

**ENVIRONMENTAL IMPACT ASSESSMENT PROCESS  
FINAL ENVIRONMENTAL IMPACT REPORT**

**PROPOSED METALS INDUSTRIAL CLUSTER NEAR  
KURUMAN, NORTHERN CAPE PROVINCE**

DENC REF NO.: NC/EIA/04/JTG/GA-S/KUR1/2016

**DECEMBER 2016**

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## PROJECT DETAILS

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<b>DENC Reference No.</b>	:	NC/EIA/04/JTG/GA-S/KUR1/2016
<b>Title</b>	:	<u>Final</u> Environmental Impact Assessment Report: Proposed Metals Industrial Cluster near Kuruman, Northern Cape Province
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**When used as a reference this report should be cited as:** Savannah Environmental (2016) Final Environmental Impact Assessment Report: Proposed Metals Industrial Cluster near Kuruman, Northern Cape Province.

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## PURPOSE OF THE ENVIRONMENTAL IMPACT ASSESSMENT REPORT

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The **Northern Cape Department of Economic Development and Tourism** propose the establishment of a Metals Industrial Cluster on Portion 6253 of Erf 1 located ~2km south east of the town of Kuruman and ~1km south west of Wrenchville. The Metals Industrial Cluster (hereafter referred to as the Cluster) is planned to be a semi-industrial and industrial park that will include a variety of businesses and enterprises relating predominantly to the industrial sector (but also including entities from other supporting sectors such as IT and retail), with varying function and nature of production (i.e. ranging from light to heavy industry). The proposed project site<sup>1</sup> falls under the jurisdiction of the Ga-Segonyana Local Municipality and within the greater John Taolo Gaetsewe District Municipality in the Northern Cape Province. The full extent of the project site (~47 ha in extent) is planned to be developed and utilised for the Metals Industrial Cluster.

The nature and extent of the Metals Industrial Cluster, as well as the potential environmental impacts associated with the establishment, operation and decommissioning phases are explored in more detail in this final EIA report. The final EIA Report consists of nine chapters, which include:

- » **Chapter 1** provides background to the project and the environmental impact assessment process followed within this final EIA report.
- » **Chapter 2** provides the project description, need and desirability, project site selection information and identified project alternatives.
- » **Chapter 3** outlines the strategic regulatory and legal context for industrial development in South Africa and specifically for the project.
- » **Chapter 4** outlines the approach to undertaking the environmental impact assessment process.
- » **Chapter 5** describes the existing biophysical and socio-economic environment within and surrounding the project site.
- » **Chapter 6** provides an assessment of the potential issues and impacts associated with the project and presents recommendations for mitigation of significant impacts.
- » **Chapter 7** provides an assessment of the potential for cumulative impacts.
- » **Chapter 8** presents the conclusions and recommendations based on the findings of the EIA.
- » **Chapter 9** provides a list of reference material used to compile the final EIA Report.

The Scoping Phase of the EIA process identified potential issues associated with the Metals Industrial Cluster, and defined the extent of the studies required within the EIA Phase. The EIA Phase addresses those identified potential environmental

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<sup>1</sup> The project site is defined as Portion 6253 of Erf 1.

impacts and benefits associated with all phases of the project including design, establishment and operation, and recommends appropriate mitigation measures for potentially significant environmental impacts. This final EIA report aims to provide the environmental authorities with sufficient information to make an informed decision regarding the proposed project.

The release of the EIA Report for a 30-day review period provided stakeholders with an opportunity to verify that the issues they have raised to date have been captured and adequately considered within the study. This final EIA Report incorporates all issues and responses prior to submission to the Northern Cape Department of Environment and Nature Conservation (DENC), the decision-making authority for the project.

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## **DENC REQUIREMENT FOR THE ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

Savannah Environmental has compiled a table (refer to **Table 1** below) which outlines the DENC requirements as outlined in the acceptance of the Scoping report dated June 2016, and where in the final Environmental Impact Assessment report the requirements have been addressed for ease of reference.

**Table 1:** Information requested by DENC

<b>NO.</b>	<b>INFORMATION REQUIREMENTS</b>	<b>CROSS REFERENCE IN THIS FINAL EIA REPORT</b>
a)	Please address concerns raised by the representative of the El Dorado Hotel.	All issues and concerns raised by the El Dorado Hotel has been addressed within this <u>final</u> EIA report. Proof of correspondence is included in Appendix C.
b)	As part of the need and desirability please look into the feasibility of the project, bearing in mind that there is a current industrial area within the same location that is under-utilised.	The need and desirability for the project is included in Chapter 2. Proof of correspondence with the Ga-Segonyana Local Municipality regarding why the current industrial area cannot be utilised for the development is included in Appendix B and Appendix C6.

### INVITATION TO COMMENT ON THE EIA REPORT

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Members of the public, local communities and stakeholders were invited to comment on the EIA Report for the Metals Industrial Cluster which was made available for a 30-day review and comment period at the following locations from **02 November 2016 – 02 December 2016**:

- » Kuruman Public Library
- » [www.savannahSA.com](http://www.savannahSA.com)

## EXECUTIVE SUMMARY

The Metals Industrial Cluster is planned as a semi-industrial and industrial park that will include a variety of businesses and enterprises relating predominantly to the industrial sector (but also including entities from other supporting sectors such as IT and retail), with varying functions and nature of production (i.e. ranging from light to heavy industry). The proposed project site falls under the jurisdiction of the Ga-Segonyana Local Municipality and within the greater John Taolo Gaetsewe District Municipality in the Northern Cape Province. The full extent of the project site (~47 ha in extent) is planned to be developed and utilised for the Metals Industrial Cluster.

The proposed project plan includes the development of the cluster in multiple phases spaced over a 20-year time horizon after the initial establishment / set up. The time scale (4 Phases) will be as follows:

Phase 1 which is considered to be developed in the short term (Year 0 to 2);

Phase 2 which is considered to be developed in the medium term (Year 3 to 6);

Phase 3 which is considered to be developed in the long term (Year 7 to 20); and

Phase 4 which is intended to cater to the expansion of the Cluster beyond the 20-year timeframe planned for Phases 1 to 3.

The Cluster will consist predominantly of Small, Medium and Micro-sized

Enterprises (SMME) and Small and Medium Enterprises (SME) companies with an increasing number of larger firms over time. These enterprises could possibly be of a light, medium or heavy industrial nature.

The Cluster will be driven by a Cluster Management Company (CMC). Incentives will be offered to Cluster Member Firms (CMFs) and will include shared infrastructure, facilities and services, as well as access to funding. Shared infrastructure will include a common boundary fence, a security checkpoint, and utility connection points and roads infrastructure within the Cluster.

The Cluster will include basic infrastructure that will be required for the operation of the development. The basic infrastructure will form part of the Phase 1 development, within which the shell of the Cluster will be constructed to make provision for the development of the subsequent project phases, and enable the development within the Cluster with the necessary essential infrastructure to do so (i.e. access roads, services etc.).

Phase specific infrastructure will also be constructed within Phases 2-4, however the specific infrastructure required for these phases are not defined as yet, due to specific tenants not being able to be defined at this stage of the planned development. It can, however, be confirmed that these phases will expand on Phase 1 which includes an increase in the CMFs located within the Cluster that will lead to a higher demand for existing or



additional infrastructure or facilities. The shared infrastructure will be upgraded or expanded in order to ensure to the functioning of the expanded Cluster into the subsequent phases.

Any entity or company (CMF) planning to be located within the Metals Industrial Cluster will be required to make provision for the specific infrastructure that would be required for the operation of that specific entity, and the undertaking of its own permits and authorisations in terms of the legal requirements.

The overarching objective of the Metals Industrial Cluster is to diversify economic activities and encourage development in the Northern Cape Province while maximising metals-related production through the development of a cluster with competitive but complimentary industries.

## **SUMMARY OF THE POTENTIAL IMPACTS**

### **Impacts on Ecology**

The entire project site is located within the Kuruman Thornveld vegetation type, which is not considered as sensitive (low ecological sensitivity), however there are individuals of trees and aloes that are protected, including the Camel Thorn Tree (*Acacia erioloba*) and Aloes (*Aloe heroensis*). On a plant community level there are sensitive habitats present (medium ecological sensitivity) within the project site that mainly relate to dolomite and rocky

outcrops. No seasonal drainage lines or wetlands occur within the project site that will be affected by the development. The significance of ecological impacts can be reduced to acceptable levels, and are rated as being medium-low.

### **Impacts on Heritage and Palaeontological Resources**

The project site is completely underlain by sediments of the Early Precambrian, Transvaal Supergroup, Ghaap Group and Campbell Rand Subgroup. The Campbell Subgroup sediments were deposited on the shallow submerged Kaapvaal Craton, approximately 2.6 to 2.5 Ga (billion years ago). Stromatolites are concentrated on the north, eastern and central portion of the proposed site. Exposed stromatolites are badly weathered, but there is a possibility that specimens still covered by sediments could be better preserved. The overall impact of the development on the palaeontological resources is of a low significance subject to the implementation of the recommended mitigation measures.

The project site is not considered to be sensitive from an archaeological perspective. This is supported by the fact that no archaeological material was identified within the project site and that similar observations have been made in areas surrounding the project site. The project site is of a low archaeological significance, with and without the implementation of the recommended mitigation measures.

## **Social and Economic Impacts**

Positive and negative social impacts have been identified. The assessment of the key issues indicated that there are no negative impacts that can be classified as fatal flaws and which are of such significance that they cannot be successfully mitigated.

The main social impacts associated with the development of the Metals Industrial Cluster is of a positive nature mainly relating to economic growth, employment, skills development, procurement and progress within the greater Kuruman area. The development will also aid in the relief of the main social issues associated with the Ga-Segonyana Local Municipality relating mainly to unemployment.

