PROPOSED LION ENERGY CONVERSION FACILITY, LIMPOPO PROVINCE

VISUAL IMPACT ASSESSMENT

Produced for:

Glencore Operations South Africa (Pty) Ltd
Lion Smelter (a Glencore Merafe Venture)

On behalf of:

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- March 2022 -

EIA REGULATIONS 2014 GNR 982 Appendix 6 **CONTENT OF THE SPECIALIST REPORTS**	**Status / Cross-reference in this Report**
a) details of the specialist who prepared the report; and the expertise of that specialist to compile a specialist report including a curriculum vitae;	1.1. Qualification and experience of the practitioner CV: Attached
b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	See below
c) an indication of the scope of, and the purpose for which, the report was prepared	3. SCOPE OF WORK
cA) an indication of the quality and age of base data used for the specialist report	1.2. Assumptions and limitations 10. REFERENCES/DATA SOURCES
cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change	6.8. Visual impact assessment
d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	1.4. Methodology
e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	1.4. Methodology
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;	6.8. Visual impact assessment
g) an identification of any areas to be avoided, including buffers;	N.A.
h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers	**Map 5:** Visual impact index and potentially affected sensitive visual receptors.
i) a description of any assumptions made and any uncertainties or gaps in knowledge;	1.2. Assumptions and limitations
j) a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	7. CONCLUSION AND RECOMMENDATIONS 8. IMPACT STATEMENT
k) any mitigation measures for inclusion in the EMPr	6.9. The potential to mitigate visual impacts 9. MANAGEMENT PROGRAMME
l) any conditions for inclusion in the environmental authorisation;	9. MANAGEMENT PROGRAMME
m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	9. MANAGEMENT PROGRAMME
n) a reasoned opinion • whether the proposed activity, activities or portions thereof should be authorised; • regarding the acceptability of the proposed activity or activities; and	7. CONCLUSION AND RECOMMENDATIONS 8. IMPACT STATEMENT 9. MANAGEMENT PROGRAMME

EIA REGULATIONS 2014 GNR 982 Appendix 6 CONTENT OF THE SPECIALIST REPORTS	Status / Cross-reference in this Report
• if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	
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	Not applicable
q) any other information requested by the competent authority	Not applicable
2) Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	Not applicable

environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

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

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

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

PROJECT TITLE

PROPOSED LION ENERGY CONVERSION FACILITY, LIMPOPO PROVINCE

Kindly note the following:

1. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
2. This form is current as of 01 September 2018. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at https://www.environment.gov.za/documents/forms.
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Departmental Details

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Private Bag X447
Pretoria
0001

Physical address:
Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Environment House
473 Steve Biko Road
Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:
Email: EIAAdmin@environment.gov.za

1. SPECIALIST INFORMATION

Specialist Company Name:	Lourens du Plessis t/a LOGIS			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	Exempt	Percentage Procurement recognition	0
Specialist name:	Lourens du Plessis			
Specialist Qualifications:	BA			
Professional affiliation/registration:	Professional Geo-Information Science (GISc) Practitioner registered with the SA Geomatics Council (SAGC) Reg. No. GPr GISc 0147			
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E-mail:	lourens@logis.co.za			

2. DECLARATION BY THE SPECIALIST

I, Lourens du Plessis, declare that –

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

Signature of the Specialist

t/a LOGIS

Name of Company:

2022-03-13

Date

3. **UNDERTAKING UNDER OATH/ AFFIRMATION**

I, Lourens du Plessis, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

Signature of the Specialist

t/a LOGIS

Name of Company

2022-03-13

Date

7166799-7 Sgt Lekela MG Selematsela

Signature of the Commissioner of Oaths

2022-03-13

Date

SOUTH AFRICAN POLICE SERVICE
GARSFONTEIN
2022 -03- 13
COMMUNITY SERVICE CENTRE
SUID-AFRIKAANSE POLISIEDIENS

EXECUTIVE SUMMARY

This report is the undertaking of a Visual Impact Assessment (VIA) of the proposed Lion Energy Conversion Facility (ECF). The determination of the potential visual impacts is undertaken in terms of the nature, extent, duration, magnitude, probability and significance of the construction and operation of the proposed infrastructure.

Glencore Operations South Africa (Pty) Ltd - Lion Smelter (a Glencore Merafe Venture) is proposing the establishment of the Lion ECF on Portions 8 and 27 of the original farm Kennedy's Vale 361 (since incorporated into The Farm Xstrata 630).

The Lion ECF is a standalone plant, presently in development which will use excess furnace gas from the Glencore Lion Smelter complex to generate electricity. The ECF project is located on the Glencore Lion site near the town of Steelpoort in the Limpopo Province.

Access to the site and most of the region is provided by the R555 main road which traverses the whole length of the Steelpoort Valley, all the way to Middelburg and the N4 national road. The site is approximately 100m from this road. The proposed Lion ECF is located west of the Lion Smelter and immediately adjacent to the smelter's final return water dam. The Kennedy's Vale Mine (underground operations) is located north of the R555 main road opposite the proposed Lion ECF.

The physical geography within the study area is characterised by low mountains and parallel hills with incised river valleys separating the mountains. The most prominent hydrological features are the perennial Dwars and Steelpoort Rivers.

Other than the mining and industrial activities there are limited agricultural activities (dryland and irrigated agriculture) along the Steelpoort River floodplain. There are no designated protected areas within the study area and no major tourist attractions or destinations were identified.

The vegetation types of the study area are the *Sekhukhune Plains Bushveld* (along the valley floor) and *Sekhukhune Mountain Bushveld* along the Sekhukhune Mountains and other hills and ridges to the south. The entire study area falls within the *Central Bushveld Bioregion* of the *Savanna Biome*.

It is clear that the relatively constrained dimensions of the ECF would amount to a fairly limited core area of potential visual exposure. The shorter distance visual exposure would largely be contained within a 1.5km radius of the proposed development site, with the predominant long distance exposure to the north-west, especially along the south-east facing slopes of the Sekhukhune Mountain.

The Lion ECF may be highly visible within a 500m radius of the development. Most of this zone falls within the Lion Smelter Plant property or within the Kennedy's Vale Mine property. These properties are not expected to contain any sensitive visual receptors, due to their inherent mining or industrial characters, and due to their association with the Glencore Lion Smelter.

The R555 traverse this zone and observers travelling along this road are expected to have a clear view of the ECF infrastructure, if no mitigation is undertaken. It should however be noted that the viewing of the infrastructure will not be in isolation, but within the context of the existing visual disturbances (i.e. the smelter plant and mine dumps) at this location.

The proposed Lion ECF is based on a relatively newly developed technology. To the author's knowledge there are no other ECFs in South Africa, and none within closer proximity to the Lion ECF study area. Therefore, in terms of this specific technology, no cumulative visual exposure is expected, and no potential cumulative visual impacts will ensue. In fact, the placement of the ECF within the Lion Smelter property, and in very close proximity to the smelter plant itself, is expected to consolidate the potential visual impact to a large degree. This is due to the industrial nature of the site and the existing visual disturbances present at this locality i.e. the visual amenity of this site have already been compromised.

The vegetation cover within the study area (woodland, thicket, bushland and bush clumps) has a high visual absorption capacity due to the height and density of these vegetation units. This is especially true for areas where the natural vegetation is still in a relatively natural and undisturbed state (e.g. within the R555 servitude and along the perimeter of the Lion Smelter property boundary). This high visual absorption capacity (VAC) will mitigate and even negate the visual impact of the ECF along some sections along this road. Construction activities of this project must be sensitive to this fact and ensure that minimum disturbance of natural vegetation take place surrounding the construction site, and specifically in between the ECF site and the R555 road.

The following potential impacts were identified:

Nature of Impact	***Without mitigation***	***With mitigation***
Primary Impacts		
Visual impact of construction activities on sensitive visual receptors in close proximity to the proposed ECF.	Moderate	Low
Visual impact on observers travelling along the R555 main road within a 0.5km radius of the ECF structures.	Moderate	Low
Visual impact on observers within a 0.5 – 1.5km radius of the ECF structures.	Low	Low
Visual impact on observers within a 1.5 – 3km radius of the ECF structures.	Low	Low
Visual impact of lighting at night on sensitive visual receptors in close proximity to the proposed ECF.	Moderate	Low
Visual impact of the ancillary infrastructure during the operation phase on observers in close proximity to the structures.	Low	Low
Secondary Impacts		
The potential impact on the sense of place of the region.	Low	Low
The potential cumulative visual impact of the ECF on the visual quality of the landscape.	Low	Low

Concluding remarks

The construction and operation of the proposed ECF and its associated infrastructure is expected to primarily have a visual impact on road users (along the R555) within a 0.5km radius of the facility. This visual impact may largely be mitigated. No cumulative visual impacts are envisaged.

Overall, the post mitigation significance of the visual impacts is expected to be **low** as a result of the industrial nature of the site and the existing visual disturbances present at this locality i.e. the visual amenity of this site have already been compromised. There are no residences or residential developments within close proximity of the proposed ECF and the primary land uses adjacent to the proposed development is mining and industrial of nature. The construction of the proposed ECF is not expected to be in conflict with these current land uses.

Considering all factors, it is recommended that the development of the facility as proposed be supported; subject to the implementation of the recommended mitigation measures and management programme.

TABLE OF CONTENTS

FIGURES

MAPS

TABLES

1. STUDY APPROACH

1.1. Qualification and experience of the practitioner

Lourens du Plessis (t/a LOGIS) is a *Professional Geographical Information Sciences (GISc) Practitioner* registered with The South African Geomatics Council (SAGC), and specialises in Environmental GIS and Visual Impact Assessments (VIA).

Lourens has been involved in the application of Geographical Information Systems (GIS) in Environmental Planning and Management since 1990. He has extensive practical knowledge in spatial analysis, environmental modeling and digital mapping, and applies this knowledge in various scientific fields and disciplines. His GIS expertise are often utilised in Environmental Impact Assessments, Environmental Management Frameworks, State of the Environment Reports, Environmental Management Plans, tourism development and environmental awareness projects.

He holds a BA degree in Geography and Anthropology from the University of Pretoria and worked at the GisLAB (Department of Landscape Architecture) from 1990 to 1997. He later became a member of the GisLAB and in 1997, when Q-Data Consulting acquired the GisLAB, worked for GIS Business Solutions for two years as project manager and senior consultant. In 1999 he joined MetroGIS (Pty) Ltd as director and equal partner until December 2015. From January 2016 he worked for SMEC South Africa (Pty) Ltd as a technical specialist until he went independent and began trading as LOGIS in April 2017.

Lourens has received various awards for his work over the past two decades, including EPPIC Awards for ENPAT, a Q-Data Consulting Performance Award and two ESRI (Environmental Systems Research Institute) awards for *Most Analytical* and *Best Cartographic Maps*, at Annual International ESRI User Conferences. He is a co-author of the ENPAT atlas and has had several of his maps published in various tourism, educational and environmental publications.

He is familiar with the "Guidelines for Involving Visual and Aesthetic Specialists in EIA Processes" (Provincial Government of the Western Cape: Department of Environmental Affairs and Development Planning) and utilises the principles and recommendations stated therein to successfully undertake visual impact assessments. Although the guidelines have been developed with specific reference to the Western Cape Province of South Africa, the core elements are more widely applicable (i.e. within the Limpopo Province).

1.2. Assumptions and limitations

This assessment was undertaken during the planning stage of the project and is based on information available at that time.

1.3. Level of confidence

Level of confidence[1] is determined as a function of:

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

[1] Adapted from Oberholzer (2005).

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

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

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

These values are applied as follows:

Table 1: Level of confidence.

	Information on the project & experience of the practitioner			
Information on the study area		**3**	**2**	**1**
	3	9	6	3
	2	6	4	2
	1	3	2	1

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

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

1.4. Methodology

The study was undertaken using Geographical Information Systems (GIS) software as a tool to generate viewshed analyses and to apply relevant spatial criteria to the proposed facility. A detailed Digital Terrain Model (DTM) for the study area was created from topographical data provided by the Japan Aerospace Exploration Agency (JAXA), Earth Observation Research Centre, in the form of the ALOS Global Digital Surface Model "ALOS World 3D - 30m" (AW3D30) elevation model.

