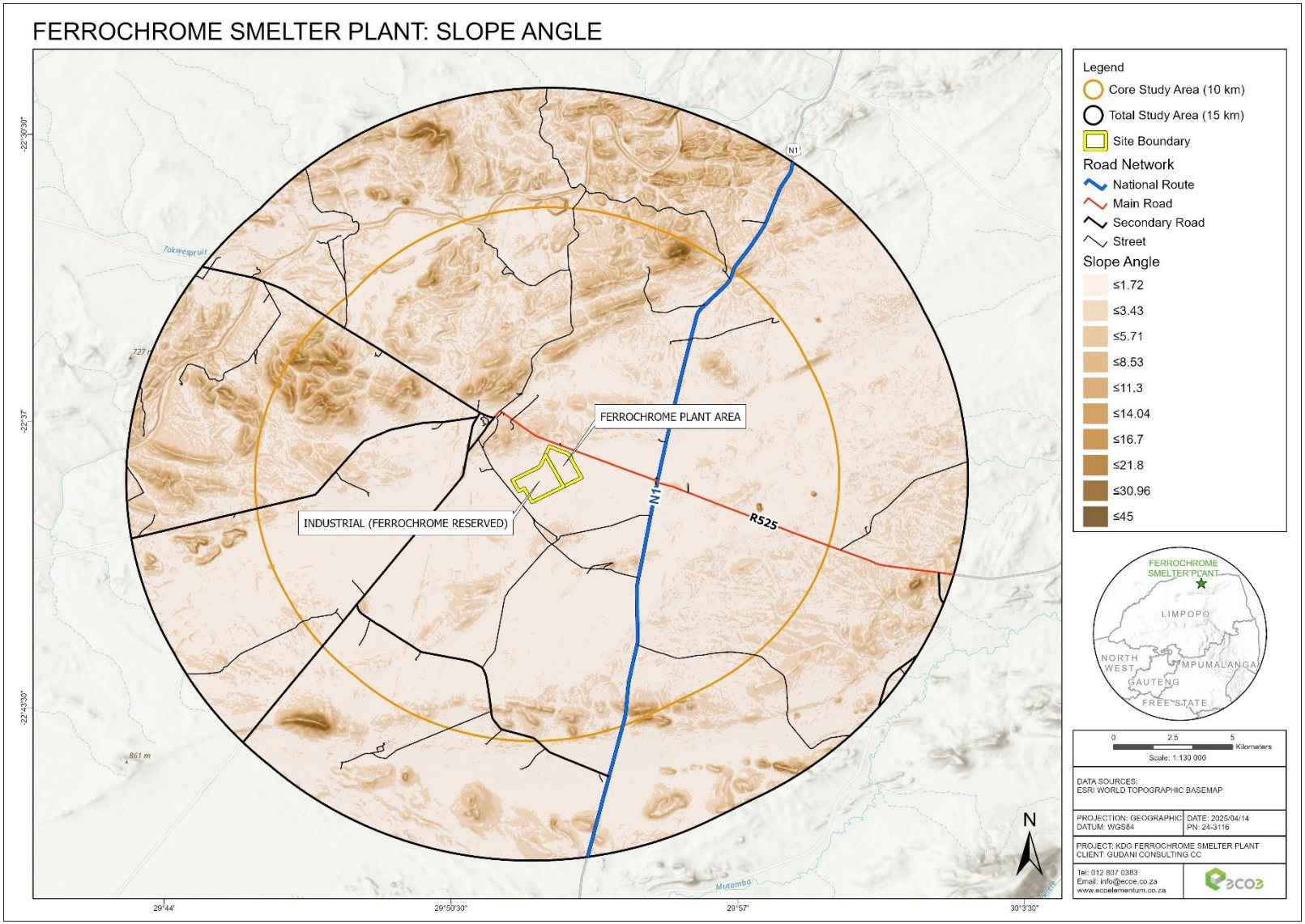

Figure 9-1: Slope angle

9.2 Aspect of the slope

Figure 9-2 shows the slope aspect of the total study area. The figure shows that the proposed Project infrastructure is located mainly on north and north-east facing slopes. Infrastructure on north facing slopes are generally less visible from areas in the south. Therefore, the proposed Project is expected to be less likely visible from the areas within the southern region of the total study area. However, the taller infrastructure, specifically the exhaust stacks and related emissions, are expected to still be visible from the southern regions.

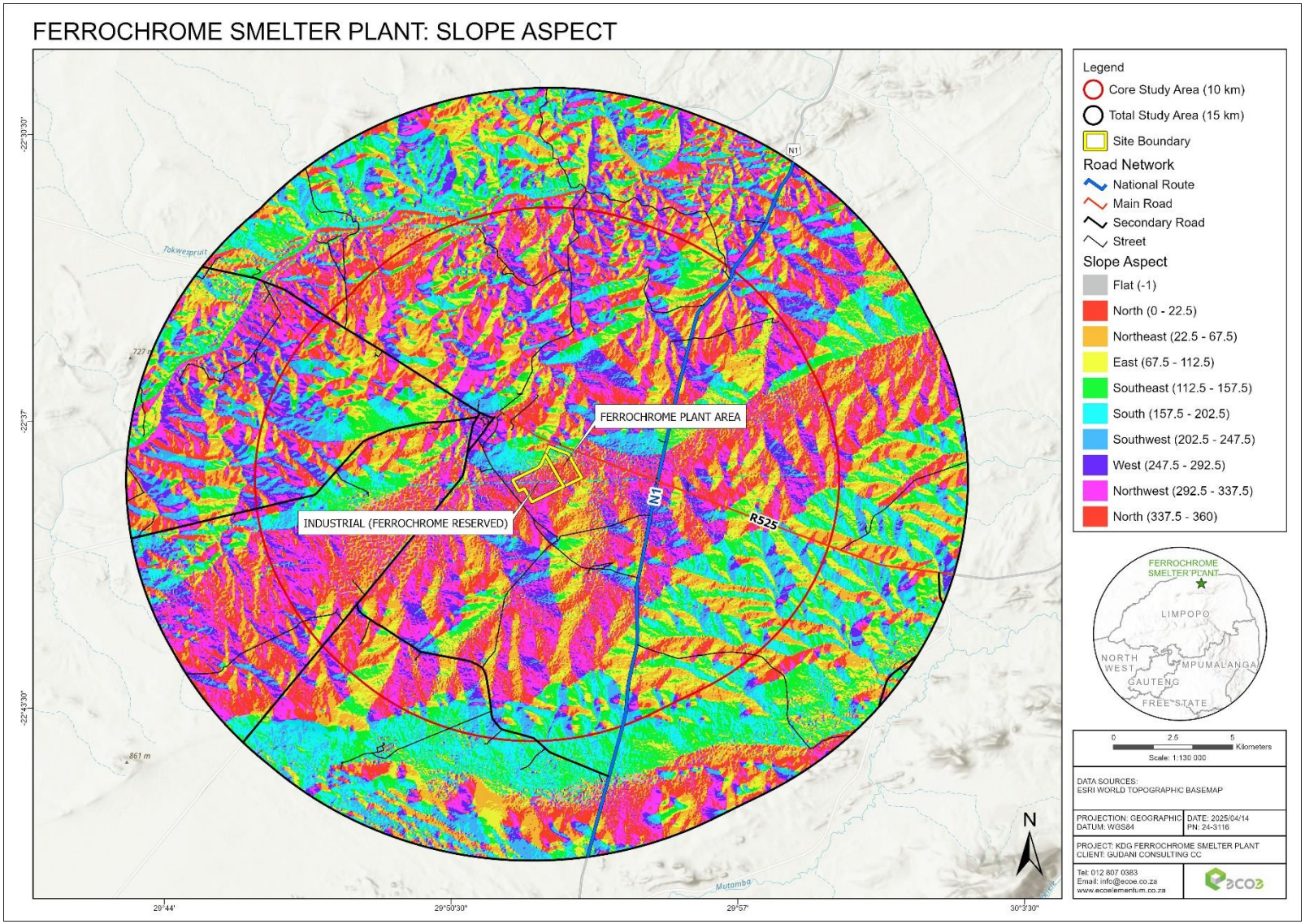

Figure 9-2: Slope aspect

9.3 Terrain ruggedness

The results of the terrain ruggedness indicated that the total study area has an overall low level of ruggedness which will decrease the areas VAC characteristics. However, the hills and ridges within the northern region of the total study area offer a rugged terrain which will increase the areas VAC characteristics and assist in screening the proposed Project from visual receptors located beyond the rugged terrain. Figure 9-3 shows the terrain ruggedness within 15 km of the proposed Project area.

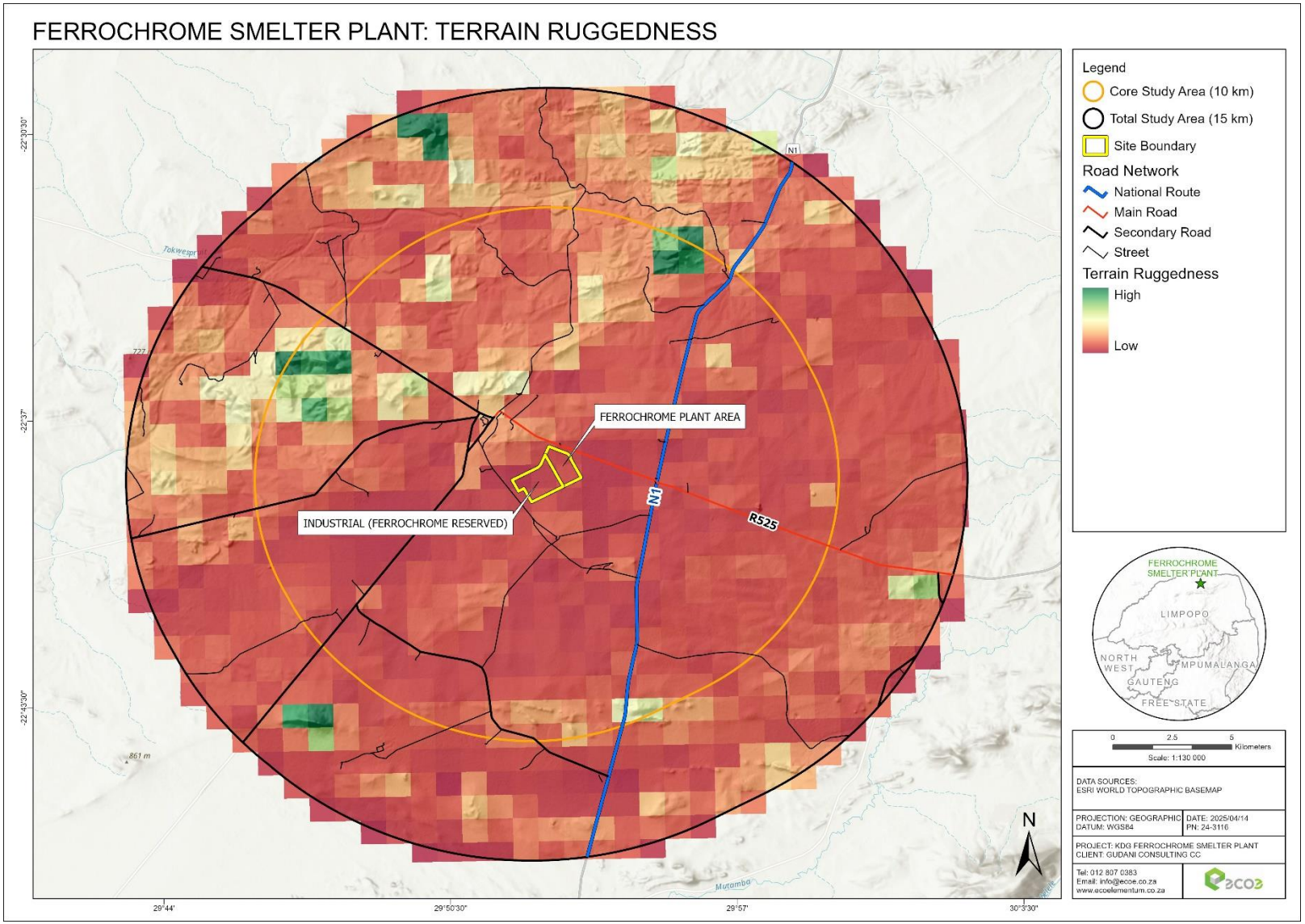

Figure 9-3: Terrain ruggedness

9.4 Relative elevation

The relative elevation results shows that the proposed Project occurs on low lying terrain relative to the surrounding areas elevation. Therefore, the proposed Project is expected to be less visible to surrounding areas than if it were built on much higher lying terrain. The higher lying areas within the total study area will assist in screening the proposed Project from visual receptors located beyond these high lying areas. However, should a visual receptor be located on a high lying area, the receptor may be susceptible to visual exposure. Figure 9-4 shows the relative elevation within the total study area.