The negative impacts relate to the construction activities associated with the establishment of the Metals Industrial Cluster. These negative issues include nuisance impacts, an impact on the daily movement patterns of the local people and an in-migration of jobseekers to the area.

The positive social impacts exceed the negative impacts and can be enhanced to intensify the effect. The positive impacts have a significance which ranges between low and high (with the implementation of enhancement measures), supporting the social and economic opportunities that will be associated with the development of the Metals Industrial Cluster. The negative social impacts range between

a low and medium significance (with the implementation of the recommended mitigation measures), but are considered appropriate in terms of the development within the urban edge of Kuruman.

From a traffic perspective and the increase in traffic within the area associated with the establishment of the Cluster, the development will have an impact on the road infrastructure's capacity to carry the additional construction vehicles. The traffic impacts including increased pressure on the existing road network relate predominantly the N14/R31 intersection located within the town of Kuruman and the intersection located north of the project site which is the connection between the N14 and the secondary unnamed surface road which provides direct access to the project site. Necessary road infrastructure upgrades at the intersections analysed should be considered for the Phase 1 of the Cluster development. Due to the size of the planned Cluster development, the time period over which the development will be established, and the undetermined number of expected trips, it is recommended that further study of the impact of traffic movement on the local and municipal roads by the Local Municipality as the Cluster expands and further an increase in traffic is noted. This would consider other intersections within Kuruman) where traffic pressure is considered likely.

## **Assessment of Potential Cumulative Impacts**

Cumulative impacts and benefits on various environmental and social receptors will occur to varying degrees with the development of the industrial sector and other development within South Africa. The degree of significance of these cumulative impacts is difficult to predict without detailed studies based on more comprehensive data/information on each of the receptors and the site specific developments. The current study assesses the cumulative impacts associated with the Metals Industrial Cluster together with other development within the area on the basis of current and best available information, with precautionary assumptions taken into account.

The development of the Metals Industrial Cluster is undoubtedly positive from an economical perspective and is considered as acceptable and without any unacceptable loss or risk to the environmental and social aspects of the project site and the broader area.

As the greater Kuruman area is located within a corridor identified for the development of the industrial and mining sector, as per the PSDF, it can be expected that various developments within these sector will be taking place in future as the area was identified as being suitable for these types of developments.

Considering the findings of the specialist assessments undertaken for

the Cluster, the cumulative impacts for the proposed Metals Industrial Cluster will be acceptable, without any unacceptable loss or risks and the majority are rated as being of moderate-low significance with mitigation.

## **OVERALL CONCLUSION (IMPACT STATEMENT)**

Due to the limited number of vacant land parcels available for the development of a Cluster within Kuruman's urban edge, as well as the approval from the Ga-Segonyana Local Municipality (landowner) for the intended use of the land, no other feasible alternatives for project sites were identified or considered for the development. The project site selection is also supported by preferable characteristics within and surrounding the project site, including easy access to the site, proximity to the town of Kuruman and the flat topography of the area.

The technical viability of establishing an industrial development on a project site located within the urban edge of the town of Kuruman has been established by the Northern Cape Department of Economic Development and Tourism. The positive implications of establishing the Cluster on the identified project site include the following:

- » The potential to promote economic growth and development within the greater Kuruman area.
- » The establishment of the Cluster will assist in the relief of

unemployment within the area and the Local and District Municipalities.

- » The Cluster will provide skills development opportunities for local people in order to ensure a higher standard of living within the area for the people.
- » Promotion of the industrial sector within an area where mining has been the predominant industry.

The findings of the specialist studies undertaken within this EIA to assess both the benefits and potential negative impacts anticipated as a result of the proposed Cluster conclude that there are no environmental fatal flaws that should prevent the proposed Metals Industrial Cluster from proceeding. The significance levels of the majority of identified negative impacts have been assessed as being low, and further reduced by implementing the mitigation measures recommended by the specialist team during the EIA process.

## **OVERALL RECOMMENDATION**

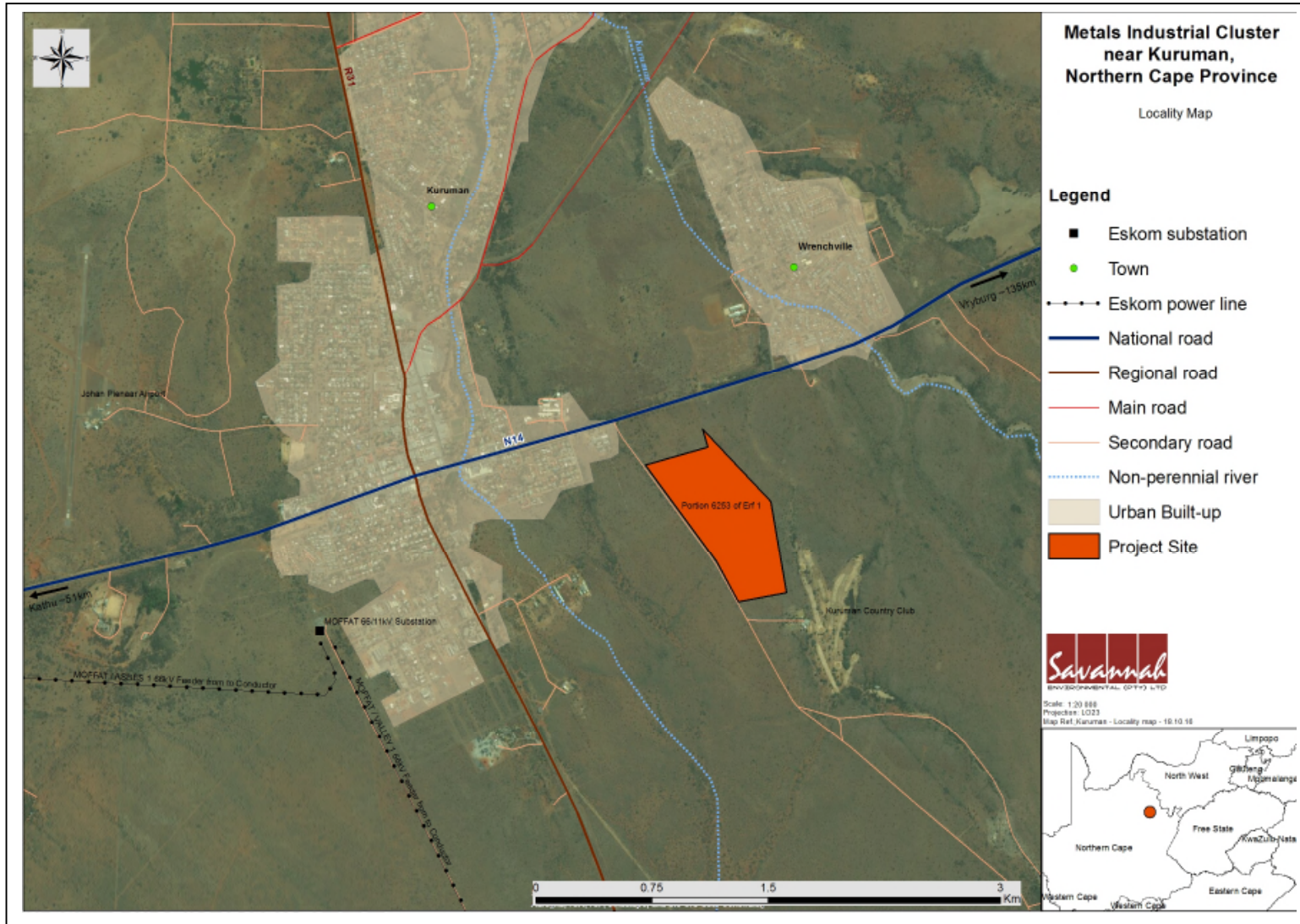
Based on the nature and extent of the proposed Metals Industrial Cluster, the local level of disturbance predicted as a result of the construction and operation of the development, the findings of the EIA, and the understanding of the significance level of potential environmental impacts, it is the opinion of the EIA project team that the negative impacts associated with the development of the Metals Industrial Cluster can be mitigated to an acceptable level, and that benefits arising from the project will

undoubtedly have a significant positive effect on the social and economic environment. The development of the Cluster is considered as acceptable and without any unacceptable loss or risk to the environmental and social aspects of the project site and the broader area. In terms of this conclusion, the EIA project team support the decision for environmental authorisation.