Visual Impact Assessment (VIA)

The VIA is determined according to the nature, extent, duration, intensity or magnitude, probability and significance of the potential visual impacts, and will

propose management actions and/or monitoring programs, and may include recommendations related to the facility layout/position.

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

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

The following VIA-specific tasks were undertaken:

- **Determine potential visual exposure**

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 (or where) the proposed facility and associated infrastructure were not visible, no impact would occur.

The viewshed analyses of the proposed facility and the related infrastructure are based on a 30m resolution AW3D30 digital terrain model of the study area.

The first step in determining the visual impact of the proposed facility is to identify the areas from which the structures would be visible. The type of structures, the dimensions, the extent of operations and their support infrastructure are taken into account.

- **Determine visual distance/observer proximity to the facility**

In order to refine the visual exposure of the facility on surrounding areas/receptors, the principle of reduced impact over distance is applied in order to determine the core area of visual influence for this type of structure.

Proximity radii for the proposed infrastructure are created in order to indicate the scale and viewing distance of the facility and to determine the prominence of the structures in relation to their environment.

The visual distance theory and the observer's proximity to the facility are closely related, and especially relevant, when considered from areas with a high viewer incidence and a predominantly (anticipated) negative visual perception of the proposed infrastructure.

- **Determine viewer incidence/viewer perception (sensitive visual receptors)**

The next layer of information is the identification of areas of high viewer incidence (i.e. main roads, residential areas, settlements, etc.) that may be exposed to the project infrastructure.

This is done in order to focus attention on areas where the perceived visual impact of the facility will be the highest and where the perception of affected observers will be negative.

Related to this data set, is a land use character map, that further aids in identifying sensitive areas and possible critical features (i.e. tourist facilities, protected areas, etc.), that should be addressed.

- **Determine the visual absorption capacity of the landscape**

This is the capacity of the receiving environment to absorb the potential visual impact of the proposed facility. The VAC is primarily a function of the vegetation, and will be high if the vegetation is tall, dense and continuous. Conversely, low growing, sparse and patchy vegetation will have a low VAC.

The VAC would also be high where the environment can readily absorb the structure in terms of texture, colour, form and light / shade characteristics of the structure. On the other hand, the VAC for a structure contrasting markedly with one or more of the characteristics of the environment would be low.

The VAC also generally increases with distance, where discernible detail in visual characteristics of both environment and structure decreases.

- **Calculate the visual impact index**

The results of the above analyses are merged in order to determine the areas of likely visual impact and where the viewer perception would be negative. An area with short distance visual exposure to the proposed infrastructure, a high viewer incidence and a predominantly negative perception would therefore have a higher value (greater impact) on the index. This focusses the attention to the critical areas of potential impact and determines the potential **magnitude** of the visual impact.

Geographical Information Systems (GIS) software is used to perform all the analyses and to overlay relevant geographical data sets in order to generate a visual impact index.

- **Determine impact significance**

The potential visual impacts are quantified in their respective geographical locations in order to determine the significance of the anticipated impact on identified receptors. Significance is determined as a function of extent, duration, magnitude (derived from the visual impact index) and probability. Potential cumulative and residual visual impacts are also addressed. The results of this section are displayed in impact tables and summarised in an impact statement.

- **Propose mitigation measures**

The preferred alternative (or a possible permutation of the alternatives) will be based on its potential to reduce the visual impact. Additional general mitigation measures will be proposed in terms of the planning, construction, operation and decommissioning phases of the project.

- **Reporting and map display**

All the data categories, used to calculate the visual impact index, and the results of the analyses will be displayed as maps in the accompanying report. The methodology of the analyses, the results of the visual impact assessment and the conclusion of the assessment will be addressed in this VIA report.

- **Site visit**

A site visit was undertaken in December 2021 in order to verify the results of the spatial analyses and to identify any additional site-specific issues that may need to be addressed in the VIA report.

2. BACKGROUND

Glencore Operations South Africa (Pty) Ltd - Lion Smelter (a Glencore Merafe Venture) is proposing the establishment of the **Lion Energy Conversion Facility (ECF)** on Portions 8 and 27 of the original farm Kennedy's Vale 361 (since incorporated into The Farm Xstrata 630).

The Lion ECF is a standalone plant, presently in development which will use excess furnace gas from the Glencore Lion Smelter complex to generate electricity. The ECF project is a standalone project, located on the Glencore Lion site near the town of Steelpoort in the Limpopo Province.

Figure 1: Regional locality of the study area.

The Plant is modular in nature, with each power generating module (called a PWR BLOK Unit or PBU) being made up of three primary components:

- The PWR BLOK module (containerised generation plant with 14 engines and all necessary ancillaries).
- A Containerised Gas Conditioner (CGC), which conditions the incoming gas prior to this being fed to the PWR BLOK.
- A Cooling Plant interconnected with the PWR BLOK module providing the necessary cooling for the 14 PCU's.

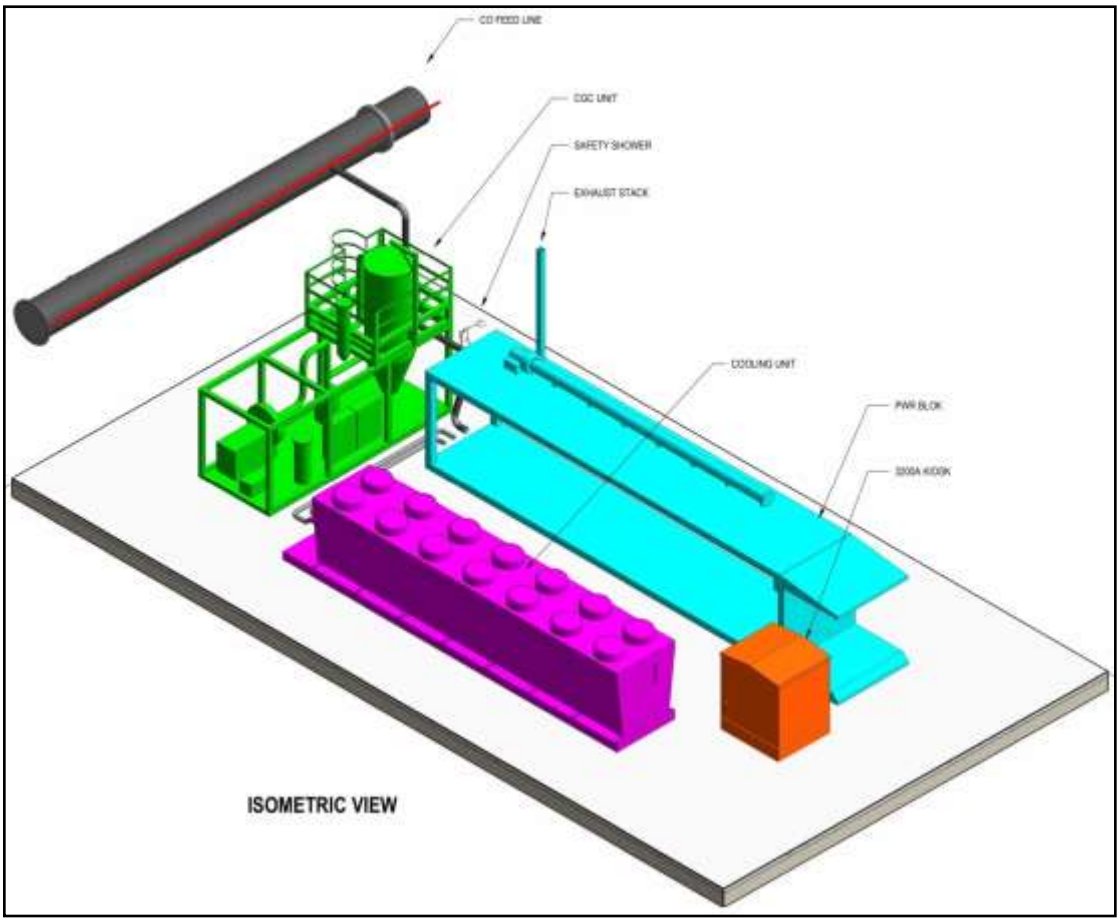


Figure 2: Components of the ECF.

The ECF consists of up to 26 PWR BLOK Modules resulting in a total ECF power generation capacity of 10MW. The plant also includes all necessary civil, electrical, control and general infrastructure required for standalone operations.

The new ECF receives furnace gas from the Lion Smelter gas reticulation system. The smelter gas reticulation system consists of two connected phases, phase 1 receiving cleaned gas from furnace A and B booster fans, and phase 2 receiving cleaned gas from furnace C and D booster fans.

Each phase supplies gas to two kilns and a hot gas generator. The new ECF tie-in is located as one tie-in per phase to allow for minimal pressure losses through the existing gas reticulation system (to be confirmed with flow simulation report) and to ensure gas availability to the ECF even when one phase is shutdown/isolated. Each tie-in is fitted with a manual isolation valve and u-tube for isolation purposes.

The received gas is ducted to the new ECF via the ECF booster fan station. From the booster fans a double manifold distributes the gas to a total of up to 26 individual PWR BLOK Units (PBU), with 14 units tied in to the first manifold and 12 units on the second manifold.

Each PCU has an integrated electric generator operating at Low Voltage (LV). The 14 PCU alternators are connected to a dedicated MCC inside the PWR BLOK module. This will be stepped up to Medium Voltage (MV) operating at 11kV with step-up transformers, with multiple PWR BLOKs being connected to each transformer (exact numbers to be confirmed in the detailed design). The LV

reticulation will be connected to the host smelter via a dedicated (modular re-deployable) MV substation.

The Plant has a dedicated LV generator, which will be suitably sized to maintain critical circuits and systems (predominantly safety critical equipment, control, and data logging).

The MV feeder from the ECF substation will tie in at the Thickener MCC. In addition, a dedicated LV supply will be expedited from the thickener MCC to supply the base load of the ECF, predominantly servicing infrastructure, small power requirements and lighting.

The proposed project site appears to have been partially worked in the past while there are small trees, shrubs and grass; no significant surface anomalies are present. Existing geotechnical information suggests moderate to good soils in the region.

As such, it is anticipated that no abnormal civil works will be required. Groundworks will thus be limited to:

- Clearing
- Removal and stockpiling of topsoil
- Limited excavation to a suitable depth
- Re-compaction of existing material
- Importing of upper layers as will be informed by the layer-works design.

The plant is modular in nature, as a specific intent, all structures and infrastructure shall be modular and installed above ground as far as possible, as such civils are envisaged to be to a single concrete slab devoid of complex civil structures.

The plant footprint is to be covered with a concrete slab. This is thickened underneath high load structures. In areas with moderate traffic thinner sections may be considered. All dirty water shall be managed with dedicated secondary catchment under the PBU's (modular trays above surface are envisaged). As such, all water captured above the slab shall be considered to be clean water.

All building works for the Lion ECF Project will be modular or containerised re-deployable structures and will consist of the following:

- An access control point;
- Lift store (containerised);
- Oil, glycol, and gas storage areas (open bays);
- Waste area for removable skips (open bays);
- PCU Trailer store (open bay);
- Ablution facility (containerised);
- First aid facility (containerised);
- General store (containerised);
- Parking bays (covered for forklift and cars); and
- Emergency vehicle parking bay (dedicated open parking bay, for use by emergency response vehicles if needed).

The ECF will be fully fenced with a "Clearvu" type fence. In addition, the area containing the PWR BLOK's will be separated from the general infrastructural areas, access between the two will be through a lockable gate.

A secondary access point is proposed to allow dedicated access to the ECF from the R555. An existing access culvert is in place and shown on the Site Layout

drawing (Annexure 2a). It is envisaged that this will be a long-term dedicated access point servicing construction and operations.

As described above, no permanent buildings are present on the site, all infrastructure is considered mobile re-deployable. As such the ECF implementation strategy allows for easy salvage on decommissioning. The most significant building structure is the civil slab, which by its nature is devoid of deep or complex structures (such as piling). The slab can be either repurposed on closure of the ECF, or easily demolished as may be required by Lion.[2]

The ECF will take approximately x months to construct and the operational lifespan of the facility is estimated at up to x years.