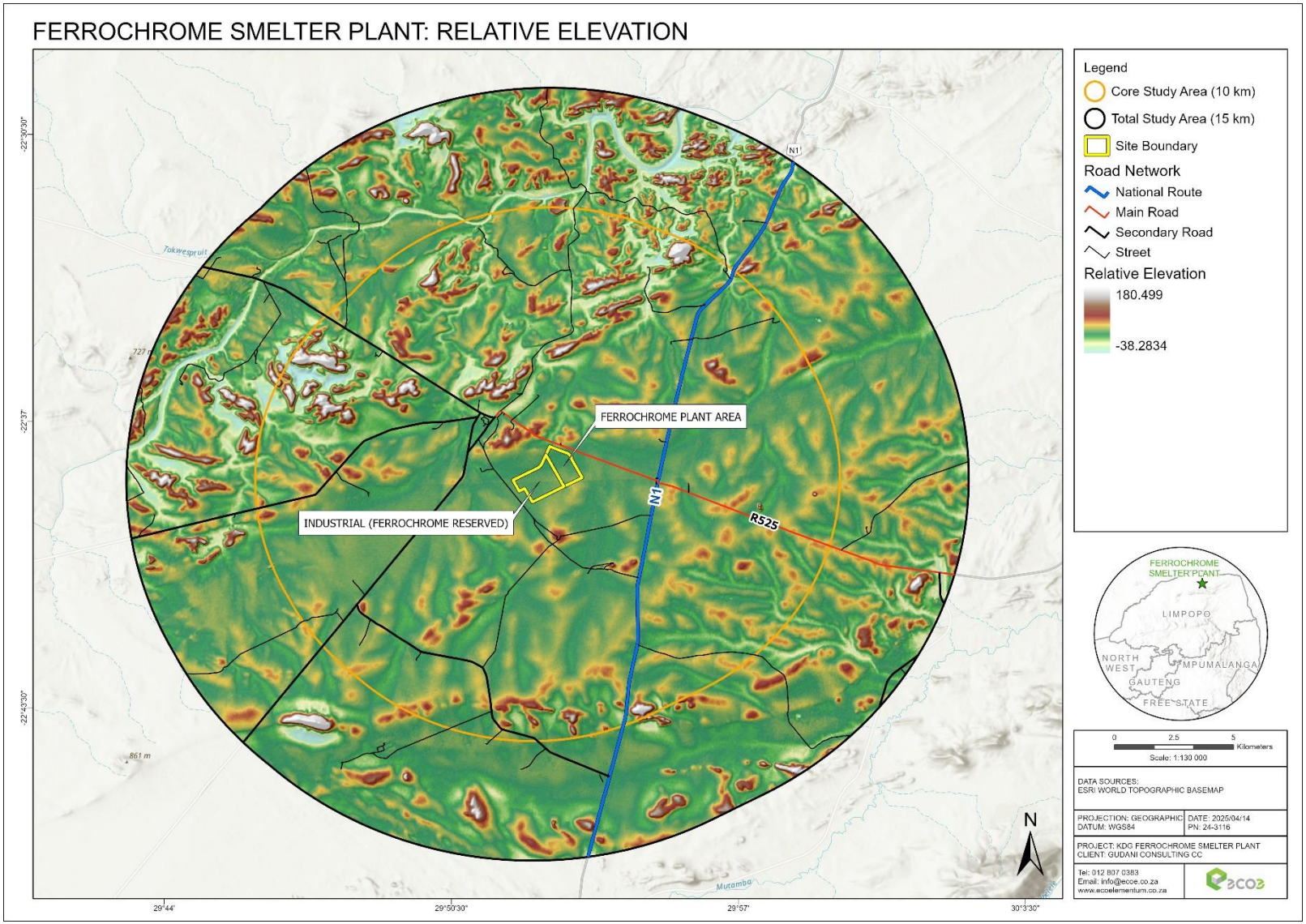

Figure 9-4: Relative elevation

9.5 Landforms

Figure 9-5 indicates the landforms within the total study area. The landform results show that the proposed Project infrastructure is situated on plains. The surrounding areas of upper slopes, mid slope ridges, small hills and high ridges are located within the total study area and these landform types may provide visual screening to the areas behind these landforms.

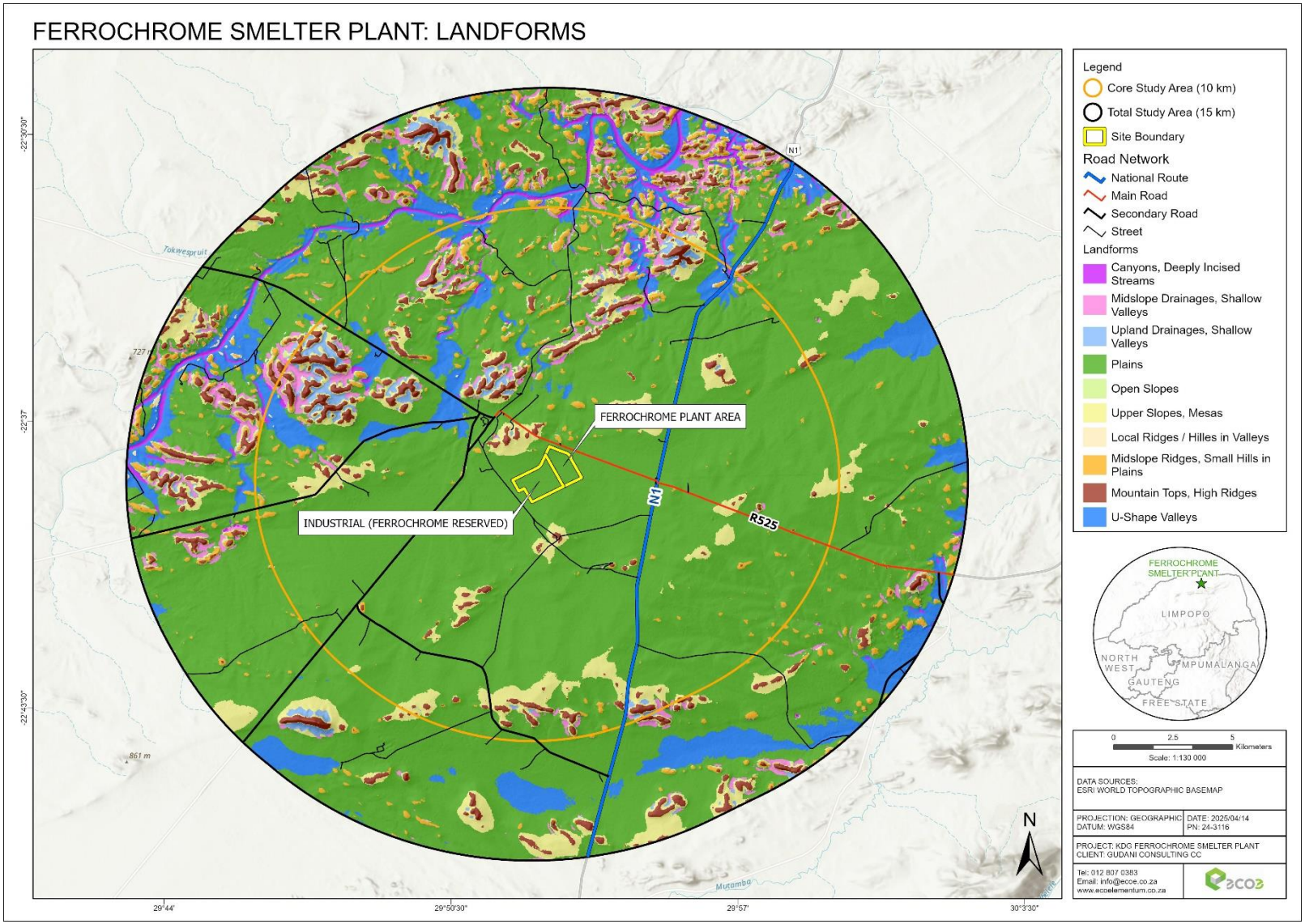

Figure 9-5: Landforms

9.6 Slope position

The results of the slope position (Figure 9-6) show that the proposed Project lies within a valley/cliff base, which to an extent will assist in concealing the proposed Project from the surrounding areas. The surrounding areas of mid slopes, upper slopes and ridges may further assist in screening the proposed Project from visual receptors. However, the proposed Project is more likely to be visible should a visual receptor be located on these high lying areas.