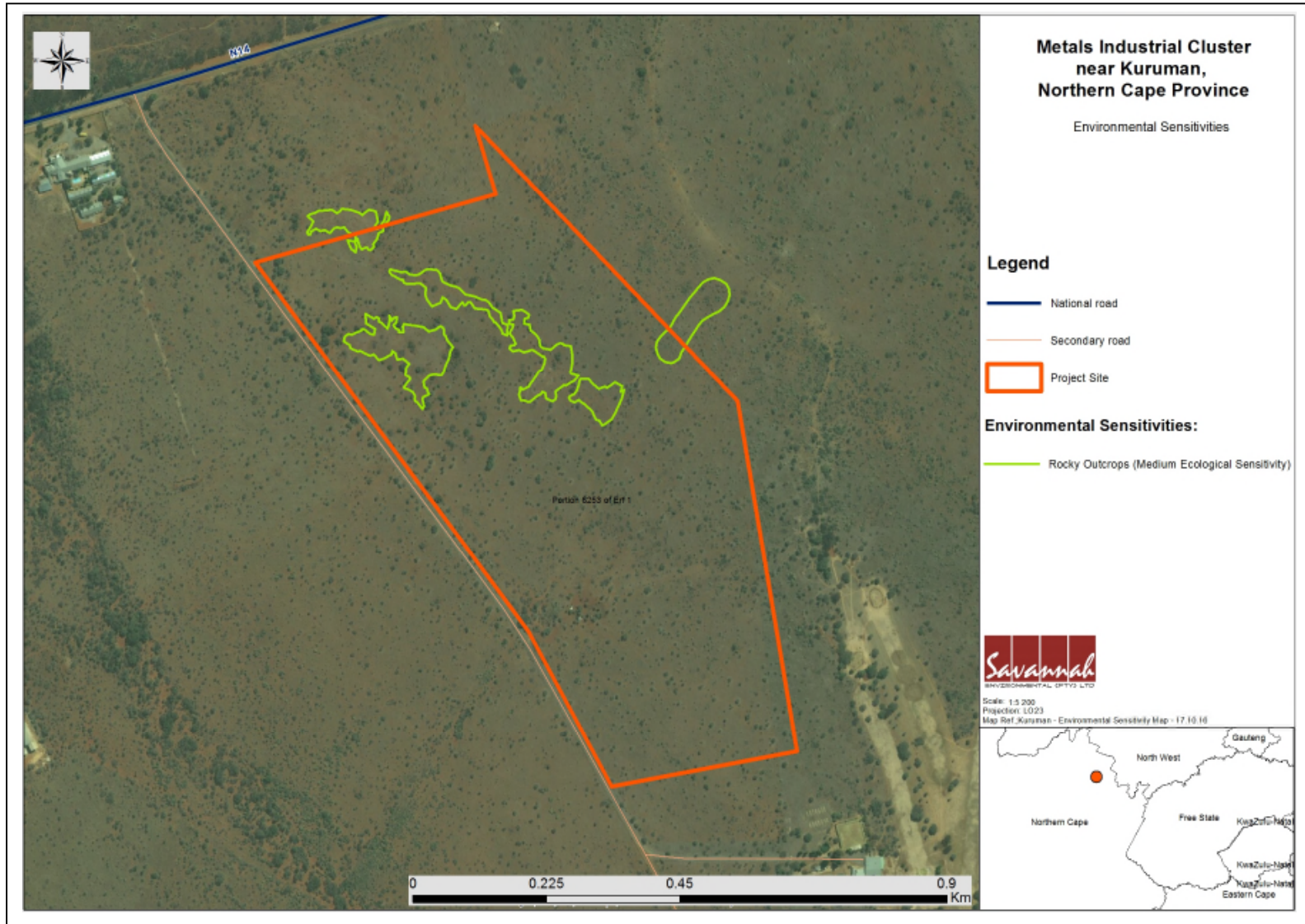
The following key conditions would be required to be included within an authorisation issued for the project:

- » All mitigation measures detailed within this report as well as the specialist reports contained within Appendices D to H are to be implemented.
- » The draft Environmental Management Programme (EMPr) as contained within Appendix J of this report should form part of the contract with the Contractors appointed to construct and maintain the proposed Cluster, and will be used to ensure compliance with environmental specifications and management measures. The implementation of this EMPr for all life cycle phases of the proposed project is considered key in achieving the appropriate environmental management standards as detailed for this project.
- » Any entity or company (CMF) planning to be located within the Metals Industrial Cluster will be required and responsible to make provision for the specific infrastructure that would be

- required for the operation of that specific entity, and the undertaking of its own permits and authorisations in terms of the legal requirements.
- » A comprehensive stormwater management plan should be compiled for the development footprint prior to construction.
  - » An ecological walk through survey of the development footprint/project site must be undertaken prior to construction commencing in order to locate individuals of Camel Thorn trees which would have to be removed. Plant species of conservation concern (e.g. Aloes) must also be located and relocated to a suitable and similar habitat where these plants can grow without any disturbance.
  - » Permits must be obtained from DAFF to remove the Camel Thorn (*Acacia erioloba*) individuals. The applicant must apply for these permits in a phased manner, as required.
  - » Weed control measures must be applied to eradicate the noxious weeds (category 1a & 1b species) on disturbed areas.
  - » Applications for all other relevant and required permits required to be obtained by the Northern Cape Department of Economic Development and Tourism must be submitted to the relevant regulating authorities. This includes permits for the transporting of all components (abnormal loads) to site, disturbance to any heritage sites, disturbance of protected vegetation and protected trees, and water uses.
- » The Cluster development parameters, such as development model, permissible floor area, permissible bulk, Public Open Space (POS), parking requirements, loading bays, site access, security requirement, public transport facilities, development phasing, financial feasibility, etc. must be cognisant of the implications on traffic (i.e. limitations and future road network planning).
  - » Necessary road infrastructure upgrading must be initiated with the commencement of the Phase 1 construction activities.



**Figure 1:** Locality map illustrating the location of the proposed project site on Portion 6253 of Erf 1 located approximately 2km south east of Kuruman and ~1km south west of Wrenchville



**Figure 2:** Environmental sensitive features located within the Metals Industrial Cluster project site

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<b>Appendix G:</b>	Traffic Assessment
<b>Appendix H:</b>	Social Impact Assessment
Appendix H(a):	Social Impact Assessment Report external reviewers letter
<b>Appendix I:</b>	Environmental Management Programme report
<b>Appendix J:</b>	A3 Maps and Project Coordinates
<b>Appendix K:</b>	EAP Affirmation

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## DEFINITIONS AND TERMINOLOGY

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**Alternatives:** Alternatives are different means of meeting the general purpose and need of a proposed activity. Alternatives may include location or site alternatives, activity alternatives, process or technology alternatives, temporal alternatives or the 'do nothing' alternative.

**Archaeological material:** Remains resulting from human activities which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures.

**Cumulative impacts:** The impact of an activity that in itself may not be significant, but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

**Direct impacts:** Impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity (e.g. noise generated by blasting operations on the site of the activity). These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable

**'Do nothing' alternative:** The 'do nothing' alternative is the option of not undertaking the proposed activity or any of its alternatives. The 'do nothing' alternative also provides the baseline against which the impacts of other alternatives should be compared.

**Drainage:** A drainage line is a lower category or order of watercourse that does not have a clearly defined bed or bank. It carries water only during or immediately after periods of heavy rainfall i.e. non-perennial, and riparian vegetation may or may not be present

**Endangered species:** Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating. Included here are taxa whose numbers of individuals have been reduced to a critical level or whose habitats have been so drastically reduced that they are deemed to be in immediate danger of extinction.

**Endemic:** An "endemic" is a species that grows in a particular area (is endemic to that region) and has a restricted distribution. It is only found in a particular place. Whether something is endemic or not depends on the geographical boundaries of the area in question and the area can be defined at different scales.

**Environment:** the surroundings within which humans exist and that are made up of:

- i. The land, water and atmosphere of the earth;

- ii. Micro-organisms, plant and animal life;
- iii. Any part or combination of (i) and (ii) and the interrelationships among and between them; and
- iv. The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

**Environmental impact:** An action or series of actions that have an effect on the environment.

**Environmental impact assessment:** Environmental Impact Assessment (EIA), as defined in the NEMA EIA Regulations and in relation to an application to which scoping must be applied, means the process of collecting, organising, analysing, interpreting and communicating information that is relevant to the consideration of that application.

**Environmental management:** Ensuring that environmental concerns are included in all stages of development, so that development is sustainable and does not exceed the carrying capacity of the environment.

**Environmental management programme:** An operational plan that organises and co-ordinates mitigation, rehabilitation and monitoring measures in order to guide the implementation of a proposal and its on-going maintenance after implementation.

**Fossil:** Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.

**Heritage:** That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act of 2000).

**Indigenous:** All biological organisms that occurred naturally within the study area prior to 1800

**Indirect impacts:** Indirect or induced changes that may occur as a result of the activity (e.g. the reduction of water in a stream that supply water to a reservoir that supply water to the activity). These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity.

**Interested and affected party:** Individuals or groups concerned with or affected by an activity and its consequences. These include the authorities, local communities, investors, work force, consumers, environmental interest groups and the general public.

**Light to heavy industries:** According to the Ga-Segonyana Local Municipality's scheme, light to medium industries are defined as developments and enterprises where no on-site manufacturing of goods, material or equipment takes place, for example bulk retailers. Medium industries are defined as businesses that usually include minor labour works, like repair works and mechanics, but does not include manufacturing. Heavy industries are defined as entities or businesses that require intensive capital investment in weighty machinery and plant, and are considered to be less labour intensive. Heavy industries usually involve automobile, mining, petroleum, and steel industries.

**Perennial and non-perennial:** Perennial systems contain flow or standing water for all or a large proportion of any given year, while non-perennial systems are episodic or ephemeral and thus contains flows for short periods, such as a few hours or days in the case of drainage lines.

**Project development property:** The project development areas considered through the EIA process in defining the area for the Cluster project include, and are defined as follows:

- » **Project Site:** Portion 6253 of Erf 1, with an extent of 47ha.
- » **Development footprint:** The development footprint will be the area housing the Metals Industrial Cluster. The development footprint will be located within the entire extent of the project site (i.e. 47ha)

**Riparian:** the area of land adjacent to a stream or river that is influenced by stream-induced or related processes. Riparian areas which are saturated or flooded for prolonged periods would be considered wetlands and could be described as riparian wetlands. However, some riparian areas are not wetlands (e.g. an area where alluvium is periodically deposited by a stream during floods but which is well drained).

**Rare species:** Taxa with small world populations that are not at present Endangered or Vulnerable, but are at risk as some unexpected threat could easily cause a critical decline. These taxa are usually localised within restricted geographical areas or habitats or are thinly scattered over a more extensive range. This category was termed Critically Rare by Hall and Veldhuis (1985) to distinguish it from the more generally used word "rare".

**Red data species:** Species listed in terms of the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species, and/or in terms of the South African Red Data list. In terms of the South African Red Data list, species are classified as being extinct, endangered, vulnerable, rare, indeterminate, insufficiently known or not threatened (see other definitions within this glossary).

**Significant impact:** An impact that by its magnitude, duration, intensity, or probability of occurrence may have a notable effect on one or more aspects of the environment.