The proposed properties identified for the ECF and associated infrastructure are indicated on the maps within this report. Sample images of similar ECF technologies are provided below.

Figure 3: Construction of an ECF.

[2] Adapted from Swedish Sterling (Energy Conversion Facility – Overview of Works for Environmental Assessment).

Figure 4: Close up view of an ECF.

Figure 5: Aerial view of an ECF.

3. SCOPE OF WORK

This report is the undertaking of a Visual Impact Assessment (VIA) of the proposed ECF as described above.

The determination of the potential visual impacts is undertaken in terms of nature, extent, duration, magnitude, probability and significance of the construction and operation of the proposed infrastructure.

The study area for the visual assessment encompasses a geographical area of approximately 131km² (the extent of the full page maps displayed in this report) and includes a minimum 3km buffer zone (area of potential visual influence) from the proposed project site.

The study area includes the Lion Smelter facility, Kennedy's Vale Mine, the Ga-Mampuru and Ga-Mpuru residential areas, and a long section of the R555 arterial/main road.

Anticipated issues related to the potential visual impact of the proposed Lion ECF include the following:

- The visibility of the facility to, and potential visual impact on, observers travelling along the R555 main road.
- The visibility of the facility to, and potential visual impact on residents of dwellings within the study area, with specific reference to the settlements of Ga-Mampuru and Ga-Mpuru.
- The potential visual impact of the facility on the visual character or sense of place of the region.
- The potential visual impact of the facility on tourist routes or tourist destinations/facilities (if present).
- The potential visual impact of the construction of ancillary infrastructure (i.e. internal access roads, buildings, etc.) on observers in close proximity to the facility.
- The visual absorption capacity of the natural vegetation (if applicable).
- Potential cumulative visual impacts (or consolidation of visual impacts), with specific reference to the placement of the Lion ECF within close proximity of the Lion Smelter.
- The potential visual impact of operational, safety and security lighting of the facility at night on observers residing in close proximity of the facility (if present).
- Potential visual impacts associated with the construction phase.
- The potential to mitigate visual impacts and inform the design process.

It is envisaged that the issues listed above may constitute a visual impact at a local and/or regional scale.

4. RELEVANT LEGISLATION AND GUIDELINES

The following legislation and guidelines have been considered in the preparation of this report:

- National Environmental Management Act 107 of 1998 (NEMA);
- The Environmental Impact Assessment Regulations, 2014 (as amended);
- Guideline on Generic Terms of Reference for EAPS and Project Schedules (DEADP, Provincial Government of the Western Cape, 2011); and
- Guideline for involving visual and aesthetic specialists in EIA processes: Edition 1.

5. THE AFFECTED ENVIRONMENT

The identified site for the proposed Lion ECF is located on the Glencore Lion Ferrochrome Smelter property, located approximately 9km south-west of the

small town of Steelpoort. The site falls within the Greater Tubatse/Fetakgomo Local Municipality of the Sekhukhune District Municipality, in the Limpopo Province.

The project site is located within the Steelpoort River valley flanked by the Sekhukhune Mountains to the north-west and foothills to the south. This mountain and foothills fall within the eastern limb of the Bushveld Igneous Complex (refer to **Figure 6**), a geological system that contains 85% of the world's platinum group elements.

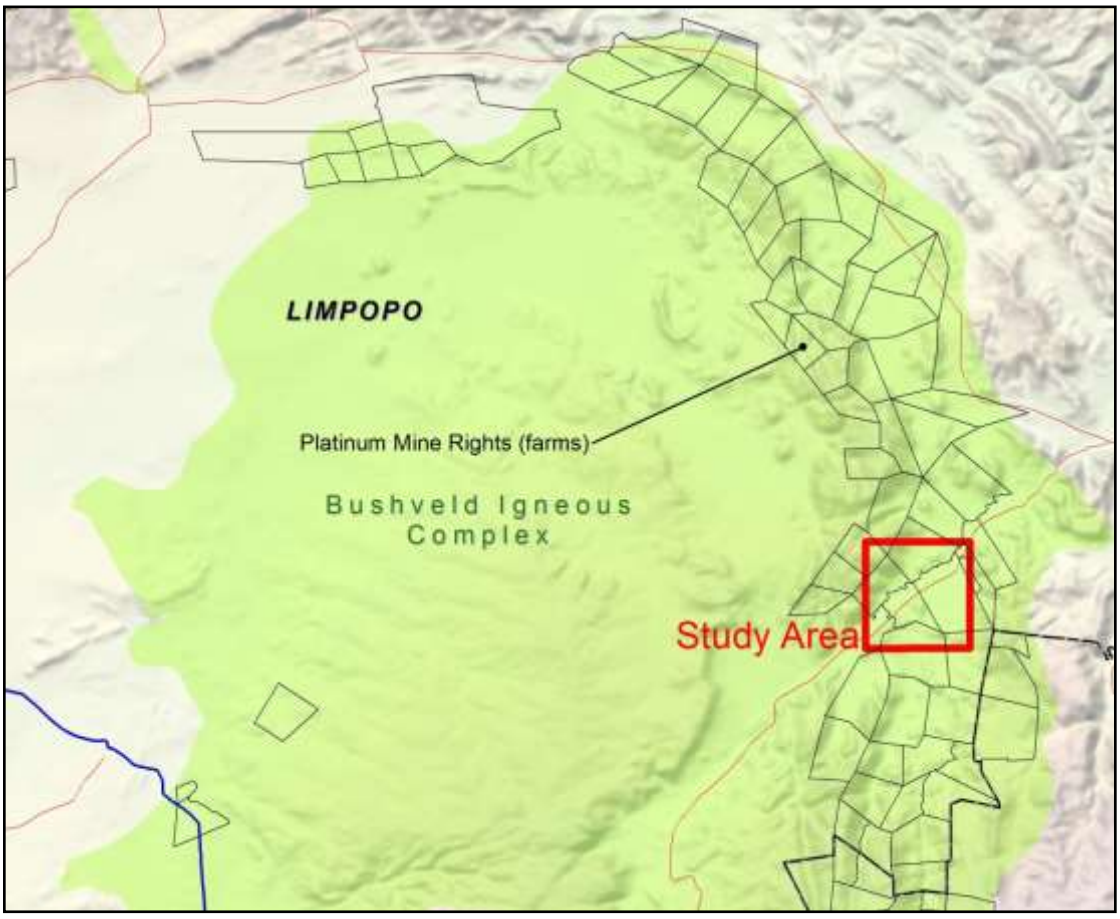


Figure 6: Platinum mining rights within the eastern limb of the Bushveld Igneous Complex.

Access to the site and most of the region is provided by the R555 main road which traverses the whole length of the Steelpoort Valley, all the way to Middelburg and the N4 national road. The site is approximately 100m from this road (see **Figure 7**). The proposed Lion ECF is located west of the Lion Smelter and immediately adjacent to the smelter's final return water dam. The Kennedy's Vale Mine (underground operations) is located north of the R555 main road opposite the proposed Lion ECF.

Figure 7: Aerial view of the proposed project site.

The physical geography within the study area is characterised by low mountains and parallel hills with incised river valleys separating the mountains. The surface elevation of the study area ranges from 760m above sea level in the north-east to 1,640m on top off the Sekhukhune Mountain to the north-west. The proposed project site is located at an average elevation of 808m above sea level. Refer to **Map 1** to view the location of the project site and the topography of the study area.

The most prominent hydrological features are the perennial Dwars and Steelpoort Rivers. These rivers are tributaries of the Olifants River that ultimately flows to Mozambique and the Indian Ocean. Other than these rivers, there are a number of man-made farm and mining dams in the study area.

The central and southern parts of the study area are sparsely populated (less than 10 people per km^2), with the highest concentrations of people occurring along the foot-slopes (north-west of the Steelpoort River) of the Sekhukhune Mountain (114 people per km^2). These populated areas are known as Ga-Mampuru and Ga-Mpuru. The land south of the Steelpoort River is predominantly mining land, of which the Lion Smelter forms part. The open cast mining and industrial activities are prominently visible on the Land Cover map (**Map 2**).

Other than the mining and industrial activities there are limited agricultural activities (dryland and irrigated agriculture) along the Steelpoort River floodplain. Large tracts of land to the north are used for subsistence agriculture, mainly by the residents of the settlements mentioned above. The natural land cover types of the region, where intact, are grassland, open woodland and some bare rock

and soil surfaces. Erosion scarring and degraded land are also evident to the northern parts of the study area.

The vegetation types of the study area are the *Sekhukhune Plains Bushveld* (along the valley floor) and *Sekhukhune Mountain Bushveld* along the Sekhukhune Mountains and other hills and ridges to the south. The entire study area falls within the *Central Bushveld Bioregion* of the *Savanna Biome*.

As mentioned earlier, the economic activity and infrastructure within the region is predominantly centred on the mines and industrial processing plants. The Eskom Senakangwedi 275/33kV Substation is located opposite the Lion Smelter, some 570m north-east of the proposed Lion ECF site.

Overhead power lines associated with this substation include:

- Merensky-Senakangwedi 275kV
- Senakangwedi-Simplon 275kV

Other power lines within the study area include:

- Jane Furse-Merensky 132kV
- Arnot-Merensky 400kV

There are no designated protected areas within the study area and no major tourist attractions or destinations were identified. The closest protected area is the De Hoop Dam Protected Environment approximately 9km south-west of the Lion ECF site (at the closest).[3]

The photographs below aid in describing the general environment within the study area and surrounding the proposed project infrastructure.

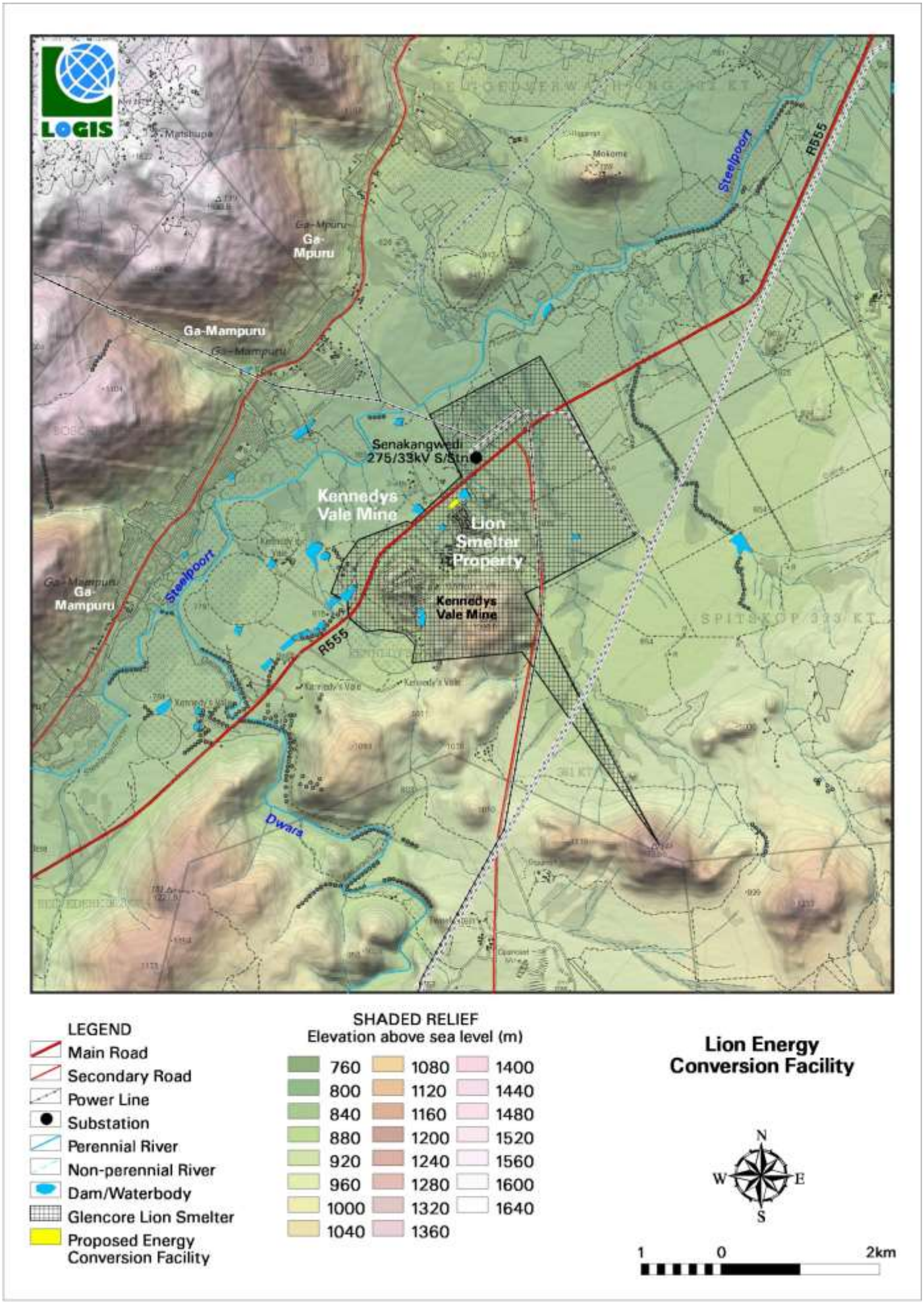
[3] Sources: DEAT (ENPAT Limpopo), NBI (Vegetation Map of South Africa, Lesotho and Swaziland), NLC2018 (ARC/CSIR), REEA_OR_2021_Q1 and SAPAD2021 (DFFE), OLEMF and Wikipedia.