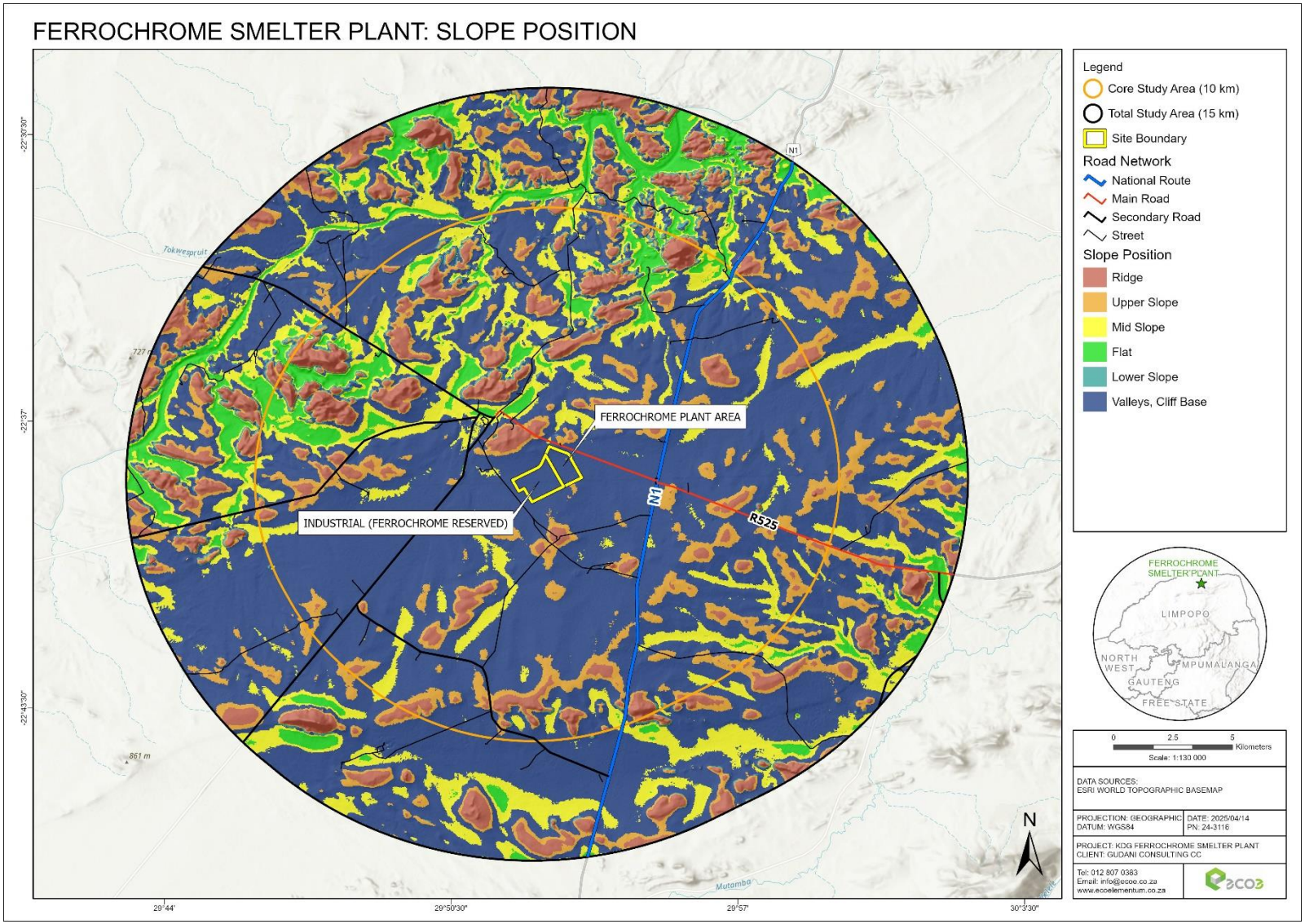

Figure 9-6: Slope positions

9.7 Landcover VAC

Figure 9-7 indicates the potential VAC of the total study area calculated using the surrounding landcover. The results show that the mining areas, residential areas, fallow land and old fields, and commercial annual crops create higher VAC levels relative to the remaining landcover types. However, these landcover types are sparse within the total study area and are expected not to effectively absorb visual impacts. Furthermore, the areas of natural grassland are expected to create the lowest VAC level and occurs sporadically within the total study area. The remaining areas within the total study area, comprising of open woodland, creates a moderate VAC level and will provide some screening of the proposed Project from the surrounding areas. On average, the results indicate that the total study area has a moderate level of VAC therefore, partial screening of the proposed Project by the landscape/receiving environment is expected.

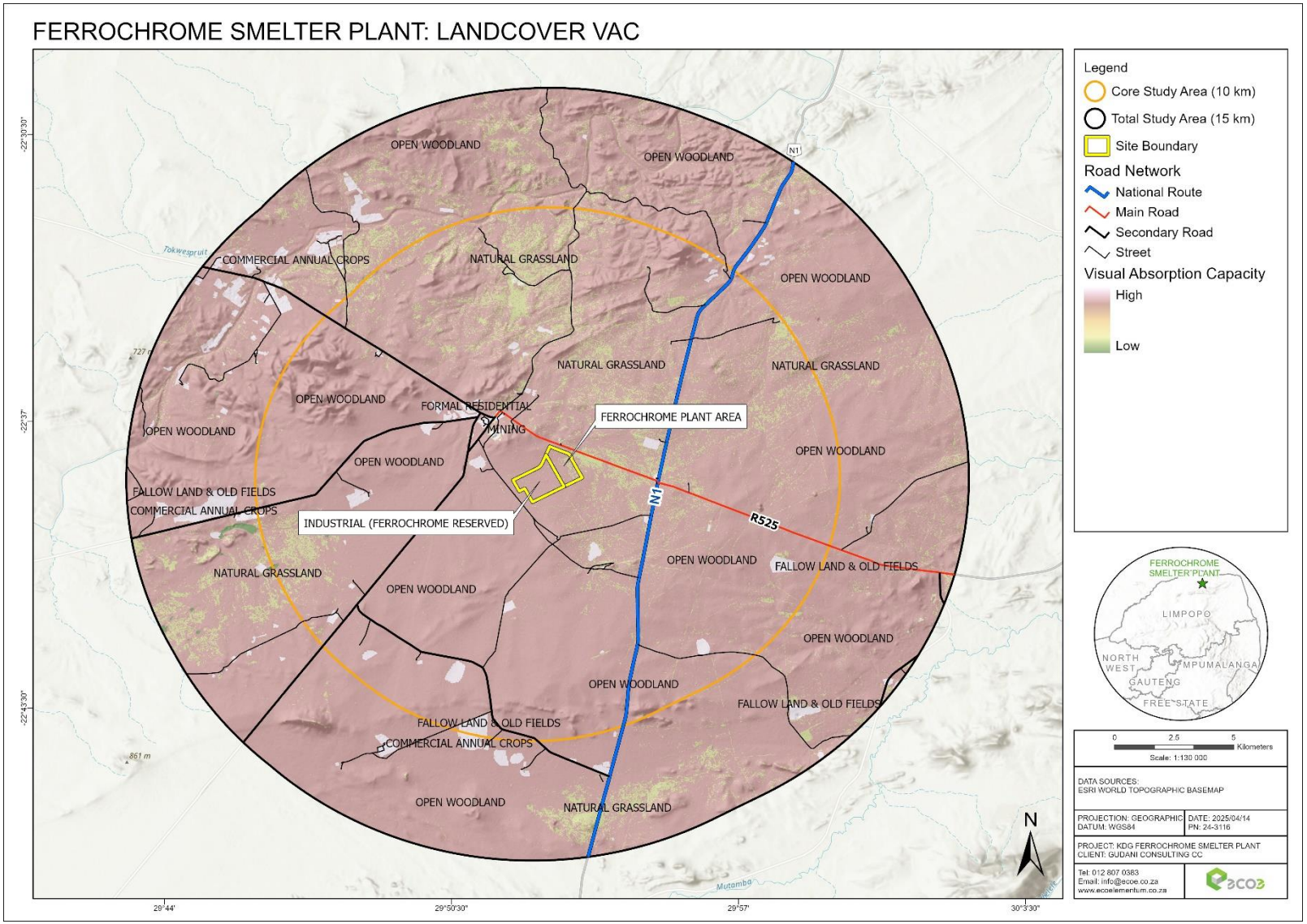

Figure 9-7: Potential visual absorption capacity

9.8 Viewshed and visibility count

Figure 9-8 shows the expected viewshed of the proposed Project. The viewshed results indicate that the proposed Project will be visible from approximately 26% of the total study area. Majority of the viewshed is concentrated within the core study area, and within the northern and south-western regions beyond the core study area. The remaining areas beyond the core study area are largely screened from the proposed Project by the surrounding topography. Within the core study area, the viewshed is concentrated within the eastern, western and southern regions.

For the visibility count analysis, the proposed Project was allocated 150 observer points, which represents the location and aboveground heights of the proposed Project infrastructure (refer to Figure 3-1 under Section 3 of this report). The visibility count analysis calculates the number of observer points that may be visible from any point within the viewshed. Figure 9-8 indicates that the highest number of observer points will be visible from majority of the viewshed within the core study area and from the areas approximately 14 km north and more than 10 km south-west of the proposed Project. Lower numbers of observer points are expected to be visible from the remaining areas covered by the viewshed.

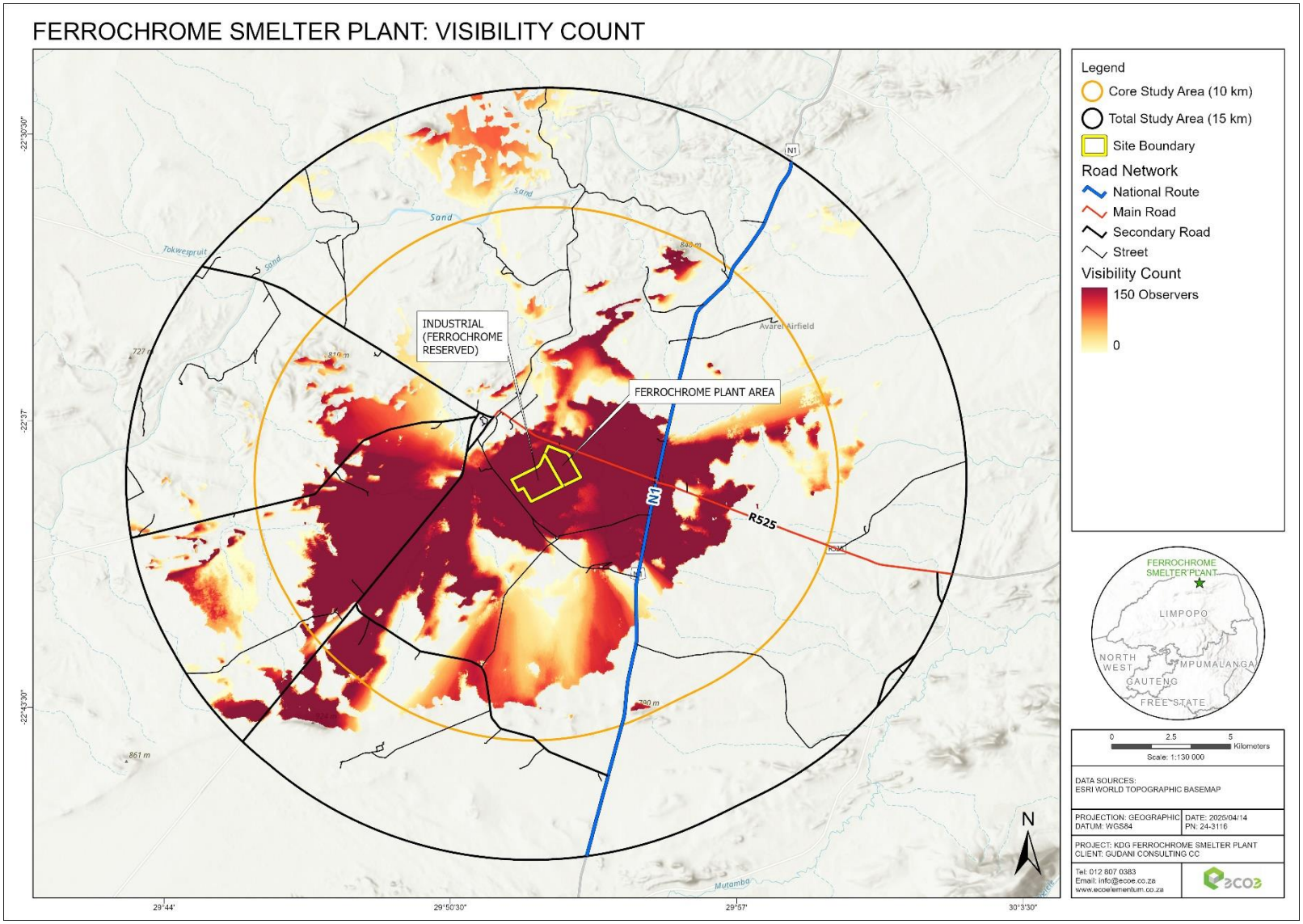

Figure 9-8: Viewshed visibility count

9.9 Viewshed visibility count distance ranking

The results of the viewshed visibility count were further ranked based on the distance from the proposed Project. The closest zone to the proposed Project designates the area of most significant impact from a visual point of view, and the furthest zone indicates the area of least impact. The visibility ratings of the zones have been defined in Table 9-1. It is important to note that although the ratings of the visibility zones have been defined by the distance from the proposed Project, the visual model also incorporates the results of the visibility count. Therefore, where the visibility zone is defined as very high, but the visibility count is low, the overall visibility impact can be low and vice versa.

Table 9-1: Visibility rating

DISTANCE	VISIBILITY RATING
0 – 1 km	Very High
1 – 2 km	High
2 – 5 km	Medium
5 – 10 km	Low
10 – 15 km	Very Low

Figure 9-9 indicates that the visibility impact level of the proposed Project will be very high from majority of the areas within 1 km of the proposed Project. Within 1 to 2 km of the proposed Project, very low to high visibility impact levels are expected from the areas north-east of the proposed Project, with medium to high visibility impact levels occurring within the remaining areas of this visibility zone. Furthermore, medium visibility impact levels are expected from the areas 2 to 5 km east and west of the proposed Project, and from the areas approximately 3 km north-west and 5 km north-east of the proposed Project. The remaining areas covered by the viewshed are expected to experience very low to low visibility impacts.