**Watercourse:** as per the National Water Act means -

- (a) a river or spring;
- (b) a natural channel in which water flows regularly or intermittently;
- (c) a wetland, lake or dam into which, or from which, water flows; and
- (d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks

**Wetlands:** land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which under normal circumstances supports or would support vegetation typically adapted to life in saturated soil (Water Act 36 of 1998); land where an excess of water is the dominant factor determining the nature of the soil development and the types of plants and animals living at the soil surface (Cowardin et al., 1979).



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## ABBREVIATIONS AND ACRONYMS

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BID	Background Information Document
CMC	Cluster Management Company
CMF	Cluster Member Firm
CO <sub>2</sub>	Carbon dioxide
DENC	Northern Cape Department of Environment and Nature Conservation
DEA	Department of Environment Affairs
DoE	Department of Energy
DWA	Department of Water Affairs
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
GIS	Geographical Information Systems
GG	Government Gazette
GN	Government Notice
GHG	Green House Gases
GSLM	Ga-Segonyana Local Municipality
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
IPP	Independent Power Producer
JTGDM	John Taolo Gaetsewe District Municipality
km <sup>2</sup>	Square kilometres
km/hr	Kilometres per hour
MAR	Mean Annual Rainfall
m <sup>2</sup>	Square meters
m/s	Meters per second
MW	Mega Watt
NEMA	National Environmental Management Act (Act No. 107 of 1998)
NERSA	National Energy Regulator of South Africa
NHRA	National Heritage Resources Act (Act No. 25 of 1999)
NGOs	Non-Governmental Organisations
NWA	National Water Act (Act No. 36 of 1998)
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SANRAL	South African National Roads Agency Limited
SDF	Spatial Development Framework
SME	Small and Medium Enterprises
SMME	Small, Medium and Micro-sized Enterprises

## INTRODUCTION

## CHAPTER 1

The **Northern Cape Department of Economic Development and Tourism** propose the establishment of a Metals Industrial Cluster on Portion 6253 of Erf 1 located ~2km south east of the town of Kuruman and ~1km south west of Wrenchville. The Metals Industrial Cluster (hereafter referred to as the Cluster) is planned to be a semi-industrial and industrial park that will include a variety of businesses and enterprises relating predominantly to the industrial sector (but also including entities from other supporting sectors such as IT and retail), with varying function and nature of production (i.e. ranging from light to heavy industry<sup>2</sup>). The proposed project site<sup>3</sup> falls under the jurisdiction of the Ga-Segonyana Local Municipality and within the greater John Taolo Gaetsewe District Municipality in the Northern Cape Province. The full extent of the project site (~47 ha in extent) is planned to be developed and utilised for the Metals Industrial Cluster.

The proposed project plan includes the development of the cluster in multiple phases spaced over a 20-year time horizon after the initial establishment / set up. The time scale (4 Phases) will be as follows:

- i) Phase 1 which is considered to be developed in the short term (Year 0 to 2);
- ii) Phase 2 which is considered to be developed in the medium term (Year 3 to 6);
- iii) Phase 3 which is considered to be developed in the long term (Year 7 to 20); and
- iv) Phase 4 which is intended to cater to the expansion of the Cluster beyond the 20-year timeframe planned for Phases 1 to 3.

There will be an establishment phase which will form part of Phase 1 and will include the preparation of the Cluster and construction of the basic infrastructure and essential services. This establishment phase is expected to take 12-18 months.

The first three phases of the development will include semi-industrial, light to medium industries, and the fourth phase will include the expansion of the first three phases, with the option of the addition of heavy industry (depending on the demand for these types of developments within the greater Kuruman area and the municipality). According to the Ga-Segonyana Local Municipality's scheme, light to medium industries are defined as developments and enterprises where no on-site manufacturing of goods, material or equipment takes place, for example bulk

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<sup>2</sup> According to the Ga-Segonyana Local Municipality's scheme, light to medium industries are defined as developments and enterprises where no on-site manufacturing of goods, material or equipment takes place, for example bulk retailers. Medium industries are defined as businesses that usually include minor labour works, like repair works and mechanics, but does not include manufacturing. Heavy industries are defined as entities or businesses that require intensive capital investment in weighty machinery and plant, and are considered to be less labour intensive. Heavy industries usually involve automobile, mining, petroleum, and steel industries.

<sup>3</sup> The project site is defined as Portion 6253 of Erf 1.

retailers. Medium industries are defined as businesses that usually include minor labour works, like repair works and mechanics, but does not include manufacturing. Heavy industries are defined as entities or businesses that require intensive capital investment in weighty machinery and plant, and are considered to be less labour intensive. Heavy industries usually involve automobile, mining, petroleum, and steel industries.

The establishment of the Metals Industrial Cluster forms part of a drive for industrial and economic development and growth which will ensure the advancement of the town of Kuruman and the Northern Cape Province. The location of the project site is considered by the Northern Cape Department of Economic Development and Tourism as a viable and desirable opportunity to see the realisation of long-term economic and social benefits in the Kuruman area. The industrial function of the town of Kuruman and the Northern Cape Province will be strengthened with the introduction of advanced steel and metals manufacturing, as well as other related functions planned to be associated with the Metals Industrial Cluster, into the region.

The nature and extent of the establishment of this Cluster, as well as potential environmental impacts associated with the activities to be undertaken are explored in more detail in this final Environmental Impact Assessment report (hereafter referred to as the EIA report). Site specific environmental issues associated with the location of the project site are considered within various specialist assessments in order to establish the environmental suitability for the establishment and delineate areas of sensitivity within the project site that will be impacted by the development of the Metals Industrial Cluster. The following sections have been included in this final EIA report:

- » **Chapter 1** provides background to the project and the environmental impact assessment process followed within this final EIA report.
- » **Chapter 2** provides the project description, need and desirability, project site selection information and identified project alternatives.
- » **Chapter 3** outlines the strategic regulatory and legal context for industrial development in South Africa and specifically for the project.
- » **Chapter 4** outlines the approach to undertaking the environmental impact assessment process.
- » **Chapter 5** describes the existing biophysical and socio-economic environment within and surrounding the project site.
- » **Chapter 6** provides an assessment of the potential issues and impacts associated with the project and presents recommendations for mitigation of significant impacts.
- » **Chapter 7** provides an assessment of the potential for cumulative impacts.
- » **Chapter 8** presents the conclusions and recommendations based on the findings of the EIA.

» **Chapter 9** provides a list of reference material used to compile the final EIA Report.

### **1.1. Requirement for an Environmental Impact Assessment Process**

The establishment of the Metals Industrial Cluster is subject to the requirements of the EIA Regulations of 2014 published in terms of Section 24(5) of the National Environmental Management Act (NEMA) 107 of 1998. This section provides a brief overview of the EIA Regulations and their application to this proposed development.

NEMA is the national legislation that provides for the authorisation of certain controlled activities known as "listed activities". In terms of Section 24(1) of NEMA, the potential impact on the environment associated with these listed activities must be considered, investigated, assessed, and reported on to the competent authority (the decision-maker) charged by NEMA with granting of the relevant environmental authorisation. The extent of the planned development will result in the clearance of indigenous vegetation within the 47ha site and the nature of the planned development will result in a change from the current use of grazing to industrial/commercial use within an urban area. These activities trigger the requirement for an Environmental Impact Assessment, as per GN R984 of the EIA Regulations, 2014. The Northern Cape Department of Environment and Nature Conservation (DENC) is the competent authority for this project. An application for authorisation for the Metals Industrial Cluster has been accepted by the DENC (under the application reference number: NC/EIA/04/JTG/GA-S/KUR1/2016).

The need to comply with the requirements of the EIA Regulations ensures that decision-makers are provided the opportunity to consider the potential environmental impacts of a project early in the project development process, and assess if environmental impacts can be avoided, minimised or mitigated to acceptable levels. Comprehensive, independent environmental studies are required to be undertaken in accordance with the EIA Regulations (Appendix 6) to provide the competent authority with sufficient information in order for an informed decision to be taken regarding the proposed project.

The Northern Cape Department of Economic Development and Tourism, as the Applicant, has appointed Savannah Environmental (Pty) Ltd as the independent Environmental Assessment consultant to undertake the environmental impact assessment process and prepare the EIA report for the Metals Industrial Cluster.

### **1.2. Legal Requirements as per the EIA Regulations for the undertaking of an Environmental Impact Assessment Report, 2014**

This final EIA report has been prepared in accordance with the requirements of the EIA Regulations published on 08 December 2014 promulgated in terms of Chapter 5

of the National Environmental Management Act (Act No 107 of 1998). This chapter of the final EIA report includes the following information required in terms of Appendix 3: Content of Environmental Impact Assessment Reports.

Requirement	Relevant Section
3(a) the details of the EAP who prepared the report and (ii) the expertise of the EAP, including a curriculum vitae.	The details and expertise of the EAP who prepared the report has been included in section 1.6 and Appendix A.
3(b) the location of the activity including (i) the 21 digit Surveyor General code of each cadastral land parcel, (ii) where available the physical address and farm name and (iii) where the required information in items (i) and (ii) is not available, the co-ordinates of the boundary of the property or properties.	The location of the proposed Metals Industrial Cluster is included in section 1.2 and Table 1.1, and is illustrated in a locality map included as Figure 1.1. The information provided includes the 21-digit Surveyor General code of the affected property (i.e. Portion 6253 of Erf 1). Additional information is also provided regarding the location of the establishment which includes the relevant province, local and district municipalities, ward and current land zoning.