Figure 8: The R555 main road near the Lion Smelter.

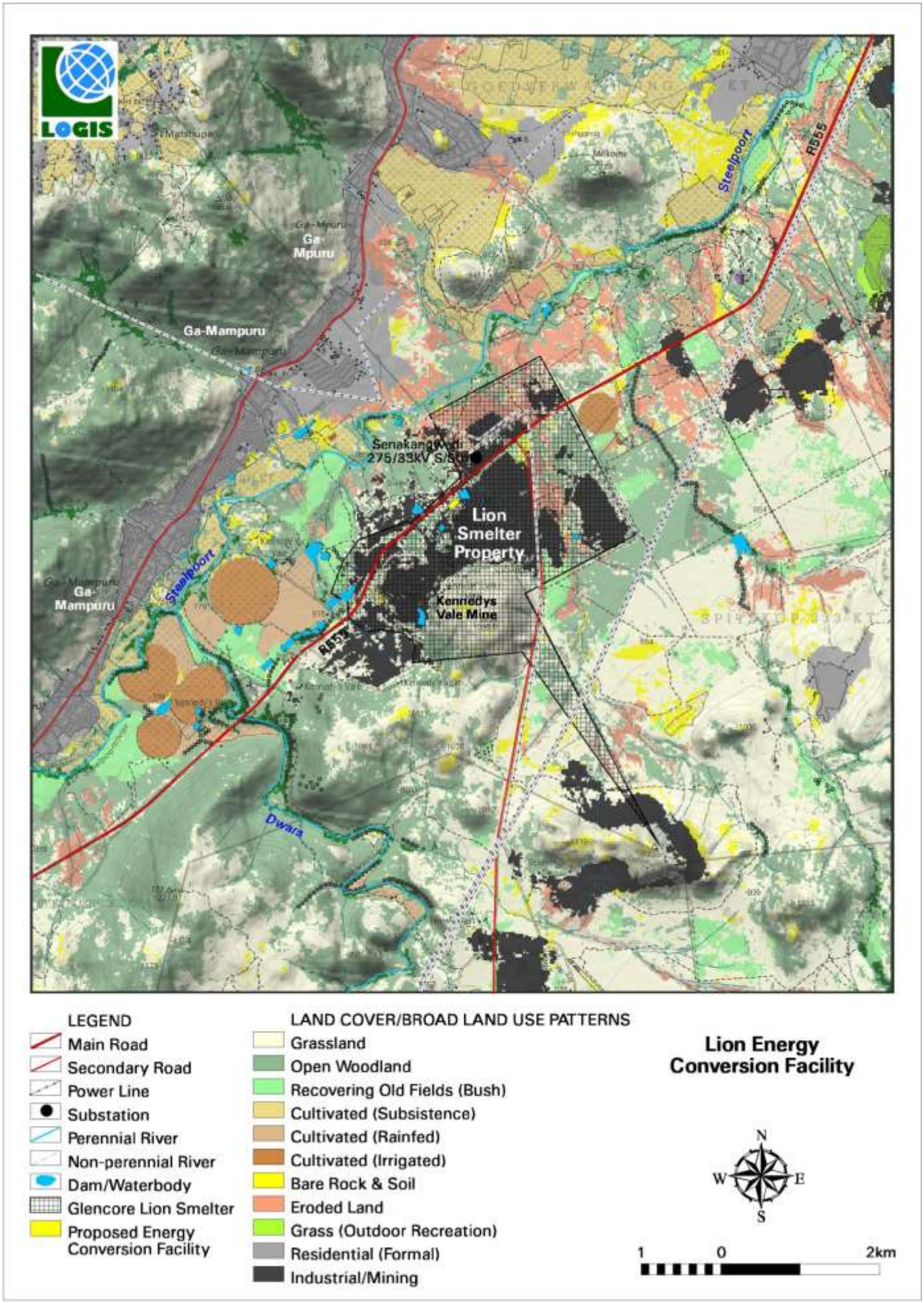
Figure 9: The proposed Lion ECF site and smelter to the left.

Figure 10: The general environment near the site with Ga-Mampuru and Ga-Mpuru in the background.

Figure 11: The Eskom Senakangwedi 275/33kV Substation.



Map 1: Shaded relief map of the study area.



Map 2: Land cover and broad land use patterns.

6. RESULTS

6.1. Potential visual exposure

The result of the viewshed analysis for the proposed facility is shown on the map below (**Map 3**). The viewshed analysis was undertaken from a representative number of vantage points within the development footprint at an offset of 5m above ground level (the maximum height of the ECF structures) and 10m for the smoke stacks. This was done in order to determine the general visual exposure (visibility) of the area under investigation, simulating the maximum height of the proposed structures associated with the facility.

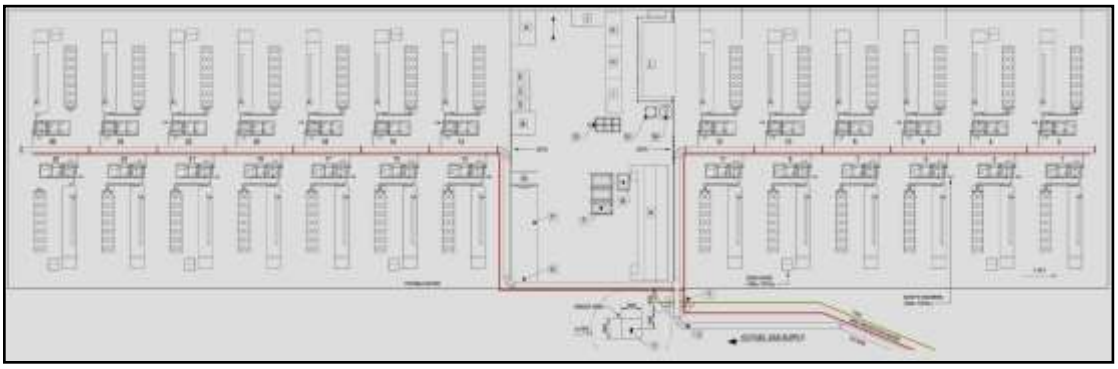


Figure 12: The Lion ECF layout.

Map 3 also indicates proximity radii from the development footprint in order to show the viewing distance (scale of observation) of the facility in relation to its surrounds.

Results

It is clear that the relatively constrained dimensions of the ECF would amount to a fairly limited core area of potential visual exposure. The shorter distance visual exposure would largely be contained within a 1.5km radius of the proposed development site, with the predominant long distance exposure to the north-west, especially along the south-east facing slopes of the Sekhukhune Mountain.

The following is evident from the viewshed analyses:

0 – 0.5km

The Lion ECF may be highly visible within a 500m radius of the development. Most of this zone falls within the Lion Smelter Plant property or within the Kennedy's Vale Mine property. These properties are not expected to contain any sensitive visual receptors, due to their inherent mining or industrial characters, and due to their association with the Glencore Lion Smelter.

The R555 traverse this zone and observers travelling along this road are expected to have a clear view of the ECF infrastructure, if no mitigation is undertaken. It should however be noted that the viewing of the infrastructure will not be in isolation, but within the context of the existing visual disturbances (i.e. the smelter plant and mine dumps) at this location.

0.5 – 1.5km

Visibility within this zone will still only encompass mining and industrial land and potentially sections of the R555 main road. The visual exposure is more scattered and interrupted due to the undulating nature of the topography.

1.5 - 3km

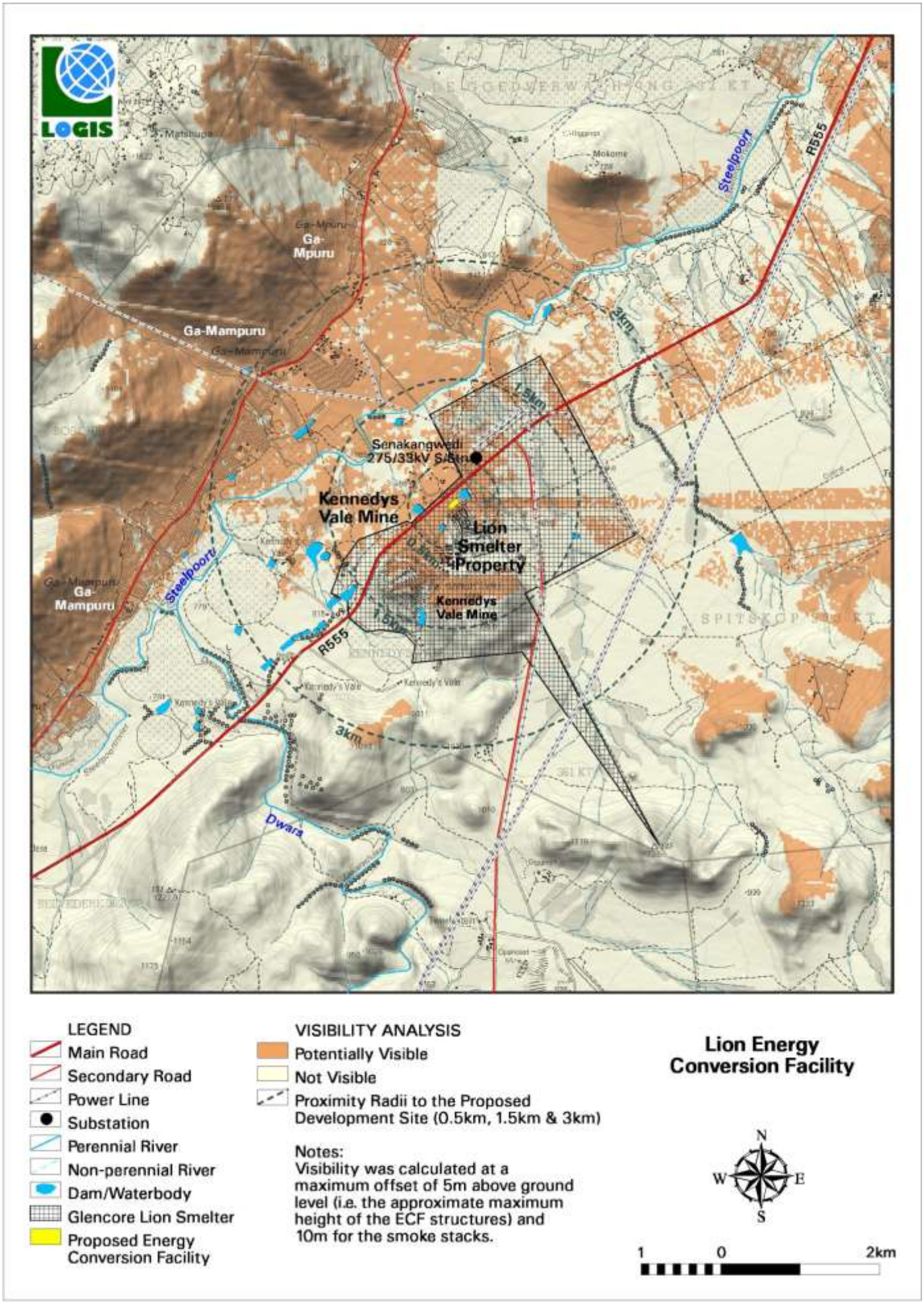
Within a 1.5 – 3km radius, the visual exposure is predominantly from the higher-lying terrain to the north of the Steelpoort River. This zone also contains parts of the Ga-Mampuru (north) and Ga-Mpuru settlements. The proposed Lion ECF infrastructure would theoretically be visible from the south-eastern outlying parts of these settlements, although the exposure would once again not be in isolation, but within the context of the existing visual disturbances of industrial and mining structures and activities.