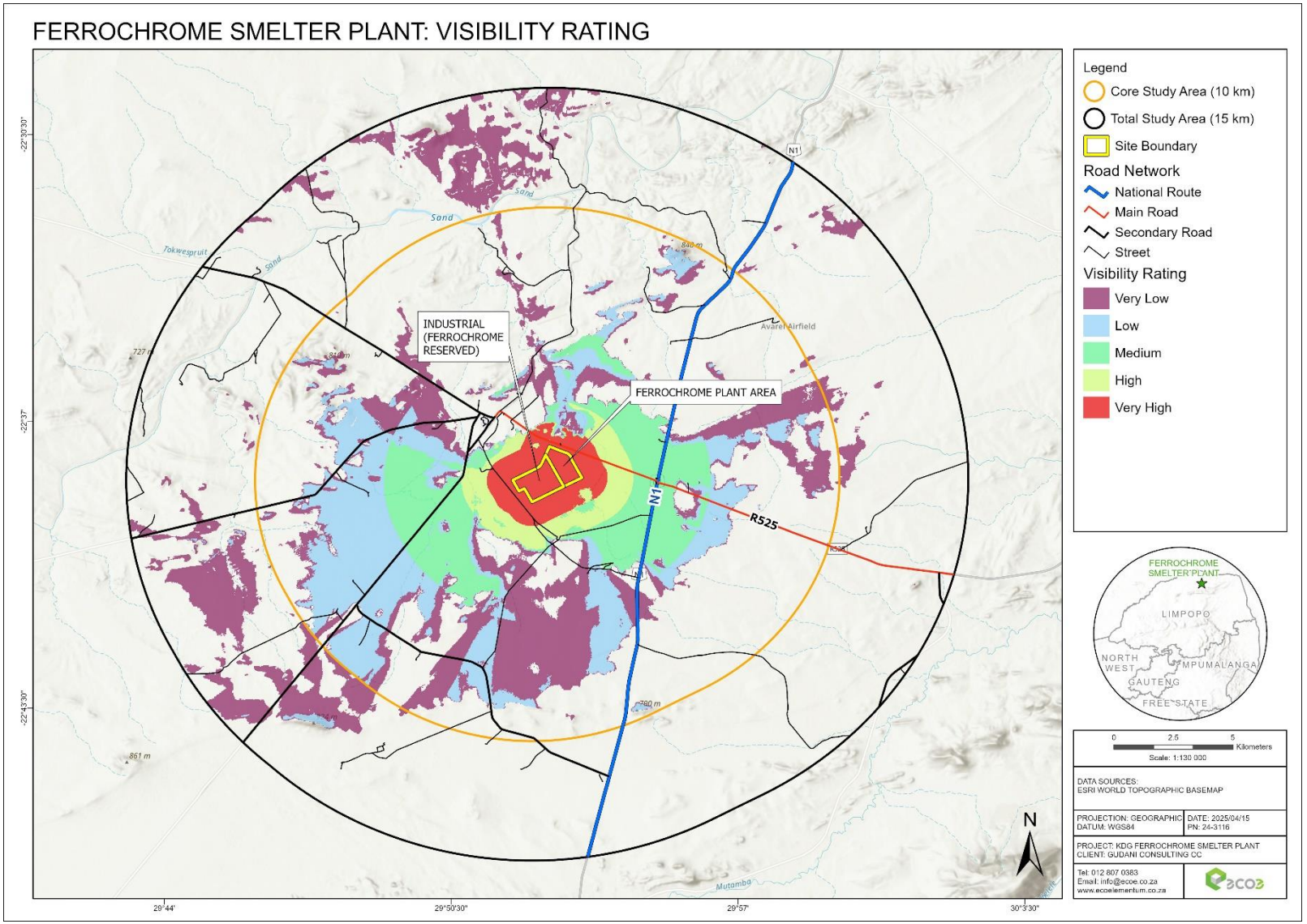

Figure 9-9: Visibility count distance rank

9.10 Visual exposure ranking

Through various raster calculations, the viewshed visibility count and distance ranking were then combined with the slope angle, slope aspect, slope position, ruggedness, relative elevation, landforms and landcover VAC to obtain a quantitative visual exposure ranking of the viewshed. Table 9-2 indicates the visual exposure rankings and Figure 9-10 shows the visual exposure results.

Table 9-2: Visual exposure ranking

VISUAL EXPOSURE RANKING	
1 – 2	Very Low
3 – 4	Low
5 – 6	Medium
7 – 8	High
9 – 10	Very High

Figure 9-10 indicates that medium to very high visual exposure levels are expected from the areas approximately 8.5 km to 9.5 km north-east of the proposed Project. Furthermore, medium to high visual exposure levels are expected from the areas approximately 300 m and 3 km north-west of the Ferrochrome Plant Area, and from the areas approximately 7.7 km to 10 km north-west and 12 km south-west of the Industrial (Ferrochrome Reserved) Area. Medium visual exposure levels are expected from the areas approximately 300 m north, 750 m south, 1.2 km west, 6.8 km north-west and 11.6 km south-west of the Industrial (Ferrochrome Reserved) Area; and from the areas approximately 4 km north-east, 13.5 km north-west and 9.5 km south of the Ferrochrome Plant Area. The remaining areas within the viewshed are expected to experience very low to low levels of visual exposure from the proposed Project.

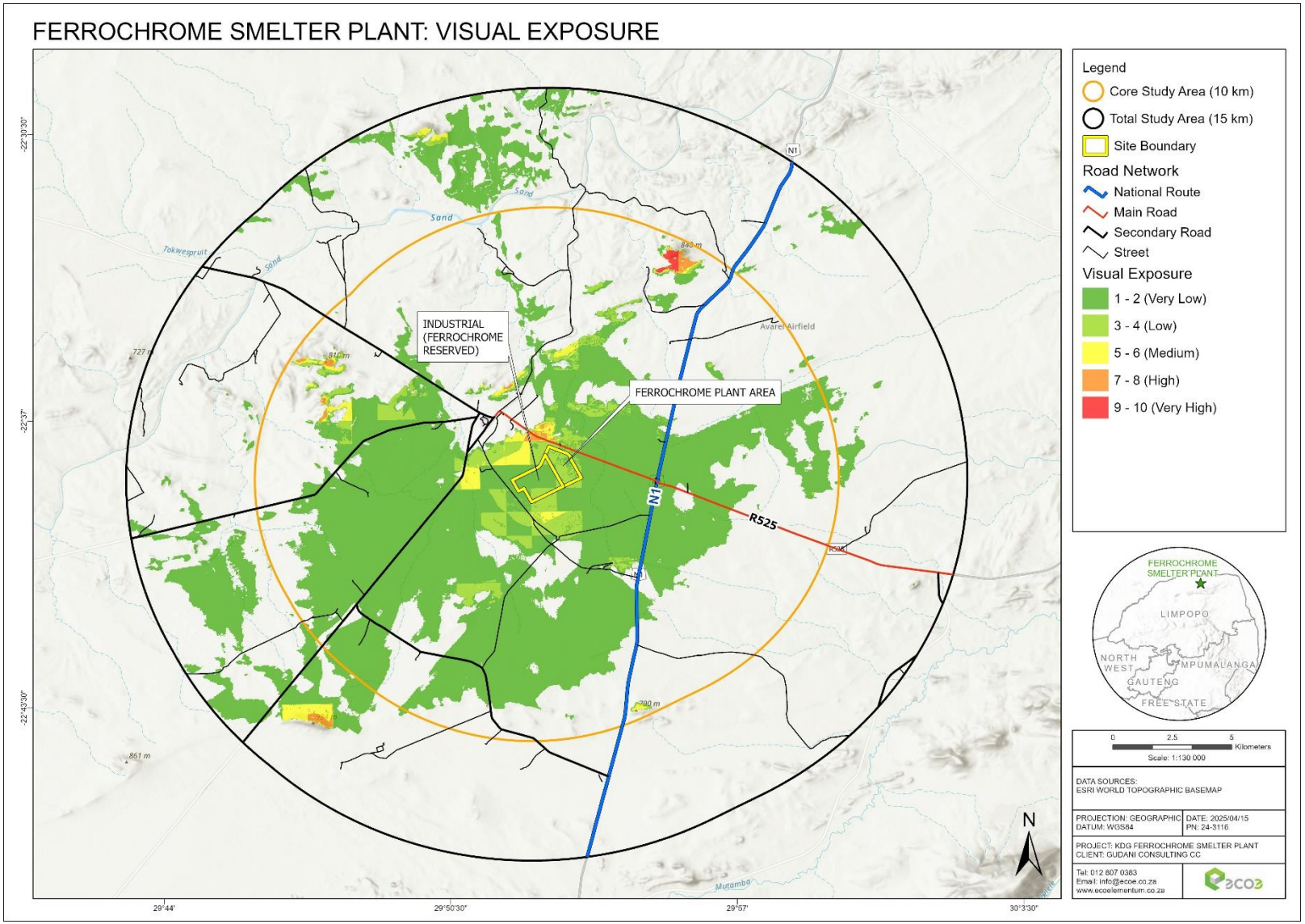

Figure 9-10: Visual exposure

9.11 Visual receptors and visual exposure

Each identified visual receptor was overlaid on the visual exposure ranking to determine the level of visual impact potentially experienced by the identified visual receptor (Figure 9-11). It is important to note that the GIS tools used to quantify the overall visual exposure levels, only incorporates the variables as described in this report. Factors such as real time and micro scale vegetation are not considered, thus the actual level of visual exposure may be lower or higher depending on the updated land use in the vicinity or current vegetation growth/height on a micro and macro scale. The results are by no means a rating of visual quality; it is rather used to determine the likelihood of the proposed Project being visible from the visual receptors.

Figure 9-11 indicates that 18% of the identified point location visual receptors (i.e. the accommodation areas, households and farmsteads, recreational facilities, gas station and school) fall within the viewshed and are all expected to experience very low to low levels of visual exposure from the proposed Project. Furthermore, the results indicate that the Mopane settlement will be completely screened from the proposed Project by the surrounding topography.

Regarding the users of the road network within the total study area, the results show that the proposed Project will be visually exposed to minimal portions of the road network. Where visual exposure is expected, these levels are very low; except for a 600 m portion of the R525 main road, approximately 300 m north of the proposed Project, where high visual exposure levels are expected. Furthermore, the results indicate that the proposed Project will be visible from approximately 7 km of the N1 national route, from approximately 4 km north-east to 6 km south-east of the Ferrochrome Plant Area; and from approximately 8 km of the R525 main road, from approximately 1 km north-west to 6 km east of the Ferrochrome Plant Area. The remaining length of these roads are expected to be topographically screened from the proposed Project.

Furthermore, the visual exposure results indicate that majority of the two national protected areas will be topographically screened from the proposed Project. Where visual exposure levels are expected, the visual exposure levels are low to very low, except for a minimal portion of the Baobab Private Nature Reserve, approximately 13.6 km north-west of the Ferrochrome Plant Area, where medium visual exposure levels are expected.

Overall, the results indicate that majority of the visual receptors will be topographically screened from the proposed Project. Where visual exposure is expected from the visual receptors, the level of visual exposure is expected to be low to very low. Except for a portion of the R525 main road and a portion of the Baobab Private Nature Reserve which are expected to experience high and medium visual exposure levels respectively, from the proposed Project. The expected low levels of visual exposure are mainly due to the areas moderate VAC level and the location of the affected visual receptors and proposed Project on flat terrain and not high lying areas.