### 1.3. Background to the project

The Northern Cape Department of Economic Development and Tourism has identified a need for economic growth and development in the Province with the aim of enhancement and improvement of the current economic state of the area. The project site, Portion 6253 of Erf 1, has an extent of 47ha, and has been identified by the Department as a suitable site of sufficient extent with the potential for the development of a Metals Industrial Cluster, planned as an industrial park anchored around the steel and metals manufacturing sectors (refer to **Figure 1.1** and **Table 1.1**). The property is owned by the Ga-Segonyana Local Municipality. Upliftment and growth of the local economy is considered as a key focus area for the Municipality.

The following aspects were taken into consideration for the development of the Metals Industrial Cluster within the identified project site:

*Technical considerations:* The project site proposed for the establishment was identified on the basis of a) the accessibility of the project from the existing national road (N14) and the secondary unnamed road (direct access to the site), as well as b) the use of municipal land for the project which strengthens the approval and need for the development within the identified project site and the greater Kuruman area. The basic layout for the establishment of the Cluster was provided by the developer and approved by the Ga-Segonyana Local Municipality, as the landowner. This basic layout indicates specific industrial zones within the development footprint which will be established accordingly (i.e. light, medium or heavy industrial developments).

*Social considerations:* The establishment of the Cluster was also considered in terms of the social benefits that would arise from the project. As the Kuruman area is in need for economic growth, development and advancement and considers general development of the area as a necessity the establishment of the Cluster will aid in the creation of employment opportunities as well as advancement of the town and Province as a whole. Business opportunities within various sectors will also be associated with the development.

*Environmental considerations:* The project site is situated outside of locally sensitive environments, including drainage lines, wetland areas or unique hilly outcrops. The project site of 47ha has been considered through the Scoping Phase of the EIA process, and confirmed that no environmental fatal flaws are associated with the site. A basic layout has been provided by the developer which is assessed throughout this EIA report.

The EIA considers the entire project site for the Metals Industrial Cluster. Portion 6253 of Erf 1 is detailed below.

**Table 1.1:** A detailed description of Portion 6253 of Erf 1 proposed for the development of the Metals Industrial Cluster

<b>Province</b>	Northern Cape Province
<b>District Municipality</b>	John Taolo Gaetsewe District Municipality
<b>Local Municipality</b>	Ga-Segonyana Local Municipality
<b>Ward number(s)</b>	1
<b>Nearest town(s)</b>	Kuruman, Wrenchville, Bodulong and Mothibistad
<b>Farm name(s) and number(s)</b>	Erf 1
<b>Portion number(s)</b>	Portion 6253
<b>SG 21 Digit Code (s)</b>	C04100030000625300000
<b>Current zoning</b>	Undetermined Zone
<b>Other</b>	The site is located within the urban edge of the town of Kuruman.
<b>Extent of the affected property</b>	47ha

Project site coordinates are included within **Appendix J**.

The Cluster will consist predominantly of Small, Medium and Micro-sized Enterprises (SMME) and Small and Medium Enterprises (SME) companies with an increasing number of larger firms over time. The Cluster will be driven by a Cluster Management Company (CMC). Incentives will be offered to Cluster Member Firms (CMFs) and will include shared infrastructure, facilities and services, as well as access to funding. Shared infrastructure will include a common boundary fence, a security checkpoint, and utility connection points and roads infrastructure within the Cluster.

Shared services will also be available and include special processes, testing facilities, warehousing and storage, security services and ICT services.

For the development to be successful and thrive, not only as an industrial cluster but as a successful business venture, sufficient space is required for the development to be constructed on and operated. The development footprint of the Cluster will occupy the full extent of the property (i.e. project site), that is an area of 47ha, resulting in the entire affected property being developed. Therefore, the entire project site will be considered as total loss to the development of the Metals Industrial Cluster.

Access to the project site is possible via the unnamed secondary road located along the western boundary of the site. This road is accessed via the national road (N14), located approximately 300m to the north of the project site. Another potential access route to the project site in the general Kuruman area is the R31 regional road, which is located approximately 1.7km to the west of the site. Both the N14 and R31 provide direct access to the town of Kuruman.

The Cluster will include basic infrastructure that will be required for the operation of the development. The basic infrastructure to be constructed includes:

- » Buildings (warehousing, administrative buildings, skills development centre, student accommodation etc.);
- » Access roads including main access to the Cluster and internal access roads;
- » Landscaping;
- » Parking;
- » Fencing;
- » Infrastructure relating to bulk services including electricity, water, sewage and waste water; and
- » Security.

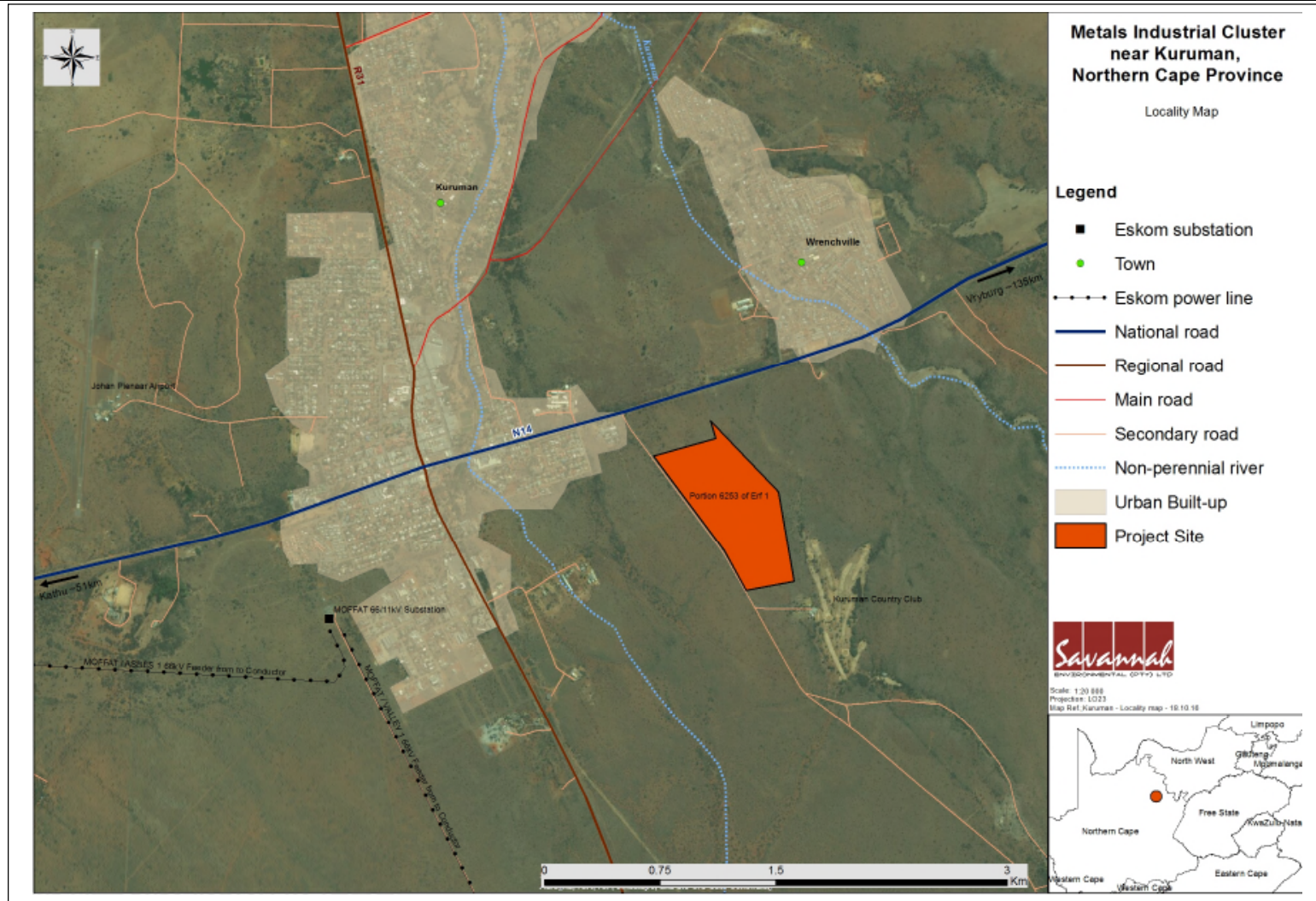
The basic infrastructure will form part of the Phase 1 development, within which the shell of the Cluster will be constructed to make provision for the development of the subsequent project phases, and enable the development within the Cluster with the necessary essential infrastructure to do so (i.e. access roads, services etc.).

Phase specific infrastructure will also be constructed within Phases 2-4, however the specific infrastructure required for these phases are not defined as yet, due to specific tenants not being able to be defined at this stage of the planned development. It can, however, be confirmed that these phases will expand on Phase 1 which includes an increase in the CMFs located within the Cluster that will lead to a higher demand for existing or additional infrastructure or facilities. The shared infrastructure will be upgraded or expanded in order to ensure to the functioning of the expanded Cluster into the subsequent phases.

Any entity or company (CMF) planning to be located within the Metals Industrial Cluster will be required and responsible to make provision for the specific infrastructure that would be required for the operation of that specific entity, and the undertaking of its own permits and authorisations in terms of the legal requirements.

The overarching objective of the Metals Industrial Cluster is to diversify economic activities and encourage development in the Northern Cape Province while maximising metals-related production through the development of a cluster with competitive but complimentary industries. In order to meet these objectives, local level environmental and planning issues will be assessed through the EIA process with the aid of site-specific specialist studies in order to delineate areas of sensitivity within the site; this will serve to inform the layout of the cluster development.