> 3km

At distances exceeding 3km the intensity of visual exposure is expected to be very low and highly unlikely due to the distance between the object (development) and the observer. This zone contains parts of the Ga-Mampuru (south) settlement and northern parts of the Ga-Mpuru settlement.

Conclusion

In general terms it is envisaged that the structures, where visible from shorter distances (e.g. less than 0.5km and potentially up to 1.5km), and where sensitive visual receptors may find themselves within this zone, may constitute a high visual prominence, potentially resulting in a visual impact. Sensitive visual receptors are expected to predominantly include observers (commuters or visitors to the region) travelling along the R555 main road in closer proximity to the facility. Residents of the settlements mentioned above, are less likely to be affected due to the general long distance between the observers and the development, and due to the presence of existing visual clutter at the proposed Lion ECF site.



Map 3: Viewshed analysis of the proposed Lion ECF.

6.2. Potential cumulative visual exposure

The proposed Lion ECF is based on a relatively newly developed technology. To the author's knowledge there are no other ECFs in South Africa, and none within closer proximity to the Lion ECF study area. Therefore, in terms of this specific technology, no cumulative visual exposure is expected, and no potential cumulative visual impacts will ensue. In fact, the placement of the ECF within the Lion Smelter property, and in very close proximity to the smelter plant itself, is expected to consolidate the potential visual impact to a large degree. This is due to the industrial nature of the site and the existing visual disturbances present at this locality i.e. the visual amenity of this site have already been compromised.

6.3. Visual distance/observer proximity to the ECF

The proximity radii are based on the anticipated visual experience of the observer over varying distances. The distances are adjusted upwards for larger power generating facilities/technologies (e.g. more extensive infrastructure associated with power plants exceeding 10MW) and downwards for smaller plants (e.g. smaller infrastructure associated with power plants with less generating capacity such as the proposed Lion ECF). This methodology was developed in the absence of any known and/or accepted standards for South African power generating facilities.

The principle of reduced impact over distance is applied in order to determine the core area of visual influence for these types of structures.

The proximity radii for the proposed ECF were created in order to indicate the scale and viewing distance of the facility and to determine the prominence of the structures in relation to their environment.

The proximity radii, based on the dimensions of the proposed development footprint are indicated on **Map 4**, and include the following:

- < 0.5km. Very short distance view where the facility would dominate the frame of vision and constitute a very high visual prominence.

- 0.5 – 1.5km. Short distance view where the structures would be easily and comfortably visible and constitute a high visual prominence.

- 1.5 - 3km. Medium to longer distance view where the facility would become part of the visual environment, but may still be visible and recognisable. This zone constitutes a moderate visual prominence.

- > 3km. Long distance view of the facility where the structures are not expected to be immediately visible and not easily recognisable. This zone constitutes a low visual prominence for the facility.

The visual distance theory and the observer's proximity to the facility are closely related, and especially relevant, when considered from areas with a high viewer incidence and a potentially negative visual perception of the proposed facility.

6.4. Viewer incidence/viewer perception

The number of observers and their perception of a structure determine the concept of visual impact. If there are no observers or if the visual perception of the structure is favourable to all the observers, there would be no visual impact.

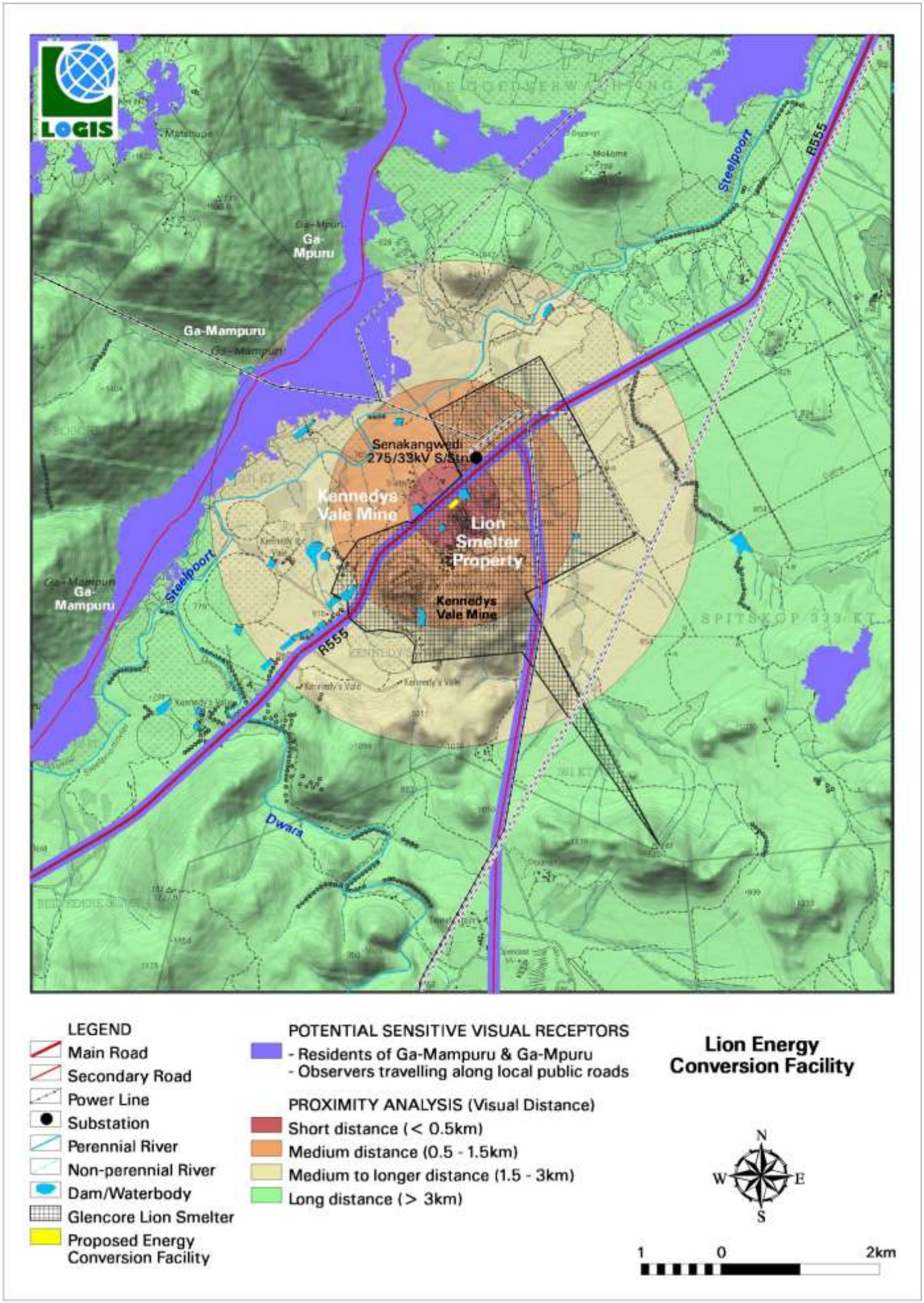
It is necessary to identify areas of high viewer incidence and to classify certain areas according to the observer's visual sensitivity towards the proposed infrastructure. It would be impossible not to generalise the viewer incidence and sensitivity to some degree, as there are many variables when trying to determine the perception of the observer: regularity of sighting, cultural background, state of mind, purpose of sighting, etc. which would create a myriad of options.

Sensitive visual receptors (and the highest level of viewer incidence) are expected to predominantly include observers (commuters or visitors to the region) travelling along the R555 main road in closer proximity to the facility. It is possible that observers may be negatively impacted upon by visual exposure to the ECF infrastructure.

Additional sensitive visual receptors are located at the Ga-Mampuru and Ga-Mpuru settlements, located west and north-west of the proposed development site. It is expected that the viewer's perception, unless the observer is associated with (or supportive of) the ECF project, would generally be negative. It should be noted though, that these settlements a located further away from the proposed ECF, and that visual exposure to the infrastructure will not be in isolation. Additionally, the built-up nature of the abovementioned settlements will mean that visual exposure will predominantly be along the perimeter of the built-up areas.

The potential sensitive visual receptor sites and areas of higher viewer incidence are indicated on **Map 4**.

The author (at the time of the compilation of this report) is not aware of any objections raised against the ECF.



Map 4: Proximity analysis and potential sensitive visual receptors.

6.5. Visual absorption capacity

The vegetation cover within the study area (woodland, thicket, bushland and bush clumps) has a high visual absorption capacity due to the height and density of these vegetation units. This is especially true for areas where the natural vegetation is still in a relatively natural and undisturbed state (e.g. within the R555 servitude and along the perimeter of the Lion Smelter property boundary). This high visual absorption capacity (VAC) will mitigate and even negate the visual impact of the ECF along some sections along this road. Construction activities of this project must be sensitive to this fact and ensure that minimum disturbance of natural vegetation take place surrounding the construction site.

The VAC will also be high within the Ga-Mampuru and Ga-Mpuru settlements, and within the industrial and mining areas due to the presence of built structures and mine dumps.

Figure 13: Vegetation cover adjacent to the R555 provides high VAC.

Where the vegetation cover have been removed (e.g. as at the Senakangwedi Substation – see **Figure 14**) the substation is clearly visible with no vegetation concealment. The ECF would similarly be exposed should the vegetation cover in between the facility and the R555 be removed. This would deprive the project of the potential to mitigate the visual impact from this road through the utilisation of existing vegetation cover.

Figure 14: Low VAC at the Senakangwedi Substation.

6.6. Visual impact index

T Here the weighted impact and the likely areas of impact have been indicated as a visual impact index. Values have been assigned for each potential visual impact per data category and merged to calculate the visual impact index.

The criteria (previously discussed in this report) which inform the visual impact index are:

- Visibility or visual exposure of the structures
- Observer proximity or visual distance from the structures
- The presence of sensitive visual receptors
- The perceived negative perception or objections to the structures (if applicable)
- The visual absorption capacity of the vegetation cover or built structures (if applicable)

An area with short distance visual exposure to the proposed infrastructure, a high viewer incidence and a potentially negative perception (i.e. a sensitive visual receptor) would therefore have a **higher** value (greater impact) on the index. This helps in focussing the attention to the critical areas of potential impact and determining the potential **magnitude** of the visual impact.

The index indicates that **potentially sensitive visual receptors** within a 0.5km radius of the ECF may experience a **very high** visual impact. The magnitude of visual impact on sensitive visual receptors subsequently subsides with distance to; **high** within a 0.5 – 1.5km radius (where/if sensitive receptors are present) and **moderate** within a 1.5 – 3km radius (where/if sensitive receptors are present). Receptors beyond 3km are expected to have a **low** potential visual impact.

Magnitude of the potential visual impact

0 – 0.5km

The majority of the exposed areas in this zone fall within mining/industrial land, generally devoid of potential sensitive visual receptors. It is only the section of the R555 main road (identified as receptor site no. 1 on **Map 5**), traversing near the proposed development site that may potentially experience visual impacts of **very high** magnitude.