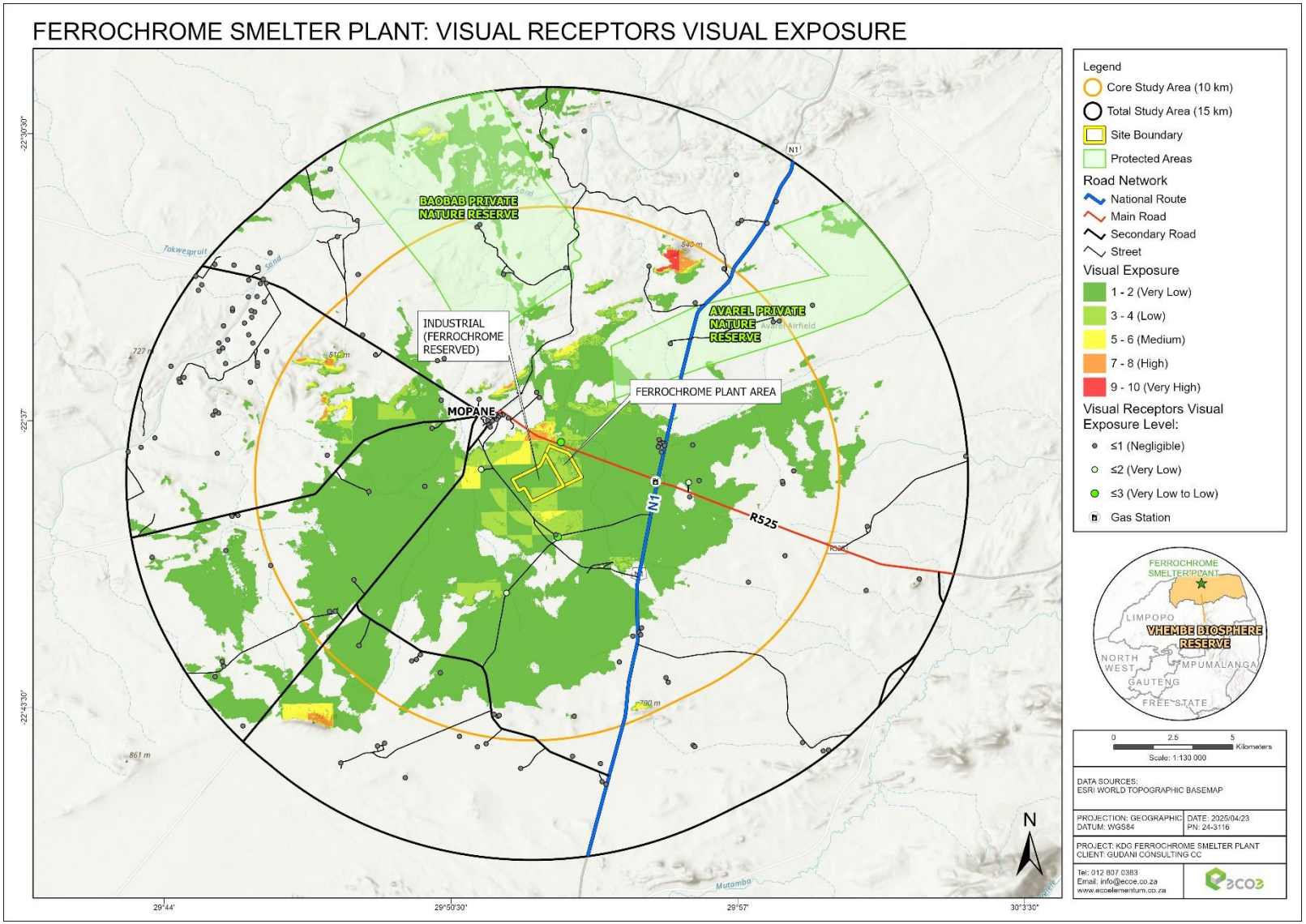

Figure 9-11: Visual exposure and visual receptors

10 VISUAL IMPACT ASSESSMENT

10.1 Impact criteria

All specialists were required to assess the proposed Project in relation to the construction (inclusive of site preparation), operational, closure and decommissioning phases to identify the potential impacts that may be associated with the proposed Project. This assessment also enables the selection of appropriate mitigation measures that can be implemented to reduce or eliminate the identified potential negative impacts. The impact assessment methodology, as detailed below, has been formalised by EcoE and was applied to this VIA. Table 10-1 to Table 10-4 provide the criteria considered and methodology used to quantify the significance of visual impacts before and after the implementation of the recommended mitigation measures.

Table 10-1: Impact assessment criteria and assigned rating

Magnitude/Severity		**Rating**
The intensity of the impact is considered by examining whether the impact is destructive or benign, whether it has a significant, moderate or insignificant		
(L)OW	The impact alters the affected environment in such a way that the natural processes or functions are not affected.	**1**
(M)EDIUM	The affected environment is altered, but functions and processes continue, albeit in a modified way.	**3**
(H)IGH	Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.	**5**
Duration		
The lifetime of the impact, that is measure in relation to the lifetime of the proposed development.		
(S)HORT TERM	The impact will either disappear with mitigation or will be mitigated through a natural process in a period shorter than that of the construction phase.	**1**
(SM) SHORT - MEDIUM TERM	The impact will be relevant through to the end of a construction phase.	**2**
(M)MEDIUM	The impact will last up to the end of the development phases, where after it will be entirely negated.	**3**
(L)ONG TERM	The impact will continue or last for the entire operational lifetime (i.e. exceed 20 years) of the development, but will be mitigated by direct human action or by natural processes thereafter.	**4**
(P)ERMANENT	This is the only class of impact, which will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact is transient.	**5**
Spatial Scale/Extent		
Classification of the physical and spatial aspect of the impact		
(F)OOTPRINT	The impacted area extends only as far as the activity, such as footprint occurring within the total site area.	**1**
(S)ITE	The impact could affect the whole, or a significant portion of the site.	**2**

(R)EGIONAL	The impact could affect the area including the neighbouring Farms, the transport routes and the adjoining towns.	**3**
(N)ATIONAL	The impact could have an effect that expands throughout the country (South Africa).	**4**
(I)NTERNATIONAL	Where the impact has international ramifications that extend beyond the boundaries of South Africa.	**5**
Probability		
This describes the likelihood of the impact actually occurring. The impact may occur for any length of time during the life cycle of the activity. The classes are rated as follows:		
(I)MPROBABLE	The possibility of the Impact occurring is none, due to the circumstances or design. The chance of this Impact occurring is zero (0%)	**1**
(P)OSSIBLE	The possibility of the Impact occurring is very low, due either to the circumstances or design. The chance of this Impact occurring is defined as 25% or less	**2**
(L)IKELY	There is a possibility that the impact will occur to the extent that provisions must therefore be made. The chances of Impact occurring is defined as 50%	**3**
(H)IGHLY LIKELY	It is most likely that the Impacts will occur at some stage of the development. Plans must be drawn up before carrying out the activity. The chances of this impact occurring is defined as 75 %.	**4**
(D)EFINITE	The impact will take place regardless of any prevention plans, and only mitigation actions or contingency plans to contain the effect can be relied on. The chance of this impact occurring is defined as 100 %.	**5**
Weighting Factor		
Subjective score assigned by Impact Assessor to give the relative importance of a particular environmental component based on project knowledge and previous experience. Simply, such a weighting factor is indicative of the importance of the impact in terms of the potential effect that it could have on the surrounding environment. Therefore, the aspects considered to have a relatively high value will score a relatively higher weighting than that which is of lower importance		
(L)OW		**1**
LOW- MEDIUM		**2**
MEDIUM (M)		**3**
MEDIUM-HIGH		**4**
HIGH (H)		**5**
Mitigation Measures and Mitigation Efficiency		
Determination of significance refers to the foreseeable significance of the impact after the successful implementation of the necessary mitigation measures		
Mitigation measures were recommended to enhance benefits and minimise negative impacts and address the following: Mitigation objectives: what level of mitigation must be aimed at: For each identified impact, the specialist must provide mitigation objectives (tolerance limits) which would result in measurable reduction in impact. Where limited knowledge or expertise exists on such tolerance limits, the specialist must make “educated guesses” based on professional experience;		

Recommended mitigation measures: For each impact the specialist must recommend practicable mitigation actions that can measurably affect the significance rating. The specialist must also identify management actions, which could enhance the condition of the environment. Where no mitigation is considered feasible, this must be stated and reasons provided;
Effectiveness of mitigation measures: The specialist must provide quantifiable standards (performance criteria) for reviewing or tracking the effectiveness of the proposed mitigation actions, where possible; and
Recommended monitoring and evaluation programme: The specialist is required to recommend an appropriate monitoring and review programme, which can track the efficacy of the mitigation objectives. Each environmental impact is to be assessed before and after mitigation measures have been implemented.
The management objectives, design standards, etc., which, if achieved, can eliminate, minimise or enhance potential impacts or benefits. National standards or criteria are examples, which can be stated as mitigation objectives.

HIGH	The impact is of major importance. Mitigation of the impact is not possible on a cost-effective basis. The impact is regarded as high importance and taken within the overall context of the project, is regarded as a fatal flaw. An impact regarded as high significance, after mitigation could render the entire development option or entire project proposal unacceptable.	**1.00**
MEDIUM-HIGH	The impact is of major importance but through the implementation of the correct mitigation measures, the negative impacts will be reduced to acceptable levels	**0.80**
MEDIUM	Notwithstanding the successful implementation of the mitigation measures, to reduce the negative impacts to acceptable levels, the negative impact will remain of significance. However, taken within the overall context of the project, the persistent impact does not constitute a fatal flaw	**0.60**
LOW -MEDIUM	The impact is of importance, however, through the implementation of the correct mitigation measures such potential impacts can be reduced to acceptable levels	**0.40**
LOW	The impact will be mitigated to the point where it is of limited importance	**0.20**
POSITIVE HIGH	Improvement to the environment	**1.20**

Table 10-2: Impact assessment significance matrix

Extent	Duration	Intensity	Probability	Weighting Factor (WF)	Significance Rating (SR)	Mitigation Efficiency (ME)	Significance Following Mitigation (SFM)
Footprint 1	Short term 1	Low 1	Probable 1	Low 1	Low 0-19	High 0,2	Low 0-19
Site 2	Short to medium 2		Possible 2	Low to medium 2	Low to medium 20-39	Medium to high 0,4	Low to medium 20-39
Regional 3	Medium term 3	Medium 3	Likely 3	Medium 3	Medium 40-59	Medium 0,6	Medium 40-59
National 4	Long term 4		Highly Likely 4	Medium to high 4	Medium to high 60-79	Low to medium 0,8	Medium to high 60-79
International 5	Permanent 5	High 5	Definite 5	High 5	High 80-100	Low 1,0	High 80-100

Table 10-3: Significance rating scale without mitigation

Potential Impacts Without Mitigation Measures (WOM) Following the assignment of the necessary weights to the respective aspects, criteria are summed and multiplied by their assigned weightings, resulting in a value for each impact (prior to the implementation of mitigation measures).		
SIGNIFICANT RATING EQUATION Significant Rating (SR) = (Extent + Intensity + Duration) x Probability		
S=0	**INSIGNIFICANT**	The impact will be mitigated to the point where it is regarded as insubstantial
SR < 30	**LOW (L)**	The impact will be mitigated to the point where it is of limited importance.
20<SR<39	**LOW- MEDIUM**	The impact is of importance, however, through the implementation of the correct mitigation measures such potential impacts can be reduced to acceptable levels;
40> SR < 59	**MEDIUM (M)**	Notwithstanding the successful implementation of the mitigation measures, to reduce the negative impacts to acceptable levels, the negative impact will remain of significance. However, taken within the overall context of the project, the persistent impact does not constitute a fatal flaw.
60<SR>79	**MEDIUM-HIGH**	The impact is of major importance but through the implementation of the correct mitigation measures, the negative impacts will be reduced to acceptable levels.
80<SR > 100	**HIGH (H)**	The impact is of major importance. Mitigation of the impact is not possible on a cost-effective basis. The impact is regarded as high importance and taken within the overall context of the project, is regarded as a fatal flaw. An impact regarded as high significance, after mitigation could render the entire development option or entire project proposal unacceptable.