**Figure 1.1:** Locality map illustrating the location of the proposed project site on Portion 6253 of Erf 1 located approximately 2km south east of Kuruman and ~1km south west of Wrenchville

## 1.4. Conclusions from the Scoping Phase

### 1.4.1. Findings of the scoping study

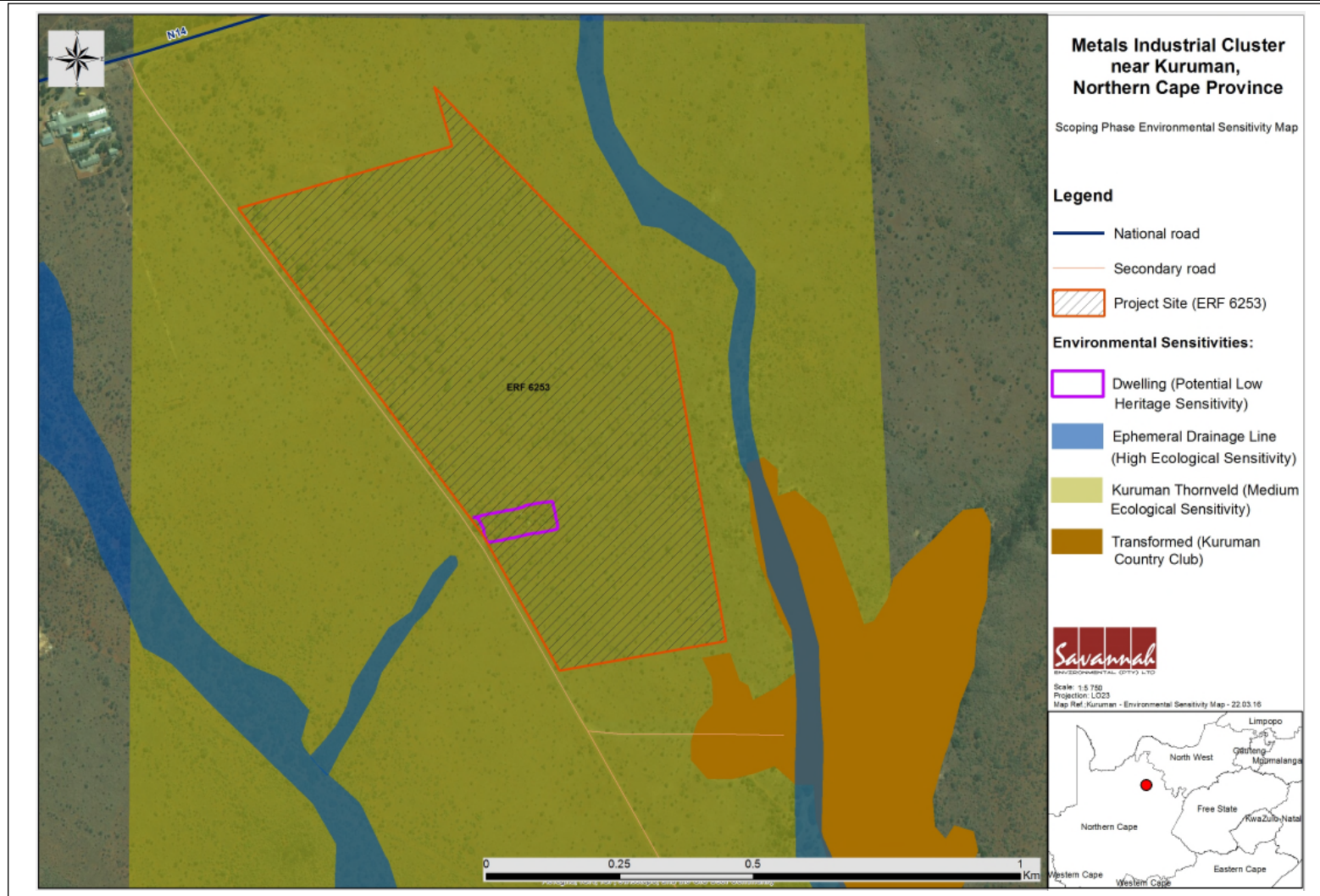
Several desktop specialist scoping studies were undertaken for the purpose of identifying potential environmental and social impacts relating to the establishment of the Cluster on the project site. The scope of the scoping evaluation included ecological, heritage (i.e. archaeology) and social impacts, and the findings are summarised below. The sensitive areas identified within the Scoping Phase have been mapped in order to inform areas considered to be sensitive to the establishment of the Cluster within the project site (refer to **Figure 1.2**).

- » **Ecology:** No ecologically sensitive habits occur within the project site. The vegetation unit present across the full extent of the project site is the Kuruman Thornveld, which is classified as a Least Threatened ecosystem. This vegetation type has a distribution throughout the Northern Cape and North West Province. The largest portion of this vegetation type is still in a natural and/or near-natural state, with only 2% transformed. The vegetation of the project site is natural veld but not in a pristine condition due to past grazing practices. The Camel Thorn (*Acacia erioloba*) forms dense stands in places, an indicator of overgrazing of the vegetation in the past. A number of footpaths also occur in a criss-cross manner within the project site. These footpaths cause degradation of the natural vegetation by the trampling effect of people and animals. The nearby dirt road also cause degradation as a result of the dust generated by cars passing by which covers the stomata of the plants. This could affect plants negatively. The dirt road furthermore cause dis-connectivity of the landscape. No wetlands or drainage lines were identified within the project site, with the two identified ephemeral streams being located outside of the project site boundary. Potential ecological impacts associated with the establishment phase of the Cluster include the transformation of the site, and subsequent loss of habitat. Potential ecological impacts associated with the operation phase of the development includes changes to the runoff patterns (owing to stormwater management and discharge), an increase in erosion potential, and the potential for alien plant invasion. Given the extensive amount of potentially intact vegetation in the greater area characterised by the same vegetation type, there is likely to be little overall disruption to the broad-scale connectivity of the landscape. With mitigation measures, including regular monitoring, effective eradication and management methods in place, the ecological impacts associated with the development of the Metals Industrial Cluster can be managed and reduced to acceptable levels.
- » **Heritage:** One area of potential archaeological interest has been identified within the project site. The structures within this area were erected after 2006 and before 2010, and so not of heritage importance. Graves are, however, often

associated with dwellings, and therefore the area of interest would be required to be ground-truthed in order to determine the presence of graves. Archaeological resources will only be impacted on in the establishment phase when excavation and ground works take place, with no impacts occurring during the operation phase.

- » Social Impacts: Socio-economic spinoffs and growth as a result of the establishment and operation of the Metals Industrial Cluster will be the most significant positive impacts associated with the development. The social positive impacts stretch beyond just the proposed site and the town of Kuruman. Opportunities relating to economic development and growth and skills development will be attracted to the greater Kuruman area where there is a need and desirability for development in general to take place. This will be utilised as a tool for the reduction of social issues within the area, which mainly relate to unemployment and a lack of economic growth. There are positive and negative social impacts associated with the establishment phase and the operation phase respectively. Positive impacts throughout the establishment and operation of the Metals Industrial Cluster includes the creation of employment opportunities and skills development opportunities, economic multiplier effects and local procurement. The development will also assist in driving industrial development in the Northern Cape Province. Negative impacts throughout the establishment and operation of the Metals Industrial Cluster includes safety and security impacts, impacts on daily living and movement patterns, an in-migration of people and nuisance impacts. Although there are negative social impacts associated with the Cluster it must be taken into account that the project site is located within the urban edge of the town of Kuruman, therefore the negative impacts are not considered to be new within the area as it is a built-up environment with its own challenges and existing developments.

No environmental fatal flaws were identified. The overall conclusion of the Scoping Phase was that the establishment of the Cluster will create benefits for the surrounding communities which will improve the standard of living without having a detrimental effect on the environment and the features located within. It was also concluded that an industrial development of this nature will be appropriate and suitable from a regional and site perspective and should be considered as a significant opportunity as a whole.



**Figure 1.2:** Environmental Sensitivity Map from the results of the scoping evaluation for the Metals Industrial Cluster located near Kuruman in the Northern Cape Province

#### 1.4.2. Findings of the public participation process

During the public participation process conducted in the Scoping Phase, the proposed Cluster was generally well received by the interested and affected parties and stakeholders in the greater Kuruman area as well as the Province. All comments and issues raised were included in the Final Scoping Report submitted to the DENC for consideration. All concerns and issues raised with the EIA team during the Scoping Phase public participation process are considered and assessed in this final EIA report.

Specific comments made during the scoping phase which have been fully addressed through additional consultation as well as additional specialist studies include:

1. The representative of the El Dorado Hotel raised concerns related to socio-economic issues, specifically those that relate to disturbance and nuisance impacts.  
*Action: This has been addressed through further consultation with the I&AP, where additional information pertaining to the planned development was shared. The I&AP has indicated that the El Dorado Hotel is in support of the development subject to the implementation of appropriate mitigation measures to ensure that the Cluster is managed correctly and sustainably. The issue has been fully assessed within the EIA phase reporting. No additional comments were submitted by the El Dorado Hotel during the 30-day review period of the EIA report. Therefore, the issues raised by the El Dorado Hotel are considered as resolved.*
2. SANRAL did not object to the development, however requested the inclusion of a Traffic Assessment in order to consider the impact of the development on the R31/N14 intersection located within the central part of Kuruman.  
*Action: A Traffic Assessment was commissioned and the results included in this final EIA report. No additional comments were submitted by SANRAL during the 30-day review period of the EIA report (inclusive of the Traffic Assessment). It is therefore considered that the requirements of the Traffic Assessment requested by SANRAL have been met.*
3. SAHRA provided comment which confirmed the findings of the heritage report, and requested the inclusion of a Palaeontological Impact Assessment due location of the project site and the underlying geology.  
*Action: A Palaeontological Impact Assessment was commissioned and the results included in this final EIA report. No additional comments were submitted by SAHRA during the 30-day review period of the EIA report. It is therefore considered that the requirements of the Palaeontological Impact Assessment requested by SAHRA have been met.*

### 1.4.3. Acceptance of the Scoping Report

No environmental or social impacts of high significance which could not be avoided or mitigated were identified to be associated with the project site during the Scoping Phase of the EIA process. The Final Scoping report was accepted by the DENC in June 2016 (refer to **Appendix B**). Two specific requirements were included into the Acceptance of Scoping which included the following:

- » Issues and concerns raised by the representative of the El Dorado Hotel must be addressed.
- » The feasibility of the project needs to be investigated as part of the need and desirability of the Metals Industrial Cluster, taking into consideration the current industrial area within Kuruman that is under-utilised.