0.5 – 1.5km

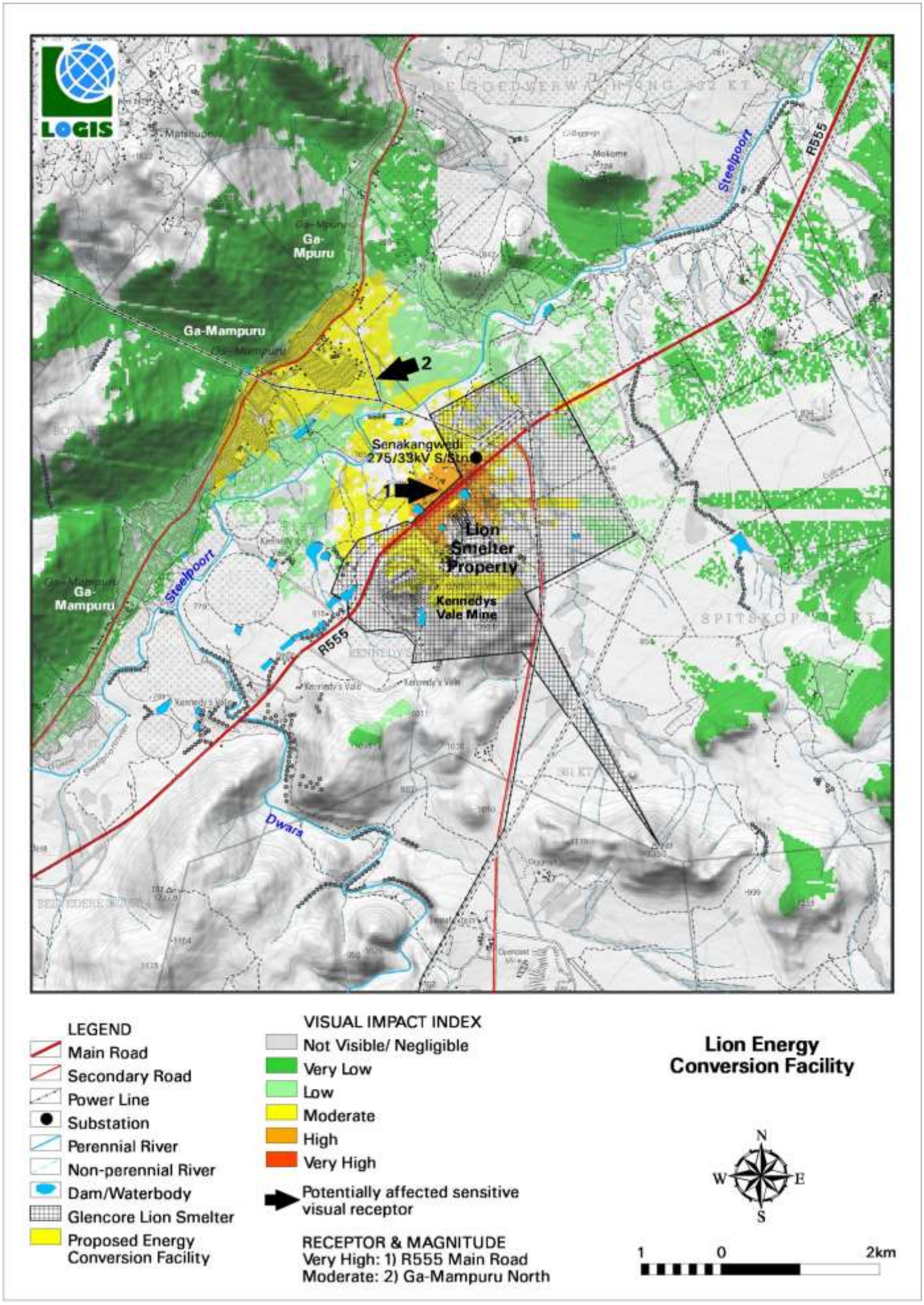
The majority of the exposed areas in this zone fall within mining/industrial land, generally devoid of observers or potential sensitive visual receptors. There are no residences within this zone and no visual impacts of **high** magnitude are expected.

1.5 – 3km

The eastern outlying part of the Ga-Mampuru settlement (identified as receptor site no. 2) is located just beyond 1.5km from the proposed ECF. It is expected that observers (residents) at this locality may experience visual impacts of **moderate** magnitude, at worst. This is due to the fact that the ECF would not likely be visible in isolation, but rather within the context of the much larger Lion Smelter complex.

Notes:

Where/if residences are derelict or deserted the visual impact will be non-existent, until such time as it is inhabited again.



Map 5: Visual impact index and potentially affected sensitive visual receptors.

6.7. Visual impact assessment: impact rating methodology

The previous section of the report identified specific areas where likely visual impacts would occur and indicate the expected **magnitude** of potential impact. This section will attempt to quantify these potential visual impacts in their respective geographical locations and in terms of the identified issues (see **Section 3:** SCOPE OF WORK) related to the visual impact.

The methodology for the assessment of potential visual impacts states the **nature** of the potential visual impact (e.g. the visual impact on users of major roads in the vicinity of the proposed facility) and includes a table quantifying the potential visual impact according to the following criteria:

- **Extent** - long distance (very low = 1), medium to longer distance (low = 2), short distance (medium = 3) and very short distance (high = 4)[4].
- **Duration** - very short (0-1 yrs. = 1), short (2-5 yrs. = 2), medium (5-15 yrs. = 3), long (>15 yrs. = 4), and permanent (= 5).
- **Magnitude** - None (= 0), minor (= 2), low (= 4), medium/moderate (= 6), high (= 8) and very high (= 10)[5].
- **Probability** – very improbable (= 1), improbable (= 2), probable (= 3), highly probable (= 4) and definite (= 5).
- **Status** (positive, negative or neutral).
- **Reversibility** - reversible (= 1), recoverable (= 3) and irreversible (= 5).
- **Significance** - low, medium or high.

The **significance** of the potential visual impact is equal to the **consequence** multiplied by the **probability** of the impact occurring, where the consequence is determined by the sum of the individual scores for magnitude, duration and extent (i.e. **significance = consequence (magnitude + duration + extent) x probability**).

The significance weighting for each potential visual impact (as calculated above) is as follows:

- <30 points: Low (where the impact would not have a direct influence on the decision to develop in the area)
- 30-60 points: Medium/moderate (where the impact could influence the decision to develop in the area)
- >60: High (where the impact must have an influence on the decision to develop in the area)

[4] Long distance = > 3km, medium to longer distance = 1.5 – 3km, short distance = 0.5 – 1.5km and very short distance = < 0.5km (refer to Section 6.3. Visual distance/observer proximity to the ECF).

[5] This value is read from the visual impact index. Where more than one value is applicable, the higher of these will be used as a worst case scenario.

6.8. Visual impact assessment

The primary and secondary visual impacts of the proposed ECF infrastructure are assessed below.

6.8.1. Construction impacts

6.8.1.1. Potential visual impact of construction activities on sensitive visual receptors in close proximity to the proposed ECF and ancillary infrastructure

During construction, there may be a noticeable increase in heavy vehicles utilising the roads to the development site that may cause, at the very least, a visual nuisance to other road users and landowners in closer proximity (< 0.5km) to the construction activities.

Construction activities may potentially result in a **moderate** (significance rating = 36), temporary visual impact, that may be mitigated to **low** (significance rating = 20).

Table 2: Visual impact of construction activities on sensitive visual receptors in close proximity to the proposed ECF.

Nature of Impact: Visual impact of construction activities on sensitive visual receptors in close proximity to the proposed ECF.		
	Without mitigation	***With mitigation***
Extent	Very short distance **(4)**	Very short distance **(4)**
Duration	Short term **(2)**	Short term **(2)**
Magnitude	Moderate **(6)**	Low **(4)**
Probability	Probable **(3)**	Improbable **(2)**
Significance	Moderate **(36)**	Moderate **(20)**
Status (positive or negative)	Negative	Negative
Reversibility	Reversible **(1)**	Reversible **(1)**
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation: Planning: ➢ Retain and maintain natural vegetation (if present) immediately adjacent to the development footprint. Construction: ➢ Ensure that vegetation cover adjacent to the development footprint (if present) is not unnecessarily removed during the construction phase. ➢ Plan the placement of laydown areas and temporary construction equipment camps in order to minimise vegetation clearing (i.e. in already disturbed areas) wherever possible. ➢ Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads. ➢ Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed regularly at licensed waste facilities. ➢ Reduce and control construction dust using approved dust suppression techniques as and when required (i.e. whenever dust		

becomes apparent). ➢ Restrict construction activities to daylight hours whenever possible in order to reduce lighting impacts. ➢ Rehabilitate all disturbed areas (if present/if required) immediately after the completion of construction works.
Residual impacts: None, provided rehabilitation works are carried out as specified.

6.8.2. Operational impacts

6.8.2.1. Potential visual impact on sensitive visual receptors located within a 0.5km radius of the ECF

The ECF is expected to have a **moderate** visual impact (significance rating = 54) on observers travelling along the R555 main road. This impact significance may be reduced to **low** (significance rating = 28) with the implementation of mitigation measures. Mitigation measures include the preservation and maintenance of the natural vegetation cover located in between the ECF site and the R555 road.

There are no residences within a 0.5km radius of the proposed facility.

Mitigation of this impact is possible and both specific measures as well as general "best practice" measures are recommended in order to reduce/mitigate the potential visual impact. The table below illustrates this impact assessment.

Table 3: Visual impact on observers in close proximity to the proposed ECF structures.

Nature of Impact: Visual impact on observers travelling along the R555 main road within a 0.5km radius of the ECF structures.		
	Without mitigation	***With mitigation***
Extent	Very short distance **(4)**	Very short distance **(4)**
Duration	Long term **(4)**	Long term **(4)**
Magnitude	Very high **(10)**	Moderate **(6)**
Probability	Probable **(3)**	Improbable **(2)**
Significance	Moderate **(54)**	Low **(28)**
Status (positive, neutral or negative)	Negative	Negative
Reversibility	Reversible **(1)**	Reversible **(1)**
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	

Mitigation / Management: Planning: ➢ Retain/re-establish and maintain natural vegetation (if present) immediately adjacent to the development footprint. ➢ Consult adjacent landowners (if present) in order to inform them of the development and to identify any (valid) visual impact concerns. ➢ Investigate the potential to screen affected receptor sites (if applicable and located within 0.5km of the facility) with planted vegetation cover. Operations: ➢ Maintain the general appearance of the facility as a whole. Decommissioning: ➢ Remove infrastructure not required for the post-decommissioning use. ➢ Rehabilitate all affected areas. Consult an ecologist regarding rehabilitation specifications.
Residual impacts: The visual impact will be removed after decommissioning, provided the ECF infrastructure is removed. Failing this, the visual impact will remain.

6.8.2.2. Potential visual impact on sensitive visual receptors within a 0.5 – 1.5km radius

The operational ECF could have a **low** visual impact (significance rating = 26) on observers within 0.5 – 1.5km radius of the structures, both before and after the implementation of mitigation measure. This is due to the fact that there are no residences within this zone.

Mitigation of this impact is possible and both specific measures as well as general "best practice" measures are recommended in order to reduce/mitigate the potential visual impact. The table below illustrates this impact assessment.

Table 4: Visual impact of the proposed ECF structures within a 0.5 – 1.5km radius.

Nature of Impact: Visual impact on observers within a 0.5 – 1.5km radius of the ECF structures.		
	Without mitigation	***With mitigation***
Extent	Short distance **(3)**	Short distance **(3)**
Duration	Long term **(4)**	Long term **(4)**
Magnitude	Moderate **(6)**	Moderate **(6)**
Probability	Improbable **(2)**	Improbable **(2)**
Significance	Low **(26)**	Low **(26)**
Status (positive, neutral or negative)	Negative	Negative
Reversibility	Reversible **(1)**	Reversible **(1)**
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No, however best practice measures are recommended.	

Mitigation / Management: Planning: ➢ Retain/re-establish and maintain natural vegetation (if present) immediately adjacent to the development footprint. Operations: ➢ Maintain the general appearance of the facility as a whole. Decommissioning: ➢ Remove infrastructure not required for the post-decommissioning use. ➢ Rehabilitate all affected areas. Consult an ecologist regarding rehabilitation specifications.
Residual impacts: The visual impact will be removed after decommissioning, provided the ECF infrastructure is removed. Failing this, the visual impact will remain.

6.8.2.3. Potential visual impact on sensitive visual receptors within a 1.5 – 3km radius

The operational ECF could have a **low** visual impact (significance rating = 24) on observers at Ga-Mampuru located within 1.5 – 3km radius of the structures, both before and after the implementation of mitigation measure.