Table 10-4: Significant rating scale with mitigation

Potential Impacts with Mitigation Measures (WM) – In order to gain a comprehensive understanding of the overall significance of the impact, after implementation of the mitigation measures, it will be necessary to re-evaluate the impact.		
SIGNIFICANT RATING WITH MITIGATION EQUATION Significance Rating (WM) = Significance Rating (WOM) x Mitigation Efficiency Or WM = WOM x ME		
S=0	**INSIGNIFICANT**	The impact will be mitigated to the point where it is regarded as insubstantial.
SR < 30	**LOW (L)**	The impact will be mitigated to the point where it is of limited importance.
20<SR<39	**LOW- MEDIUM**	The impact is of importance, however, through the implementation of the correct mitigation measures such potential impacts can be reduced to acceptable. levels;
40> SR < 59	**MEDIUM (M)**	Notwithstanding the successful implementation of the mitigation measures, to reduce the negative impacts to acceptable levels, the negative impact will remain of significance. However, taken within the overall context of the project, the persistent impact does not constitute a fatal flaw.
60<SR>79	**MEDIUM-HIGH**	The impact is of major importance but through the implementation of the correct mitigation measures, the negative impacts will be reduced to acceptable levels.
80<SR > 100	**HIGH (H)**	The impact is of major importance. Mitigation of the impact is not possible on a cost-effective basis. The impact is regarded as high importance and taken within the overall context of the project, is regarded as a fatal flaw. An impact regarded as high significance, after mitigation could render the entire development option or entire project proposal unacceptable.

10.2 Visual impact assessment

Table 10-5 shows the identified visual impacts rated according to the above methodology. The impact ratings consider the description of the affected environment along with the results of the viewshed and visual exposure analyses.

Table 10-5: Impact assessment

				Category Rating														
Activity	**Aspect**	**Impact**	**Phase**	**Extent**	**Severity**	**Duration**	**Probability**	**Weighting Factor**	**+/-**	**Significance without mitigation**		**+/-**	**Mitigation efficiency**	**Significance with mitigation**		**Mitigation measures**	**Action Plan**	**Mitigation & management objective**	**Mitigation & management goals**
Site Clearance and project establishment	Removal of topsoil and vegetation Cut and fill activities Increased human activity, construction vehicles and heavy machinery Presence of laydown areas and construction camps Presence of temporary soil stockpiles	Change in landscape character and sense of place due to the site being more visible, the land use change and the increase in vehicular activity Dust creation on-site and on the surrounding road network	Construction Phase	3	3	4	4	4	-	56	Med	-	0.8	44.8	Med	Limit the construction footprint to only the development area Limit the duration of the construction phase Visually screen the proposed Project from the surrounding visual receptors Buildings and ancillary infrastructure should blend in with the landscape Regulate the number and speed of vehicles travelling on and off site Implement dust suppression activities on dust emitting sources Disturbed areas should be rehabilitated/revegetated as soon as practically possible	Clearly demarcate the development area and ensure that the demarcations are not visually intrusive. Limit the duration of the construction phase through careful planning Establish and/or maintain visual screens in the form of indigenous vegetation around the entire proposed Project site boundary and within the proposed Project footprint. This will assist in obscuring the view of the construction related activities from the surrounding visual receptors Locate laydown areas and construction camps in areas where they would be less visible to the surrounding visual receptors, or screen these areas using suitable screening methods Consult a botanist and/or landscape architect if needed Buildings and ancillary infrastructure should be painted natural colours that blend in with the surroundings and highly reflective materials should not be used Carefully plan to minimize the number of vehicles on the surrounding road network at a given time Use existing roads where possible Implement a suitable speed limit of construction vehicles travelling on and off site to limit dust creation	To ensure that the total study areas landscape character and sense of place remains unchanged as much as possible	To reduce any changes to the total study areas landscape character and sense of place by implementing the recommended mitigation measures and action plans

				Category Rating													
Activity	**Aspect**	**Impact**	**Phase**	**Extent**	**Severity**	**Duration**	**Probability**	**Weighting Factor**	**+/-**	**Significance without mitigation**	**+/-**	**Mitigation efficiency**	**Significance with mitigation**	**Mitigation measures**	**Action Plan**	**Mitigation & management objective**	**Mitigation & management goals**
															Identify the significant dust emitting sources and implement regular dust suppression activities where necessary Ensure ongoing rehabilitation and revegetation of disturbed areas where possible Ensure ongoing housekeeping Establish and maintain a suitable system for addressing grievances/complaints pertaining to visual aspects of the proposed Project		
Construction related activities	Construction waste generation	Visual disturbance	Construction Phase	2	3	2	3	2	-	20	Low-Med	-	0.4	8	Low	Ensure ongoing housekeeping	Ensure that all construction related waste is disposed of in a licensed waste management facility If waste is not disposed of timeously, ensure that all construction waste is stored in a neat and tidy manner on site Ensure sufficient waste skips and bins are provided for the temporary storage of waste on site Establish and maintain a suitable system for addressing grievances/complaints pertaining to visual aspects of the proposed Project	To ensure that the total study areas landscape character and sense of place remains unchanged as much as possible	To reduce any changes to the total study areas landscape character and sense of place by implementing the recommended mitigation measures and action plans
Construction related activities	Night lighting	Light pollution at night on the identified visual receptors and surrounding landscape Change in sense of place	Construction Phase	3	3	2	3	3	-	33	Low-Med	-	0.6	19.8	Low-Med	Reduce unnecessary spill light, glare and flood lighting	Choose lighting types which reduce spill light and glare Only focus lighting to areas where it is needed Utilise methods such as dimmers, motion sensor lights and timers to reduce lighting impacts	To ensure that the total study areas landscape character and sense of place remains unchanged as	To reduce any changes to the total study areas landscape character and sense of place by implementing

				Category Rating													
Activity	**Aspect**	**Impact**	**Phase**	**Extent**	**Severity**	**Duration**	**Probability**	**Weighting Factor**	**+/-**	**Significance without mitigation**		**+/-**	**Mitigation efficiency**	**Significance with mitigation**		**Mitigation measures**	**Action Plan**	**Mitigation & management objective**	**Mitigation & management goals**
																	The construction activities should be limited to daylight hours where possible Implement ongoing inspections of light emitting sources to ensure they are in working order, not flickering and causing additional light pollution Establish and maintain a suitable system for addressing grievances/complaints pertaining to visual aspects of the proposed Project	much as possible	the recommended mitigation measures and action plans
Operational related activities	Presence and operation of the proposed Project	Visual intrusion leading to a change in sense of place and landscape character	Operational Phase	3	5	4	4	5	-	80	High	-	0.8	64	Med - High	Visually screen the proposed Project from the surrounding visual receptors Regulate the number and speed of vehicles on and off site Implement dust suppression activities on dust emitting sources Disturbed areas should be continuously rehabilitated or revegetated	Establish and/or maintain visual screens in the form of indigenous vegetation around the entire proposed Project site boundary and within the proposed Project footprint. This will assist in decreasing the level of visual intrusion of the proposed Project on the surrounding landscape Ensure that no additional vegetation is removed Progressively vegetate any stockpiles with exposed side slopes with suitable indigenous vegetation Progressively shape any stockpile side slopes to blend in with the natural landscape created by the surrounding hilly areas Ensure that no additional vegetation is removed Carefully plan to minimize the number of vehicles on the surrounding road network at a given time Use existing roads where possible Implement a suitable speed limit of operational	To ensure that the total study areas landscape character and sense of place remains unchanged as much as possible	To reduce any changes to the total study areas landscape character and sense of place by implementing the recommended mitigation measures and action plans

				Category Rating													
Activity	**Aspect**	**Impact**	**Phase**	**Extent**	**Severity**	**Duration**	**Probability**	**Weighting Factor**	**+/-**	**Significance without mitigation**	**+/-**	**Mitigation efficiency**	**Significance with mitigation**	**Mitigation measures**	**Action Plan**	**Mitigation & management objective**	**Mitigation & management goals**
															vehicles travelling on and off site to limit dust creation. Identify the significant dust emitting sources and implement regular dust suppression activities where necessary Ensure ongoing rehabilitation and revegetation of disturbed areas where possible Ensure ongoing housekeeping Establish and maintain a suitable system for addressing grievances/complaints pertaining to visual aspects of the proposed Project		
Operational related activities	Presence and operation of the proposed Project	Visual impact on the identified visual receptors	Operational Phase	3	3	4	4	5	-	70	Med-High	-	0.8	56	Med	Visually screen the proposed Project from the surrounding visual receptors Regulate the number and speed of vehicles on and off site Implement dust suppression activities on dust emitting sources Disturbed areas should be continuously rehabilitated or revegetated	Establish and/or maintain visual screens in the form of indigenous vegetation around the entire proposed Project site boundary and within the proposed Project footprint. This will assist in obscuring the view of the construction related activities from the surrounding visual receptors Ensure that no additional vegetation is removed Progressively vegetate any stockpiles with exposed side slopes with suitable indigenous vegetation Progressively shape any stockpile side slopes to blend in with the natural landscape created by the surrounding hilly areas Carefully plan to minimize the number of vehicles on the surrounding road network at a given time Use existing roads where possible	To ensure that the total study areas landscape character and sense of place remains unchanged as much as possible	To reduce any changes to the total study areas landscape character and sense of place by implementing the recommended mitigation measures and action plans

				Category Rating													
Activity	**Aspect**	**Impact**	**Phase**	**Extent**	**Severity**	**Duration**	**Probability**	**Weighting Factor**	**+/-**	**Significance without mitigation**	**+/-**	**Mitigation efficiency**	**Significance with mitigation**	**Mitigation measures**	**Action Plan**	**Mitigation & management objective**	**Mitigation & management goals**
															Implement a suitable speed limit of operational vehicles travelling on and off site to limit dust creation Identify the significant dust emitting sources and implement regular dust suppression activities where necessary Ensure ongoing rehabilitation and revegetation of disturbed areas where possible Ensure ongoing housekeeping Establish and maintain a suitable system for addressing grievances/complaints pertaining to visual aspects of the proposed Project		
Operational related activities	Increased human activity, operational vehicles and heavy machinery	Change in landscape character due to dust creation and the increased number of vehicles on the surrounding road network	Operational Phase	3	3	4	3	3	-	39	Low-Med	-	0.6	23.4	Low-Med	Limit the operational activities to only the proposed Project footprint Regulate the number and speed of vehicles on and off site Implement dust suppression activities on dust emitting sources	Carefully plan to minimize the number of vehicles on the surrounding road network at a given time Use existing roads where possible Implement a suitable speed limit of operational vehicles travelling on and off site to limit dust creation Identify the significant dust emitting sources and implement regular dust suppression activities where necessary Establish and maintain a suitable system for addressing grievances/complaints pertaining to visual aspects of the proposed Project	To ensure that the total study areas landscape character and sense of place remains unchanged as much as possible	To reduce any changes to the total study areas landscape character and sense of place by implementing the recommended mitigation measures and action plans

				Category Rating														
Activity	**Aspect**	**Impact**	**Phase**	**Extent**	**Severity**	**Duration**	**Probability**	**Weighting Factor**	**+/-**	**Significance without mitigation**		**+/-**	**Mitigation efficiency**	**Significance with mitigation**		**Mitigation measures**	**Action Plan**	**Mitigation & management objective**	**Mitigation & management goals**
Operational related activities	Operational Waste Generation	Visual disturbance	Operational Phase	2	3	4	3	2	-	24	Low-Med	-	0.4	9.6	Low	Ensure ongoing housekeeping	Ensure that all operational related waste is disposed of in a licensed waste management facility If waste is not disposed of timeously, ensure that all construction waste is stored in a neat and tidy manner on site Ensure sufficient waste skips and bins are provided for the temporary storage of waste on site Establish and maintain a suitable system for addressing grievances/complaints pertaining to visual aspects of the proposed Project	To ensure that the total study areas landscape character and sense of place remains unchanged as much as possible	To reduce any changes to the total study areas landscape character and sense of place by implementing the recommended mitigation measures and action plans
Operational related activities	Night lighting	Light pollution at night on the identified visual receptors and surrounding landscape Change in sense of place	Operational Phase	3	3	4	3	3	-	39	Low-Med	-	0.6	23.4	Low-Med	Reduce unnecessary spill light, glare and flood lighting	Choose lighting types which reduce spill light and glare Only focus lighting to areas where it is needed Utilise methods such as dimmers, motion sensor lights and timers to reduce lighting impacts The operational activities should be limited to daylight hours where possible Implement ongoing inspections of light emitting sources to ensure they are in working order, not flickering and causing additional light pollution Establish and maintain a suitable system for addressing grievances/complaints pertaining to visual aspects of the proposed Project	To ensure that the total study areas landscape character and sense of place remains unchanged as much as possible	To reduce any changes to the total study areas landscape character and sense of place by implementing the recommended mitigation measures and action plans