All comments have been fully addressed within this final EIA report in order to ensure compliance with the DENC requirements, as well as those from other commenting authorities and I&APs. In terms of Section 3(7) of the EIA Regulations, DENC agreed to the extension of the prescribed timeframe in order to fully consider all comments raised through the process, and provide an EIA report on which the DENC can make an informed decision.

### 1.5. Objectives of the Environmental Impact Assessment Process

The Scoping Phase was completed in June 2016 with the submission of a Final Scoping Report to the DENC, and the acceptance of scoping. The Scoping Phase included desk-top studies and served to identify potential impacts associated with the proposed establishment and to define the extent of studies required within the EIA Phase. Input from the project developer (Northern Cape Department of Economic Development and Tourism), specialists with experience in the broader study area and in EIAs for similar projects, as well as a public consultation process with key stakeholders, which included both government authorities and interested and affected parties (I&APs), was included in the evaluation of impacts.

Appendix 3 of the Environmental Impact Assessment Process of the EIA Regulations, 2014, contains the objectives to be achieved through the undertaking of an EIA process. The following objectives have been considered and undertaken through a consultative process within this final EIA report for the Metals Industrial Cluster:

- » The policies and legislative context associated with the location of the proposed project site and the manner in which the proposed Cluster complies with and responds to the relevant policies and legislative context.
- » The need and desirability of the Metals Industrial Cluster in the context of the preferred location.

- » The location of the development footprint (i.e. basic layout) within the project site based on an impact of the development, including the consideration of cumulative impacts, focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment in order to determine the nature, significance, consequence, extent, duration, and probability of the impacts occurring to inform identified alternatives and the degree to which these impacts can be reversed, may cause irreplaceable loss of resources, and can be avoided, managed or mitigated.
- » Identify the most ideal development footprint (i.e. basic layout) for the Metals Industrial Cluster within the project site based on the lowest level of environmental sensitivity identified during the assessment.
- » Identify, assess and rank the impacts that the Cluster will have on the project site through the life of the development.
- » Identify suitable and appropriate measures to avoid, manage or mitigate identified impacts and identify residual risks which need to be managed and monitored.

The release of the EIA report for a 30 day review period provided stakeholders with an opportunity to review and provide input in terms of potential issues and concerns that may be associated with the establishment of the Cluster. This final EIA report for submission to the DENC considers and incorporates all issues, concerns and responses raised during the review period of the EIA report. The DENC will also consider these issues, concerns and responses in their decision-making of the application for Environmental Authorisation.

#### **1.6. Details of the Environmental Assessment Practitioner and Expertise to conduct the Scoping and EIA phases**

Savannah Environmental was appointed by the Northern Cape Department of Economic Development and Tourism as the independent environmental consultant and assessment practitioner to undertake the Scoping and EIA process for the proposed Metals Industrial Cluster near Kuruman. Neither Savannah Environmental nor any of its specialist sub-consultants on this project are subsidiaries of or are affiliated to the Northern Cape Department of Economic Development and Tourism. Furthermore, Savannah Environmental does not have any interests in secondary developments that may arise from the authorisation of the proposed project.

Savannah Environmental is a specialist environmental consulting company providing holistic environmental management services, including environmental impact assessments and planning to ensure compliance and evaluate the risk of development; and the development and implementation of environmental management tools. Savannah Environmental benefits from the pooled resources, diverse skills and experience in the environmental field held by its team.

The Savannah Environmental team has considerable experience in environmental impact assessments and environmental management, and have been actively involved in undertaking environmental studies, for a wide variety of projects throughout South Africa.

- » *Lisa Opperman* - the principle author of this report holds a Bachelor degree with Honours in Environmental Management and has over one year of experience in the environmental field. Her key focus is on environmental impact assessments, public participation, environmental management plans and programmes, as well as mapping using ArcGIS for a variety of environmental projects. She is currently involved in several EIAs for a variety of projects across the country.
- » *Karen Jodas* - is a registered Professional Natural Scientist and holds a Master of Science degree and is the registered EAP on the proposed project. She has 20 years of experience consulting in the environmental field. Her key focus is on strategic environmental assessment and advice; management and co-ordination of environmental projects, which includes integration of environmental studies and environmental processes into larger engineering-based projects and ensuring compliance to legislation and guidelines; compliance reporting; the identification of environmental management solutions and mitigation/risk minimising measures; and strategy and guideline development. She is currently responsible for the project management of EIAs for several projects across the country.
- » *Gabriele Wood* - has 9 years of consulting experience in public participation and social research. Her experience includes the design and implementation of public participation programmes and stakeholder management strategies for numerous integrated development planning and infrastructure projects. Her work focuses on managing the public participation component of Environmental Impact Assessments and Basic Assessments undertaken by Savannah Environmental.
- » *Candice Hunter* - is a social specialist with a Master's degree in Environmental Management and an advanced certificate in Social Impact Assessments (SIA). She has over 2 years of experience as a social consultant. Specific experience lies in field social research; the management and analysis of socio-economic baseline data; policy and programme analysis, undertaking stakeholder engagement; and conducting general social research for a variety of projects. Her expertise lie in the field of social impact assessments, with significant experience in social consulting and report writing.
- » *Pamela Sidambe* - a social specialist, holds a Master's degree in Social Impact Assessments from the University of Johannesburg, an Honours in Development Studies and a Bachelor's degree in Community Development both from the University of South Africa (UNISA).

In order to adequately identify and assess potential environmental impacts associated with the proposed project, Savannah Environmental has included the following sub-contracted specialist consultants to conduct specialist assessments:

- » Ecology – P.J du Preez (Enviro-Niche Consulting)



- » Archaeology - Jaco van der Walt (Heritage Contracts and Archaeological Consulting cc (HCAC))
- » Palaeontology – Elize Butler (Banzai Environmental)
- » Social and land use - Neville Bews (Neville Bews and Associates)
- » Traffic – Stephen Fautley (Techso)

**Appendix A** includes the curricula vitae for the environmental assessment practitioners from Savannah Environmental and the sub-contracted specialist consultants.

**OVERVIEW OF THE PROPOSED PROJECT**

**CHAPTER 2**

This chapter provides an overview of the Metals Industrial Cluster and details the project scope which includes the planning/design, establishment, construction, operation and decommissioning activities. This chapter also explores the need and desirability of the project at the preferred site location, site well as the 'do nothing' option. Lastly, it explores the use of industrial development as a means of advancement and growth in the affected area.

The Metals Industrial Cluster is planned to be established on Portion 6253 of Erf 1, located approximately 2km south east from the town of Kuruman in the Northern Cape Province.

**2.1. Legal Requirements as per the EIA Regulations for the undertaking of an Environmental Impact Assessment Report, 2014**

This chapter of the final EIA report includes the following information required in terms of Appendix 3: Content of Environmental Impact Assessment Reports:

<b>Requirement</b>	<b>Relevant Section</b>
3(d)(ii) a description of the proposed activity, including a description of the associated structures and infrastructure related to the development.	A description of the proposed establishment of the Metals Industrial Cluster is included in section 2.3.
3(f) a motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred location.	The need and desirability for the establishment of the Cluster in the proposed project site is included in section 2.2.
3(g) a motivation for the preferred development footprint within the approved site.	A motivation for the location of the identified project site and the development footprint within the project site (i.e. Portion 6253 of Erf 1) is included in section 2.4.1.
3(h)(i) details of the development footprint considered.	The details of the development footprint considered for the Metals Industrial Cluster is included in section 2.3 and Table 2.1.
3(h)(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.	The positive and negative impacts of the proposed Cluster is included in section 2.2.

3(h)(ix) if no alternative development locations for the activity were investigated, the motivation for not considering such.	A motivation for not considering any alternative project sites is included in section 2.4.1.
3(h)(x) a concluding statement indicating the preferred alternative development location within the approved site.	No alternative development locations within the proposed project site have been identified for the Metals Industrial Cluster. The motivation for not considering alternative development locations within the project site is included in section 2.4.1.

**2.2. Rationale and Benefits of the Proposed Cluster**

The primary rationale for the establishment of the Metals Industrial Cluster within the town of Kuruman relates to social consideration, with the aim of job creation, acquisition and growth of skills and knowledge, expansion of opportunities and localisation of “hard” technologies. The decision to pursue the development of the Cluster incorporating the metals manufacturing industries was driven by:

- » A strong demand throughout the Northern Cape for metal manufactures products. This demand is currently met primarily through imports, together with small and basic local fabricators.
- » The need for development of artisans, technicians and engineers will be achieved by the Cluster through various development programs, particularly on the job training, incubators, hybrid work-sharing and skills development.
- » The Cluster, including the Cluster Member Firms, will create a broader base to compete in the overall industrial market and to grow more rapidly in terms of development. Each member firm will have distinctive complementary capabilities that will create competitive advantages and scale of economies when harnessed jointly.

At the highest level, the Cluster will help address a number of issues which are related to social and economic challenges experienced by people in Kuruman, the John Taolo Gaetsewe District Municipality and the Northern Cape Province.

**Table 2.1** below indicates the local and regional needs of the area within which the site for the proposed Metals Industrial Cluster is located and the contribution that the development of the Cluster will have.