Mitigation of this impact is possible and both specific measures as well as general "best practice" measures are recommended in order to reduce/mitigate the potential visual impact. The table below illustrates this impact assessment.

Table 5: Visual impact of the proposed ECF structures within a 1.5 – 3km radius.

Nature of Impact: Visual impact on observers within a 1.5 – 3km radius of the ECF structures.		
	Without mitigation	***With mitigation***
Extent	Medium to longer distance **(2)**	Medium to longer distance **(2)**
Duration	Long term **(4)**	Long term **(4)**
Magnitude	Moderate **(6)**	Moderate **(6)**
Probability	Improbable **(2)**	Improbable **(2)**
Significance	Low **(24)**	Low **(24)**
Status (positive, neutral or negative)	Negative	Negative
Reversibility	Reversible **(1)**	Reversible **(1)**
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No, however best practice measures are recommended.	
Mitigation / Management: Planning: ➢ Retain/re-establish and maintain natural vegetation (if present) immediately adjacent to the development footprint. Operations: ➢ Maintain the general appearance of the facility as a whole. Decommissioning: ➢ Remove infrastructure not required for the post-decommissioning use. ➢ Rehabilitate all affected areas. Consult an ecologist regarding rehabilitation specifications.		

Residual impacts: The visual impact will be removed after decommissioning, provided the ECF infrastructure is removed. Failing this, the visual impact will remain.

6.8.2.4. Lighting impacts

Potential visual impact of operational, safety and security lighting of the facility at night on observers in close proximity to the proposed ECF.

Lighting impacts relate to the effects of glare and sky glow. The source of glare light is unshielded luminaries which emit light in all directions and which are visible over long distances.

Sky glow is the condition where the night sky is illuminated when light reflects off particles in the atmosphere such as moisture, dust or smog. The sky glow intensifies with the increase in the number of light sources. Each new light source, especially upwardly directed lighting, contribute to the increase in sky glow. It is possible that the ECF may contribute to the effect of sky glow within the region.

Mitigation of direct lighting impacts and sky glow entails the pro-active design, planning and specification of lighting for the facility. The correct specification and placement of lighting and light fixtures for the ECF and the ancillary infrastructure (e.g. workshop and storage facilities) will go far to contain rather than spread the light.

The following table summarises the assessment of this anticipated impact, which is likely to be of **moderate** significance, and may be mitigated to **low**.

Table 6: Impact table summarising the significance of visual impact of lighting at night on visual receptors in close proximity to the proposed ECF.

Nature of Impact: Visual impact of lighting at night on sensitive visual receptors in close proximity to the proposed ECF.		
	Without mitigation	***With mitigation***
Extent	Very short distance **(4)**	Very short distance **(4)**
Duration	Long term **(4)**	Long term **(4)**
Magnitude	High **(8)**	Moderate **(6)**
Probability	Probable **(3)**	Improbable **(2)**
Significance	Moderate **(48)**	Low **(28)**
Status (positive or negative)	Negative	Negative
Reversibility	Reversible **(1)**	Reversible **(1)**
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation: <u>Planning & operation</u>: ➢ Shield the sources of light by physical barriers (walls, vegetation, or the structure itself). ➢ Limit mounting heights of lighting fixtures, or alternatively use foot-lights or bollard level lights. ➢ Make use of minimum lumen or wattage in fixtures. ➢ Make use of down-lighters, or shielded fixtures. ➢ Make use of Low Pressure Sodium lighting or other types of low impact		

lighting. ➢ Make use of motion detectors on security lighting. This will allow the site to remain in relative darkness, until lighting is required for security or maintenance purposes.
Residual impacts: The visual impact will be removed after decommissioning, provided the ECF and ancillary infrastructure is removed. Failing this, the visual impact will remain.

6.8.2.5. Ancillary infrastructure

On-site ancillary infrastructure associated with the ECF includes internal access roads, workshop, office buildings, etc.

No dedicated viewshed analyses have been generated for the ancillary infrastructure, as the range of visual exposure will fall within that of the ECF. The anticipated visual impact resulting from this infrastructure is likely to be of **low** significance both before and after mitigation.

Table 7: Visual impact of the ancillary infrastructure.

Nature of Impact: Visual impact of the ancillary infrastructure during the operation phase on observers in close proximity to the structures.		
	Without mitigation	***With mitigation***
Extent	Very short distance **(4)**	Very short distance **(4)**
Duration	Long term **(4)**	Long term **(4)**
Magnitude	Low **(4)**	Low **(4)**
Probability	Improbable **(2)**	Improbable **(2)**
Significance	Low **(24)**	Low **(24)**
Status (positive, neutral or negative)	Negative	Negative
Reversibility	Reversible **(1)**	Reversible **(1)**
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No, only best practise measures can be implemented	
Generic best practise mitigation/management measures: <u>Planning:</u> ➢ Retain/re-establish and maintain natural vegetation (if present) immediately adjacent to the development footprint where possible. <u>Operations:</u> ➢ Maintain the general appearance of the infrastructure. <u>Decommissioning:</u> ➢ Remove infrastructure not required for the post-decommissioning use. ➢ Rehabilitate all affected areas. Consult an ecologist regarding rehabilitation specifications.		
Residual impacts: The visual impact will be removed after decommissioning, provided the ancillary infrastructure is removed. Failing this, the visual impact will remain.		

6.8.2.6. Secondary impacts

The potential visual impact of the proposed ECF on the sense of place of the region.

Sense of place refers to a unique experience of an environment by a user, based on his or her cognitive experience of the place. Visual criteria, specifically the

visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.), plays a significant role.

An impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light.

The greater environment has a rural, undeveloped character and a natural appearance. These generally undeveloped landscapes are considered to have a high visual quality, except where mining/industrial and residential developments represent existing visual disturbances.

The anticipated visual impact of the proposed ECF on the regional visual quality (i.e. beyond 3km of the proposed infrastructure), and by implication, on the sense of place, is generally expected to be of **low** significance.

Table 8: The potential impact on the sense of place of the region.

Nature of Impact: The potential impact on the sense of place of the region.		
	Without mitigation	***With mitigation***
Extent	Medium to longer distance **(2)**	Medium to longer distance **(2)**
Duration	Long term **(4)**	Long term **(4)**
Magnitude	Low **(4)**	Low **(4)**
Probability	Improbable **(2)**	Improbable **(2)**
Significance	Low **(20)**	Low **(20)**
Status (positive, neutral or negative)	Negative	Negative
Reversibility	Reversible **(1)**	Reversible **(1)**
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No, only best practise measures can be implemented	
Generic best practise mitigation/management measures: <u>Planning:</u> ➢ Retain/re-establish and maintain natural vegetation (if present) immediately adjacent to the development footprint where possible. <u>Operations:</u> ➢ Maintain the general appearance of the facility as a whole. <u>Decommissioning:</u> ➢ Remove infrastructure not required for the post-decommissioning use. ➢ Rehabilitate all affected areas. Consult an ecologist regarding rehabilitation specifications.		
Residual impacts: The visual impact will be removed after decommissioning, provided the ECF infrastructure is removed. Failing this, the visual impact will remain.		

The potential cumulative visual impact of the ECF on the visual quality of the landscape.

No potential cumulative visual impacts are expected. The placement of the ECF within the Lion Smelter property, and in very close proximity to the smelter plant itself, is expected to consolidate the potential visual impact to a large degree.

The cumulative visual impact of the proposed ECF is expected to be of **low** significance due to the industrial nature of the site and the existing visual disturbances present at this locality i.e. the visual amenity of this site have already been compromised.

Table 9: The potential cumulative visual impact of the ECF on the visual quality of the landscape.

Nature of Impact: The potential cumulative visual impact of the ECF on the visual quality of the landscape.		
	Overall impact of the proposed project considered in isolation (with mitigation)	***Cumulative impact of the project and other projects within the area (with mitigation)***
Extent	Very short distance **(4)**	Medium to longer distance **(2)**
Duration	Long term **(4)**	Long term **(4)**
Magnitude	Moderate **(6)**	Moderate **(6)**
Probability	Improbable **(2)**	Improbable **(2)**
Significance	Low **(28)**	Low **(24)**
Status (positive, neutral or negative)	Negative	Negative
Reversibility	Reversible **(1)**	Reversible **(1)**
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No, only best practise measures can be implemented	
Generic best practise mitigation/management measures: <u>Planning:</u> ➢ Retain/re-establish and maintain natural vegetation (if present) immediately adjacent to the development footprint where possible. <u>Operations:</u> ➢ Maintain the general appearance of the facility as a whole. <u>Decommissioning:</u> ➢ Remove infrastructure not required for the post-decommissioning use. ➢ Rehabilitate all affected areas. Consult an ecologist regarding rehabilitation specifications.		
Residual impacts: The visual impact will be removed after decommissioning, provided the ECF infrastructure is removed. Failing this, the visual impact will remain.		

6.9. The potential to mitigate visual impacts

The primary visual impact, namely the layout and appearance of the ECF is not possible to mitigate. The functional design of the ECF cannot be changed in order to reduce visual impacts.

The following mitigation is however possible:

- It is recommended that vegetation cover (i.e. either natural or planted) immediately adjacent to the development footprint (and especially in between the ECF and the R555 road) be maintained, both during construction and operation of the proposed facility. This will minimise the visual impact resulting from areas denuded of vegetation and shield the facility from observers travelling along the R555.

- Existing roads should be utilised wherever possible. New roads should be planned taking due cognisance of the topography to limit cut and fill requirements. The construction/upgrade of roads should be undertaken properly, with adequate drainage structures in place to forego potential erosion problems.

- In terms of onsite ancillary buildings and structures, it is recommended that it be planned so that clearing of vegetation is minimised where possible. This implies consolidating this infrastructure as much as possible and making use of already disturbed areas rather than undisturbed sites wherever possible.

- Mitigation of lighting impacts includes the pro-active design, planning and specification of lighting for the facility. The correct specification and placement of lighting and light fixtures for the proposed ECF and ancillary infrastructure will go far to contain rather than spread the light. Mitigation measures include the following:

    - Shielding the sources of light by physical barriers (walls, vegetation, or the structure itself);
    - Limiting mounting heights of lighting fixtures, or alternatively using foot-lights or bollard level lights;
    - Making use of minimum lumen or wattage in fixtures;
    - Making use of down-lighters, or shielded fixtures;
    - Making use of Low Pressure Sodium lighting or other types of low impact lighting.
    - Making use of motion detectors on security lighting. This will allow the site to remain in relative darkness, until lighting is required for security or maintenance purposes.

- Mitigation of visual impacts associated with the construction phase, albeit temporary, would entail proper planning, management and rehabilitation of the construction site. Recommended mitigation measures include the following:

    - Ensure that vegetation adjacent to the development footprint (if present) is not unnecessarily cleared or removed during the construction period.
    - Reduce the construction period through careful logistical planning and productive implementation of resources wherever possible.
    - Plan the placement of laydown areas and any potential temporary construction camps in order to minimise vegetation clearing (i.e. in already disturbed areas) wherever possible.
    - Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads.
    - Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed regularly at licensed waste facilities.
    - Reduce and control construction dust through the use of approved dust suppression techniques as and when required (i.e. whenever dust becomes apparent).
    - Restrict construction activities to daylight hours in order to negate or reduce the visual impacts associated with lighting wherever possible.

- Rehabilitate all disturbed areas (if present/if required) immediately after the completion of construction works.

- During operation, the maintenance of the ECF and ancillary structures and infrastructure will ensure that the facility does not degrade, therefore avoiding aggravating the visual impact.

- Roads must be maintained to forego erosion and to suppress dust, and rehabilitated areas must be monitored for rehabilitation failure. Remedial actions must be implemented as and when required.

- Once the facility has exhausted its life span, the main facility and all associated infrastructure not required for the post rehabilitation use of the site should be removed and all disturbed areas appropriately rehabilitated, unless a new authorisation is granted for the plant to continue a new cycle. An ecologist should be consulted to give input into rehabilitation specifications.

- All rehabilitated areas should be monitored for at least a year following decommissioning, and remedial actions implemented as and when required.