				Category Rating														
Activity	**Aspect**	**Impact**	**Phase**	**Extent**	**Severity**	**Duration**	**Probability**	**Weighting Factor**	**+/-**	**Significance without mitigation**		**+/-**	**Mitigation efficiency**	**Significance with mitigation**		**Mitigation measures**	**Action Plan**	**Mitigation & management objective**	**Mitigation & management goals**
Removal of infrastructure	Increased human activity, construction vehicles and heavy machinery	Change in landscape character due to dust creation and the increased number of vehicles on the surrounding road network	Decommissioning Phase	3	3	2	3	3	-	33	Low-Med	-	0.4	13.2	Low	Regulate the number and speed of vehicles on and off site Implement dust suppression activities on dust emitting sources	Carefully plan to minimize the number of vehicles on the surrounding road network at a given time Use existing roads where possible Implement a suitable speed limit of decommissioning vehicles travelling on and off site to limit dust creation Identify the significant dust emitting sources and implement regular dust suppression activities where necessary Establish and maintain a suitable system for addressing grievances/complaints pertaining to visual aspects of the proposed Project	To ensure that the total study areas landscape character and sense of place remains unchanged as much as possible	To reduce any changes to the total study areas landscape character and sense of place by implementing the recommended mitigation measures and action plans
Removal of infrastructure	Decommissioning Waste Generation	Visual disturbance	Decommissioning Phase	2	3	2	3	2	-	20	Low-Med	-	0.4	8	Low	Ensure ongoing housekeeping	Ensure that all decommissioning related waste is disposed of in a licensed waste management facility If waste is not disposed of timeously, ensure that all construction waste is stored in a neat and tidy manner on site Ensure sufficient waste skips and bins are provided for the temporary storage of waste on site Establish and maintain a suitable system for addressing grievances/complaints pertaining to visual aspects of the proposed Project	To ensure that the total study areas landscape character and sense of place remains unchanged as much as possible	To reduce any changes to the total study areas landscape character and sense of place by implementing the recommended mitigation measures and action plans

				Category Rating															
Activity	**Aspect**	**Impact**	**Phase**	**Extent**	**Severity**	**Duration**	**Probability**	**Weighting Factor**	**+/-**	**Significance without mitigation**		**+/-**	**Mitigation efficiency**	**Significance with mitigation**		**Mitigation measures**	**Action Plan**	**Mitigation & management objective**	**Mitigation & management goals**
Removal of infrastructure	Night lighting	Light pollution at night on the identified visual receptors and surrounding landscape Change in sense of place	Decommissioning Phase	3	3	2	3	3	-	33	Low-Med	-	0.4	13.2	Low	Reduce unnecessary spill light, glare and flood lighting	Choose lighting types which reduce spill light and glare Only focus lighting to areas where it is needed Utilise methods such as dimmers, motion sensor lights and timers to reduce lighting impacts The decommissioning activities should be limited to daylight hours where possible Implement ongoing inspections of light emitting sources to ensure they are in working order, not flickering and causing additional light pollution Establish and maintain a suitable system for addressing grievances/complaints pertaining to visual aspects of the proposed Project	To ensure that the total study areas landscape character and sense of place remains unchanged as much as possible	To reduce any changes to the total study areas landscape character and sense of place by implementing the recommended mitigation measures and action plans
Rehabilitation related activities	Revegetation and rehabilitation of all disturbed areas	Change in landscape character and sense of place	Decommissioning and Post-closure Phase	3	1	4	4	4	+	48	Med	+	1.2	58	Med	Disturbed areas should be suitably reshaped and revegetated Ensure the success of vegetated areas Ensure that any residual infrastructure remains in good condition	Ensure that all disturbed areas are reshaped to resemble the pre-construction landscape Vegetate all disturbed areas with suitable indigenous vegetation Reshape any remaining stockpiles to blend in with the natural landscape created by the surrounding hilly areas Vegetate any remaining stockpiles with suitable indigenous vegetation. Consult a botanist and/or landscape architect if needed	To ensure that the total study areas landscape character and sense of place remains unchanged as much as possible	To reduce any changes to the total study areas landscape character and sense of place by implementing the recommended mitigation measures and action plans

				Category Rating														
Activity	**Aspect**	**Impact**	**Phase**	**Extent**	**Severity**	**Duration**	**Probability**	**Weighting Factor**	**+/-**	**Significance without mitigation**	**+/-**	**Mitigation efficiency**	**Significance with mitigation**	**Mitigation measures**	**Action Plan**	**Mitigation & management objective**	**Mitigation & management goals**
															Implement a suitable monitoring programme to monitor rehabilitated areas for at least a year after closure Implement regular maintenance of the site to address any issues that may arise post-closure		

10.3 Cumulative visual impacts

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

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

Regarding past activities, from a review of satellite imagery it was noted that limited indication of previous mining and industrial activities are present within the total study area, with evidence of only one historical mine noted approximately 3.5 km south-east of the proposed Project. Regarding current visual disturbances within the total study area, as discussed in Section 7.5.2, the existing Syferfontein Mine, a substation, existing overhead power lines and a railway line were noted within the total study area. Future activities within the total study area and local municipality, as noted from the final 2024/2025-2027/2028 IDP for the Musina Local Municipality, includes the MMSEZ which will comprise of the phased development of light industries (primarily logistics), medium and heavy industries (manufacturing/beneficiation) and energy facilities.

Overall, the proposed Project in conjunction with the phased development of the MMSEZ, is expected to create negative cumulative visual impacts on the surrounding visual receptors and landscape by introducing large scale industrial activities in a largely natural and undeveloped landscape.

Considering the above, Table 10-6 rates the potential cumulative impacts expected on the surrounding visual receptors and landscape. The cumulative impact rating only considers the operational phase of the proposed Project as it is unlikely that the construction and decommissioning phases of the proposed Project and any additional projects within the total study area will occur simultaneously.

Table 10-6: Cumulative impact assessment

Nature of impact:

- Impact on the landscape character of the total study area, additional impacts from night lighting, visual impact on the identified visual receptors and an alteration in sense of place.

Category Rating											
Extent	Severity	Duration	Probability	Weighting Factor	+/-	Significance without mitigation		+/-	Mitigation efficiency	Significance with mitigation	
3	5	4	4	5	-	80	High	-	0.8	64	Med-High

Mitigation Measures:

- Implement all recommended mitigation measures and action plans in Table 10-5, throughout the life of the proposed Project.
- Where necessary, liaise with management from neighbouring facilities to mutually decrease visual and landscape impacts on the surrounding areas and identified visual receptors.

10.4 Summary of the visual impact assessment

10.4.1 Construction phase impacts

The impact assessment in Table 10-5 indicates that visual impacts of medium negative significance are expected during the construction phase of the proposed Project due to the site clearance and project establishment activities. Following the successful implementation of the recommended mitigation measures, the significance of these impacts can be lowered however, will remain of medium negative significance. The medium negative significance is mainly a result of the expected alteration to the total study areas unique sense of place and landscape character. The remaining impacts within the construction phase, relating to construction waste generation and night lighting, are of low to medium negative significance. The significance of the impact relating to construction waste generation can be reduced to a low negative significance following the implementation of the recommended mitigation measures however, the impacts will remain of relevance. Regarding the visual impact from night lighting, the significance of the impact can be reduced post-mitigation, however, will remain of low to medium negative significance due to the introduction of night lighting within a largely undeveloped area.

10.4.2 Operational phase impacts

During the operational phase, impacts of high negative significance are expected on the total study areas unique sense of place and landscape character. With the proper implementation of the recommended mitigation measures, the significance of these impacts can be reduced to a medium to high negative significance. Although the total study area has a moderate level of VAC created by the natural vegetation and topography, impacts of medium to high negative significance are expected post-mitigation due to the proposed Projects location within a mostly natural and undeveloped area. Furthermore, the taller infrastructure associated with the proposed Project, specifically the exhaust stacks and related emissions, will still protrude above the tree line thereby leading to a change in the

total study areas unique sense of place and landscape character, and potentially affect tourism within the total study area and larger Vhembe Biosphere Reserve.

Regarding the visual impact on the identified visual receptors within the total study area, medium to high negative significance impacts are expected before the implementation of the recommended mitigation measures. The significance of these impacts can be reduced to a medium negative significance post-mitigation. The lower significance rating is attributed to the results of the viewshed and visual exposure analysis where it was determined that majority of the visual receptors are expected to experience low to very low visual exposure levels. The significance rating of this impact post-mitigation also considered the nature and sensitivity of the visual receptors (such as the accommodation areas and tourist routes) thereby lending to a medium negative significance post-mitigation.

The impacts relating to night lighting, and increased human activity, operational vehicles and heavy machinery during the operational phase are of low to medium negative significance. The significance of these impacts can be reduced following the implementation of the recommended mitigation measures, however, will remain of low to medium negative significance due to the alteration of the total study areas unique sense of place and landscape character.

Lastly, low to medium negative significance impacts are expected from operational waste generation during this phase. The significance of the impact can be reduced to a low negative significance following the implementation of the recommended mitigation measures however, the impacts will remain of relevance.

10.4.3 Decommissioning and post-closure phase impacts

The visual impacts expected during the decommissioning phase are of low to medium negative significance. The significance of the impacts can be reduced to a low negative significance following the implementation of the recommended mitigation measures. Low significance impacts are expected during this phase mainly due to the time of exposure to these activities being temporary.

The impacts relating to the revegetation and rehabilitation of all disturbed areas within the proposed Project during the decommissioning and post-closure phases are expected to be of medium positive significance. Impacts of positive significance are anticipated due to the removal of infrastructure and the revegetation/rehabilitation of the proposed Project footprint to the resemble the pre-construction landscape.

10.4.4 Cumulative impacts

Regarding cumulative impacts, Table 10-6 indicates that high negative significance cumulative impacts are expected on the surrounding landscape and visual receptors. This level of visual impact can be reduced after the successful implementation of the recommended mitigation measures to a medium to high negative significance. This level of cumulative impact is anticipated due to the alteration of the total study areas unique sense of place and landscape character created by the proposed Project in conjunction with the phased development of the MMSEZ which will introduce large scale industrial activities in a largely natural and undeveloped landscape.

10.5 No-go/without project option

If the proposed Project does not proceed, no additional/new visual impact would occur that would have been associated with the proposed Project. The potential impacts expected from the development of the MMSEZ will however still occur.

10.6 Visual impact mitigation measures

Detailed mitigation measures and action plans have been outlined in Table 10-5 and Table 10-6 and should be adhered to throughout the proposed Project life to reduce visual and landscape impacts as far as practically possible. It is important to note that even with the successful implementation of the recommended mitigation measures, the impact of the proposed Project cannot be entirely mitigated due to the scale and height of the proposed Project.

Furthermore, it is recommended that the visual receptors, most importantly the owners of the accommodation areas and recreational facilities, and other affected landowners within the total study area are duly and timeously informed of the details of the proposed Project in order for the visual receptors to anticipate and accommodate for the impact on tourism within the total study area and on the success of their businesses.

10.7 Impact statement

Considering the characteristics of the affected environment, the viewshed and visual exposure results and the impact assessment, the proposed Project is supported from a visual perspective. However, the support of the proposed Project is subject to the strict implementation of the recommended mitigation measures and action plans throughout the proposed Project life. It is further recommended that the environmental authorities consider the results of this assessment before a final decision is made regarding the status of the proposed Project.

11 FINDINGS AND CONCLUSION

The VIA analysed the potential visual impacts that the proposed Project may have on the affected environment and visual receptors. A baseline description of the affected environment was completed, and viewshed along with visual exposure analyses were conducted through the use of Geographic Information System (GIS) methods. These results were used to inform the VIA.

The assessment indicated that visual impacts of medium negative significance are expected during the construction phase of the proposed Project as a result of site clearance and project establishment activities. Following the successful implementation of the recommended mitigation measures, the significance of these impacts can be lowered however, will remain of medium negative significance. The medium negative significance is mainly a result of the expected alteration to the total study areas unique sense of place and landscape character. The remaining impacts within the construction phase, relating to construction waste generation and night lighting, are of low to medium negative significance. The significance of the impact relating to construction waste generation can be reduced to a low negative significance following the implementation of the recommended mitigation measures however, the impacts will remain of relevance. Regarding the visual impact from night lighting, the significance of the impact can be reduced post-mitigation, however, will remain of low to medium negative significance due to the introduction of night lighting within a largely undeveloped area.

During the operational phase, impacts of high negative significance are expected on the total study areas unique sense of place and landscape character. With the proper implementation of the recommended mitigation measures, the significance of these impacts can be reduced to a medium to high negative significance. Although the total study area has a moderate level of VAC created by the natural vegetation and topography, impacts of medium to high negative significance are expected post-mitigation due to the proposed Projects location within a mostly natural and undeveloped area. Furthermore, the proposed and taller infrastructure associated with the proposed Project, specifically the exhaust stacks and related emissions, will still protrude above the tree line thereby leading to a change in the total study areas unique sense of place and landscape character, and potentially affect tourism within the total study area and larger Vhembe Biosphere Reserve.

Regarding the visual impact on the identified visual receptors within the total study area during this phase, medium to high negative significance impacts are expected before the implementation of the recommended mitigation measures. The significance of these impacts can be reduced to a medium negative significance post-mitigation. The lower significance rating is attributed to the results of the viewshed and visual exposure analysis where it was determined that majority of the visual receptors are expected to experience low to very low visual exposure levels. The significance rating of this impact post-mitigation also considered the nature and sensitivity of the visual receptors (such as the accommodation areas and tourist routes) thereby lending to a medium negative significance post-mitigation.

The impacts relating to night lighting, and increased human activity, operational vehicles and heavy machinery during the operational phase are of low to medium negative significance. The significance

of these impacts can be reduced following the implementation of the recommended mitigation measures, however, will remain of low to medium negative significance due to the alteration of the total study areas unique sense of place and landscape character.

Lastly, low to medium negative significance impacts are expected from operational waste generation during this phase. The significance of the impact can be reduced to a low negative significance following the implementation of the recommended mitigation measures however, the impacts will remain of relevance.

The visual impacts expected during the decommissioning phase are of low to medium negative significance. The significance of the impacts can be reduced to a low negative significance following the implementation of the recommended mitigation measures. Low significance impacts are expected during this phase mainly due to the time of exposure to these activities being temporary.

The impacts relating to the revegetation and rehabilitation of all disturbed areas within the proposed Project during the decommissioning and post-closure phases are expected to be of medium positive significance. Impacts of positive significance are anticipated due to the removal of infrastructure and the revegetation/rehabilitation of the proposed Project footprint to the resemble the pre-construction landscape.

Regarding cumulative impacts, high negative significance cumulative impacts are expected on the surrounding landscape and visual receptors. This level of visual impact can be reduced after the successful implementation of the recommended mitigation measures to a medium to high negative significance. This level of cumulative impact is anticipated due to the alteration of the total study areas unique sense of place and landscape character created by the proposed Project in conjunction with the phased development of the MMSEZ which will introduce large scale industrial activities in a largely natural and undeveloped landscape.

Detailed mitigation measures and action plans have been outlined and should be adhered to throughout the proposed Project life to reduce visual and landscape impacts as far as practically possible. It is important to note that even with the successful implementation of the recommended mitigation measures, the impact of the proposed Project cannot be entirely mitigated due to the scale and height of the proposed Project. Furthermore, it is recommended that the visual receptors, most importantly the owners of the accommodation areas and recreational facilities, and other affected landowners within the total study area are duly and timeously informed of the details of the proposed Project in order for the visual receptors to anticipate and accommodate for the impact on tourism within the total study area and on the operation of their businesses.

Considering the characteristics of the affected environment, the viewshed and visual exposure results and the impact assessment, the proposed Project is supported from a visual perspective. However, the support of the proposed Project is subject to the strict implementation of the recommended mitigation measures and action plans throughout the proposed Project life. It is further recommended that the environmental authorities consider the results of this assessment before a final decision is made regarding the status of the proposed Project.

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APPENDIX A: CV OF THE SPECIALIST

Nakéla Jobraj

Senior GIS Consultant & Visual Specialist

012 807 0383 nakela@ecoe.co.za

About

Nakéla has eight years of work experience, with more than six years comprising of GIS experience. Nakéla has gained valuable skills in environmental authorisation applications and has progressed into GIS to expand her skills with visual impact assessments, data processing/analysis and cartography. Her current role as Senior GIS Consultant & Visual Specialist includes conducting visual impact assessments, shadow flicker impact assessments and providing GIS support for various disciplines.

Company history

Senior GIS Consultant & Visual Specialist
Eco Elementum (Pty) Ltd
Pretoria
September 2021 - Present

Role
Cartography, data acquisition, data analysis, data processing, database management, visual impact assessments, shadow flicker impact assessments, general GIS support and managing the GIS unit.

GIS Consultant
Groundwater Consulting Services:
Johannesburg
June 2018 to August 2021

Role
Cartography, data acquisition, data analysis, data processing, visual impact assessments, volumetric calculations, applications for environmental authorisations and managing the GIS unit.

Qualifications

BSc Honours: Environmental Science
University of KwaZulu-Natal
2016

BSc: Environmental Science
University of KwaZulu-Natal
2013 - 2015

Expertise and Skills

- GIS Software Applications: Global Mapper, QGIS, ArcGIS Pro and ArcGIS Online
- GIS database management, data acquisition, data processing and data interpretation
- Visual Impact Assessments
- Shadow Flicker Impact Assessments
- Cartography

Registrations

South African Council for Natural Scientific Professions (SACNASP) – Certificated Natural Scientist (Reg. No. 120896)
The Geo-Information Society of South Africa – 2019 to present
Golden Key International Honour Society – 2013 to present

INNOVATIVE CONSULTING

PROJECT EXPERIENCE			
DATE	CLIENT	DESCRIPTION	PROJECT ROLE
Visual and Shadow Flicker Impact Assessments			
2024	Prescali Environmental Consultants (Pty) Ltd	Samancor Western Chrome Mines Millsell Section, Tailings Storage Facility Expansion Project	Visual Impact Specialist
2024	Aquatox Consulting (Pty) Ltd	Tunnel Vision Resources Colliery	Visual Impact Specialist
2024	Eco Elementum (Pty) Ltd	Izazi Mining Right Project	Visual Impact Specialist
2024	Eco Elementum (Pty) Ltd	Ivanplats Dry Stack TSF Project	Visual Impact Specialist
2024	Amber Earth (Pty) Ltd	Mzimkhulu Mining Expansion	Visual Impact Specialist
2024	Amber Earth (Pty) Ltd	Avco Cassava Processing Plant	Visual Impact Specialist
2024	Prescali Environmental Consultants (Pty) Ltd	Glenover Phosphate S102 Application	Visual Impact Specialist
2024	Eco Elementum (Pty) Ltd	Bengwenyama Mining Project	Visual Impact Specialist
2024	BioBlue Environmental Sustainability (Pty) Ltd	Ndau Solar PV	Visual Impact Specialist
2024	BioBlue Environmental Sustainability (Pty) Ltd	Zak Fonteyn Solar PV	Visual Impact Specialist
2024	BioBlue Environmental Sustainability (Pty) Ltd	P15 Zeeven Fonteyn Solar PV	Visual Impact Specialist
2024	BioBlue Environmental Sustainability (Pty) Ltd	P17 Zeeven Fonteyn Solar PV	Visual Impact Specialist
2024	Enviro-Insight CC	FE Houmoed WEF	Visual and Shadow Flicker Impact Specialist
2023	Alta van Dyk Environmental Consultants (Pty) Ltd	Middellaagte Optimised Open Pit Mining	Visual Impact Specialist
2023	Eco Elementum (Pty) Ltd	S.I.T.E Mining Permit Application	Visual Impact Specialist
2023	Eco Elementum (Pty) Ltd	CML Projects Mining Permit Application	Visual Impact Specialist
2023	Eco Elementum (Pty) Ltd	Mafatiki Colliery Underground MR	Visual Impact Specialist
2023	Emvelo Consultants	Eyamakhosi Resources Coal Storage Facility	Visual Impact Specialist
2023	Emvelo Consultants	Grindrod Navitrade Coal Storage Facility	Visual Impact Specialist
2023	SRK Consulting (Pty) Ltd	Sunderland Ridge Waste-to-Gas Project	Visual Impact Specialist
2023	Eco Elementum (Pty) Ltd	Nndanganeni Colliery (South Extension)	Visual Impact Specialist

PROJECT EXPERIENCE			
DATE	CLIENT	DESCRIPTION	PROJECT ROLE
Visual and Shadow Flicker Impact Assessments			
2023	Eco Elementum (Pty) Ltd	Breyten Colliery	Visual Impact Specialist
2023	Eco Elementum (Pty) Ltd	Alkmaar Mining Right Application	Visual Impact Specialist
2023	Eco Elementum (Pty) Ltd	Kopermyn Opencast Pit	Visual Impact Specialist
2023	Eco Elementum (Pty) Ltd	Hillside Siding Washplant	Visual Impact Specialist
2023	Enviro-Insight CC	De Rust North Wind Energy Facility	Visual and Shadow Flicker Impact Specialist
2023	Enviro-Insight CC	De Rust South Wind Energy Facility	Visual and Shadow Flicker Impact Specialist
2023	Enviro-Insight CC	De Rust PV1 Solar Energy Facility	Visual Impact Specialist
2023	Enviro-Insight CC	De Rust PV2 Solar Energy Facility	Visual Impact Specialist
2023	Nemai Consulting CC	Umzimkhulu River Weir & Pipeline Project	Visual Impact Specialist
2023	Nemai Consulting CC	Decommissioning of the Komati Power Station	Visual Impact Specialist
2022	Nemai Consulting CC	Ferrum-Upington 400kV Powerline Project	Visual Impact Specialist
2022	Eco Elementum (Pty) Ltd	Nndanganeni Coal	Visual Impact Specialist
2022	Amber Earth (Pty) Ltd	Mzimkhulu Expansion	Visual Impact Specialist
2022	Nemai Consulting CC	Paradise Solar PV Project	Visual Impact Specialist
2022	Eco Elementum (Pty) Ltd	Roodepoort Coal	Visual Impact Specialist
2022	Nemai Consulting CC	Parys Solar PV Project	Visual Impact Specialist
2022	Enviro-Insight CC	Red Sands Northeast Wind Energy Facility	Visual and Shadow Flicker Impact Specialist
2022	Enviro-Insight CC	Red Sands Northwest Wind Energy Facility	Visual and Shadow Flicker Impact Specialist
2022	Enviro-Insight CC	Red Sands Southeast Wind Energy Facility	Visual and Shadow Flicker Impact Specialist
2022	Enviro-Insight CC	Red Sands Southwest Wind Energy Facility	Visual and Shadow Flicker Impact Specialist
2022	SRK Consulting (Pty) Ltd	SRK Amandelbult Complex	Visual Impact Specialist

SACNASP

South African Council for Natural Scientific Professions

herewith certifies that

Nakela Jobraj

Registration Number: 120896

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)

Environmental Science (Certificated Natural Scientist)

Effective **11 September 2019** Expires **31 March 2026**

Chairperson

Chief Executive Officer

To verify this certificate scan this code