- Secondary impacts anticipated as a result of the proposed ECF (i.e. visual character and sense of place) are not possible to mitigate.

- Where sensitive visual receptors (if present) are likely to be affected it is recommended that the developer enter into negotiations with the property owners regarding the potential screening of visual impacts at the receptor site. This may entail the planting of vegetation, trees or the construction of screens. Ultimately, visual screening is most effective when placed at the receptor itself.

Good practice requires that the mitigation of both primary and secondary visual impacts, as listed above, be implemented and maintained on an ongoing basis.

7. CONCLUSION AND RECOMMENDATIONS

The construction and operation of the proposed ECF and its associated infrastructure is expected to primarily have a visual impact on road users (along the R555) within a 0.5km radius of the facility. This visual impact may largely be mitigated. No cumulative visual impacts are envisaged.

Overall, the post mitigation significance of the visual impacts is expected to be **low** as a result of the industrial nature of the site and the existing visual disturbances present at this locality i.e. the visual amenity of this site have already been compromised. There are no residences or residential developments within close proximity of the proposed ECF and the primary land uses adjacent to the proposed development is mining and industrial of nature. The construction of the proposed ECF is not expected to be in conflict with these current land uses.

A number of mitigation measures have been proposed (**Section 6.9.**). Regardless of whether or not mitigation measures will reduce the significance of the anticipated visual impacts, they are considered to be good practice and should all be implemented and maintained throughout the construction, operation and decommissioning phases of the proposed facility.

If mitigation is undertaken as recommended, it is concluded that the significance of most of the anticipated visual impacts will remain at or be managed to acceptable levels. As such, the ECF and associated infrastructure would be considered to be acceptable from a visual impact perspective and can therefore be authorised.

8. IMPACT STATEMENT

The findings of the Visual Impact Assessment undertaken for the proposed Lion ECF is that the visual environment surrounding the site, especially within a 0.5km radius the proposed facility, may be visually impacted during the anticipated operational lifespan of the facility (i.e. a minimum of 20 years), should no mitigation be undertaken.

This impact is primarily applicable to the individual ECF and no cumulative visual impacts are expected.

The following is a summary of impacts remaining, assuming mitigation as recommended, is exercised:

- During construction, there may be a noticeable increase in heavy vehicles utilising the roads to the development site that may cause, at the very least, a visual nuisance to other road users and landowners in the area. Construction activities may potentially result in a **moderate**, temporary visual impact that may be mitigated to **low**.

- The ECF is expected to have a **moderate** visual impact on observers travelling along the R555 main road. This impact significance may be reduced to **low** with the implementation of mitigation measures. Mitigation measures include the preservation and maintenance of the natural vegetation cover located in between the ECF site and the R555 road.

- The operational ECF could have a **low** visual impact on observers within 0.5 – 1.5km radius of the structures, both before and after the implementation of mitigation measure. This is due to the fact that there are no residences within this zone.

- The operational ECF could have a **low** visual impact on observers at Ga-Mampuru located within 1.5 – 3km radius of the structures, both before and after the implementation of mitigation measure.

- The anticipated impact of lighting at the ECF is likely to be of **moderate** significance, and may be mitigated to **low**.

- The anticipated visual impact resulting from the construction of on-site ancillary infrastructure is likely to be of **low** significance both before and after mitigation.

- The anticipated visual impact of the proposed ECF on the regional visual quality (i.e. beyond 3km of the proposed infrastructure), and by implication, on the sense of place, is generally expected to be of **low** significance.

- The cumulative visual impact of the proposed ECF is expected to be of **low** significance due to the industrial nature of the site and the existing visual

disturbances present at this locality i.e. the visual amenity of this site have already been compromised.

Overall, the post mitigation significance of the visual impacts is expected to be **low.** Anticipated visual impacts on sensitive visual receptors (if and where present) in close proximity to the proposed facility are not considered to be fatal flaws for the proposed ECF.

Considering all factors, it is recommended that the development of the facility as proposed be supported; subject to the implementation of the recommended mitigation measures (**Section 6.9.**) and management programme (**Section 9.**).

9. MANAGEMENT PROGRAMME

The following management plan tables aim to summarise the key findings of the visual impact report and suggest possible management actions in order to mitigate the potential visual impacts. Refer to the tables below.

Table 10: Management programme – Planning.

OBJECTIVE: The mitigation and possible negation of visual impacts associated with the planning of the proposed ECF.		
Project Component/s	The ECF and ancillary infrastructure (i.e. access roads, security lighting, workshop, etc.).	
Potential Impact	Primary visual impact of the facility due to the presence of the ECF and associated infrastructure as well as the visual impact of lighting at night.	
Activity/Risk Source	The viewing of the above mentioned by observers on or near the site (i.e. within 0.5km of the site) as well as within the region.	
Mitigation: Target/Objective	Optimal planning of infrastructure to minimise the visual impact.	
Mitigation: Action/control	**Responsibility**	**Timeframe**
Plan the placement of laydown areas and temporary construction equipment camps in order to minimise vegetation clearing (i.e. in already disturbed areas) wherever possible.	Project proponent / contractor	Early in the planning phase.
Retain and maintain natural vegetation (if present) immediately adjacent to the development footprint.	Project proponent/ design consultant	Early in the planning phase.
Make use of existing roads wherever possible and plan the layout and construction of roads and infrastructure with due cognisance of the topography to limit cut and fill requirements.	Project proponent/ design consultant	Early in the planning phase.
Plan all roads, ancillary buildings and ancillary infrastructure in such a way that clearing of vegetation is minimised. Consolidate infrastructure and make use of already disturbed sites rather than undisturbed areas.	Project proponent/ design consultant	Early in the planning phase.
Consult a lighting engineer in the design and planning of lighting to ensure the correct specification and placement of lighting and light fixtures for the ECF and the ancillary infrastructure. The following is recommended:	Project proponent / design consultant	Early in the planning phase.

○ Shield the sources of light by physical barriers (walls, vegetation, or the structure itself). ○ Limit mounting heights of fixtures, or use foot-lights or bollard lights. ○ Make use of minimum lumen or wattage in fixtures. ○ Making use of down-lighters or shielded fixtures. ○ Make use of Low Pressure Sodium lighting or other low impact lighting. ○ Make use of motion detectors on security lighting, so allowing the site to remain in darkness until lighting is required for security or maintenance purposes.		
Performance Indicator	Minimal exposure (limited or no complaints from I&APs) of ancillary infrastructure and lighting at night to observers on or near the site (i.e. within 0.5km) and within the region.	
Monitoring	Monitor the resolution of complaints on an ongoing basis (i.e. during all phases of the project).	

Table 11: Management programme – Construction.

OBJECTIVE: The mitigation and possible negation of visual impacts associated with the construction of the proposed ECF.		
Project Component/s	Construction site and activities	
Potential Impact	Visual impact of general construction activities, and the potential scarring of the landscape due to vegetation clearing and resulting erosion.	
Activity/Risk Source	The viewing of the above mentioned by observers on or near the site.	
Mitigation: Target/Objective	Minimal visual intrusion by construction activities and intact vegetation cover outside of immediate construction work areas.	
Mitigation: Action/control	**Responsibility**	**Timeframe**
Ensure that vegetation cover adjacent to the development footprint (if present) is not unnecessarily removed during the construction phase, where possible.	Project proponent / contractor	Early in the construction phase.
Reduce the construction phase through careful logistical planning and productive implementation of resources wherever possible.	Project proponent / contractor	Early in the construction phase.
Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads.	Project proponent / contractor	Throughout the construction phase.
Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed regularly at licensed waste facilities.	Project proponent / contractor	Throughout the construction phase.
Reduce and control construction dust through the use of approved dust suppression techniques as and when required (i.e. whenever dust becomes apparent).	Project proponent / contractor	Throughout the construction phase.
Restrict construction activities to daylight hours in order to negate or reduce the	Project proponent / contractor	Throughout the construction phase.

visual impacts associated with lighting, where possible.		
Rehabilitate all disturbed areas (if present/if required) immediately after the completion of construction works.	Project proponent / contractor	Throughout and at the end of the construction phase.
Performance Indicator	Vegetation cover on and in the vicinity of the site is intact (i.e. full cover as per natural vegetation present within the environment) with no evidence of degradation or erosion.	
Monitoring	Monitoring of vegetation clearing during construction (by contractor as part of construction contract). Monitoring of rehabilitated areas quarterly for at least a year following the end of construction (by contractor as part of construction contract).	

Table 12: Management programme – Operation.

OBJECTIVE: The mitigation and possible negation of visual impacts associated with the operation of the proposed ECF.		
Project Component/s	The ECF and ancillary infrastructure (i.e. access roads, security lighting, workshop, etc.).	
Potential Impact	Visual impact of facility degradation and vegetation rehabilitation failure.	
Activity/Risk Source	The viewing of the above mentioned by observers on or near the site.	
Mitigation: Target/Objective	Well maintained and neat facility.	
Mitigation: Action/control	**Responsibility**	**Timeframe**
If specific sensitive visual receptors are identified during operation, investigate screening at the receptor site.	Project proponent / operator	Throughout the operation phase.
Maintain the general appearance of the facility as a whole, including the ECF and the ancillary structures.	Project proponent / operator	Throughout the operation phase.
Maintain roads and servitudes to forego erosion and to suppress dust.	Project proponent / operator	Throughout the operation phase.
Monitor rehabilitated areas, and implement remedial action as and when required.	Project proponent / operator	Throughout the operation phase.
Investigate and implement (should it be required) the potential to screen visual impacts at affected receptor sites.	Project proponent / operator	Throughout the operation phase.
Performance Indicator	Well maintained and neat facility with intact vegetation on and in the vicinity of the facility.	
Monitoring	Monitoring of the entire site on an ongoing basis (by operator).	

Table 13: Management programme – Decommissioning.

OBJECTIVE: The mitigation and possible negation of visual impacts associated with the decommissioning of the proposed ECF.	
Project Component/s	The ECF and ancillary infrastructure (i.e. access roads, security lighting, workshop, etc.).
Potential Impact	Visual impact of residual visual scarring and vegetation rehabilitation failure.
Activity/Risk Source	The viewing of the above mentioned by observers on or near the site.
Mitigation: Target/Objective	Only the infrastructure required for post decommissioning use of the site retained and rehabilitated vegetation in all disturbed areas.

Mitigation: Action/control	Responsibility	Timeframe
Remove infrastructure not required for the post-decommissioning use of the site.	Project proponent / operator	During the decommissioning phase.
Rehabilitate access roads and servitudes not required for the post-decommissioning use of the site. If necessary, an ecologist should be consulted to give input into rehabilitation specifications.	Project proponent / operator	During the decommissioning phase.
Monitor rehabilitated areas quarterly for at least a year following decommissioning, and implement remedial action as and when required.	Project proponent / operator	Post decommissioning.

Performance Indicator	Vegetation cover on and in the vicinity of the site is intact (i.e. full cover as per natural vegetation within the environment) with no evidence of degradation or erosion.
Monitoring	Monitoring of rehabilitated areas quarterly for at least a year following decommissioning.

10. REFERENCES/DATA SOURCES

Chief Directorate National Geo-Spatial Information, varying dates. *1:50 000 Topographical Maps and Data.*

DFFE, 2018. *National Land-cover Database 2018 (NLC2018).*

DFFE, 2021. *South African Protected Areas Database (SAPAD_OR_2021_Q1).*

DEA&DP, 2011. Provincial Government of the Western Cape. *Guideline on Generic Terms of Reference for EAPS and Project Schedules.*

Department of Environmental Affairs and Tourism (DEA&T), 2001. *Environmental Potential Atlas (ENPAT) for the Limpopo Province.*

JAXA, 2021. Earth Observation Research Centre. *ALOS Global Digital Surface Model (AW3D30).*

National Botanical Institute (NBI), 2004. *Vegetation Map of South Africa, Lesotho and Swaziland (Unpublished Beta Version 3.0)*

Oberholzer, B. (2005). *Guideline for involving visual and aesthetic specialists in EIA processes: Edition 1.*

The Environmental Impact Assessment Amendment Regulations. In Government Gazette Nr. 33306, 18 June 2010.