**Table 2.1:** A description of the needs in the local and regional areas surrounding the site and the manner in which the Cluster will contribute

Need	Contribution
An increase in the size of the manufacturing industry.	The Cluster in itself is a manufacturing centre and the demand generated by the Cluster will boost demand in other local areas.
An increase in employment and income	The Cluster will result in a significant amount

levels.	of direct and indirect jobs, as well as an increase in skilled and semi-skilled employment.
The local industry must be able to support strategic initiatives such as the Strategic Integrated Projects (SIPs)	The Cluster will create a local industry presence that will enable supply options for relevant SIP initiatives
Locally produce more of the goods consumed in the Northern Cape.	The Cluster will increase the number of local supply options for goods consumed in the Northern Cape as a result of the influx people that will be attracted to the area by the Cluster and through the increased economic activity which will stem from the Cluster activity.
The improvement of conditions for business development.	The Cluster will provide extensive skills-building and business support opportunities to Cluster Member Firms and associated businesses.

The following socio-economic values and benefits are expected to be associated with the development of the Metals Industrial Cluster:

- » Infrastructure relating to bulk services including electricity, water, sewage and wastewater; and
- » The anticipated capital expenditure value of the project on completion is expected to be approximately R800 million.
- » The annual income to be generated by the proposed Metals Industrial Cluster is expected to be approximately R300 million.
- » Approximately 2600 new skilled employment opportunities are expected to be created in the construction phase of the development.
- » Approximately 2000 new skilled employment opportunities are expected to be created in the operational phase.
- » Approximately 1760 new unskilled employment opportunities are expected to be created in the construction phase.
- » Approximately 5000 new unskilled employment opportunities are expected to be created in the operation phase.
- » The expected value to be generated in terms of the employment opportunities during the operation and construction phase is R20.2 billion.
- » The percentage of the value to be generated in terms of the employment opportunities that will accrue to previously disadvantaged individuals is expected to be approximately 40%.
- » The expected current value of the employment opportunities during the first 10 years is approximately R4.04 billion.
- » The percentage of the value to be generated in terms of employment opportunities during the first 10 years that will accrue to previously disadvantaged individuals is approximately 40%.

- » Local and national government incentives will be met through the development of the Metals Industrial Cluster.
- » Improved access to inputs and end markets.
- » Greater profitability based on cluster development economics.
- » Support from incubators and the Cluster Management Company.
- » Free land and/or discounted rentals.
- » Reduced operational costs.
- » Tax incentives.
- » Grants for manufacturing.
- » Shared services and infrastructure.
- » Investment opportunities within the area.
- » Increased innovation in terms of business growth and development.
- » A supportive environment for start-up and growing businesses.

### **2.3. The Need and Desirability of the Development at the Preferred Site Location and on a Local and National Level**

The Northern Cape Province is a vast and arid Province and is by far the largest Province in South Africa, taking up nearly a third of South Africa's land area, however the Province has the smallest population, which is 2.2% of South Africa's population. The capital of the Northern Cape is Kimberley, located on the Province's eastern border. Other important towns are Kuruman, Springbok and De Aar.

The Northern Cape has historically experienced a high volume of mining activity without the corresponding rise in manufacturing and the associated long-term economic and social benefits. Unemployment is prevalent in the Province and the Ga-Segonyana Local Municipality specifically has a high unemployment rate of 33.7%. This is considered as a serious social issue that needs to be addressed for advancement and growth to take place within the Province and Municipality. As a result of the current economic and employment state, there is a real need to create employment and business opportunities beyond the economically viable life of the mines and the agricultural sector characteristic of the Province. The establishment of a Metals Industrial Cluster is considered a viable and desirable opportunity to see the realisation of the identified long-term economic and social benefits.

From an economical perspective, the Northern Cape Province is considered to have a relatively diverse economy. The mining sector accounts for the largest portion while the construction sector has the lowest share.

The following factors make the Northern Cape Province attractive for the development of the proposed Metals Industrial Cluster:

- » *Extensive mineral wealth* – the Province is South Africa's largest producer of iron ore (84%), diamonds, zinc, silver, manganese and lead.

- » *Easy port access* – the presence of the Walvis Bay harbour, located within Namibia, provides port access which is considered to be low in cost and has fast turnaround times. This creates opportunities for different transport methods of goods to and from the Cluster.
- » *Transport links* – quality national and regional roads located within the area, the Uptington International Airport and access to the De Aar rail interchange provides excellent transport links.
- » *Adequate access to electricity and water* – adequate electricity supply from the national grid and access to water from the Orange River is available for use in the area.
- » *Skills* – various education and training institutions are located within the surrounding area creating a bigger skills pool.

The town of Kuruman has been identified as an area where economic development is considered as a necessity, specifically in the industrial sector. The Ga-Segonyana Local Municipality's local economy contributes approximately 38.4% to the John Taolo Gaetsewe District Municipality. The John Taolo Gaetsewe District Municipality only contributes approximately 18.7% to the Northern Cape provincial economy. In terms of the economic performance of municipalities, the average annual economic growth between 1995 and 2008 of the local municipality was 5.5% and 2.2% for the district municipality. Therefore, the development of the Metals Industrial Cluster will aid in the enhancement of the economy from a local, district and provincial level.

The project site identified by the Northern Cape Department of Economic Development and Tourism is considered as a desirable and feasible site for the development of the Cluster, not only from an economic perspective but also an environmental and social perspective. The use of the identified site for heavy to low industrial, semi-industrial and business purposes are in line with the following national, provincial and local policies, which provide the core rationale for the need and justification for the development. These policies include

- i) the National Development Plan 2030,
- ii) the Northern Cape Provincial Development and Resource Management Plan/Provincial Spatial Development Framework (PSDF) (2012),
- iii) the Northern Cape Provincial Growth and Development Strategy (PGDS) (2011),
- iv) the Northern Cape Provincial Local Economic Development (LED) Strategy (2009),
- v) the John Taolo Gaetsewe District Municipality Integrated Development Plan (IDP) (2012-2019) and
- vi) the Ga-Segonyana Local Municipality Integrated Development Plan (IDP) (2015-2016).

The proposed Cluster will contribute towards targets and policy aims stated within the abovementioned policies.

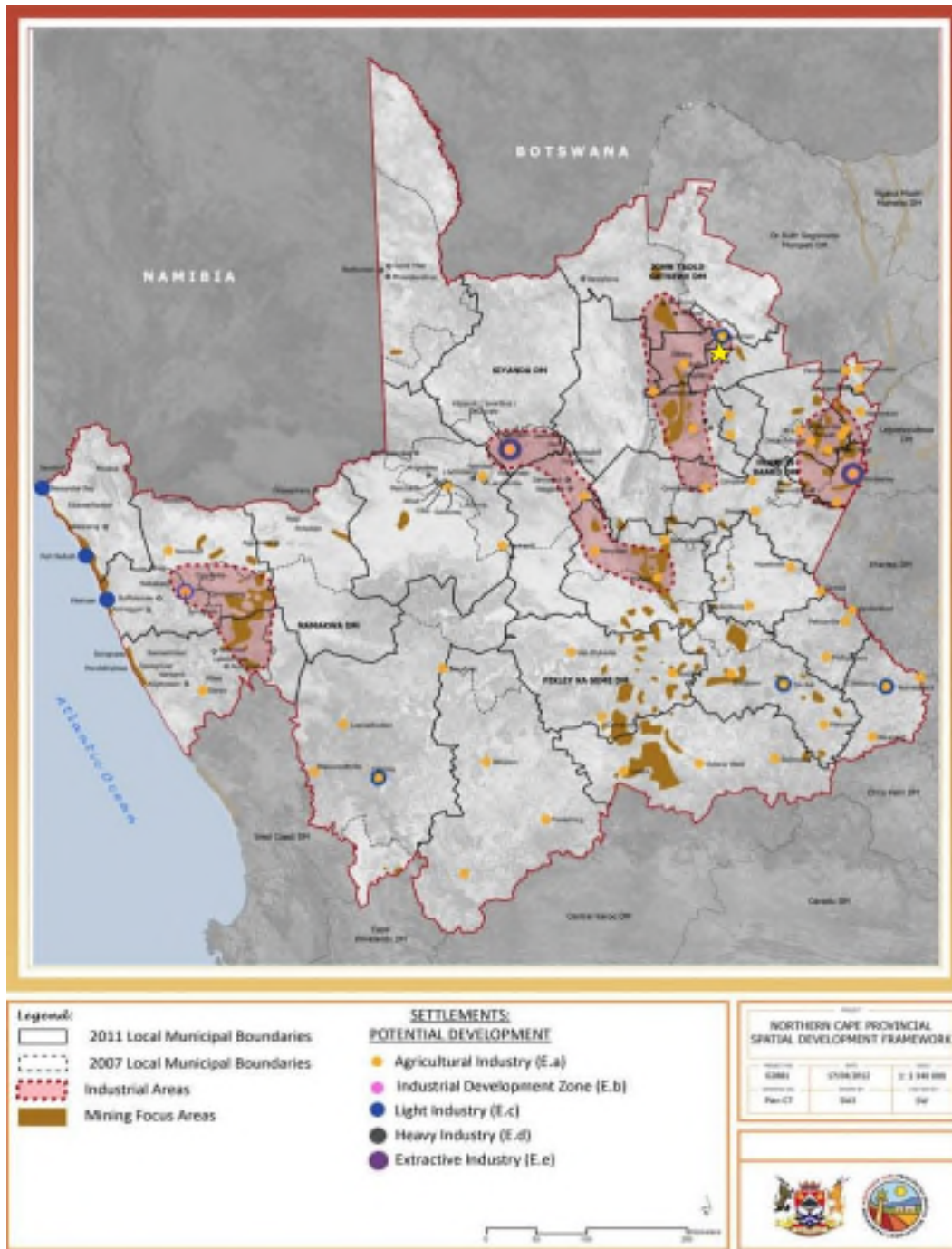
There are existing industrial developments located within industrial zone of Kuruman. This area is known as the Kuruman Industrial Area. This demarcated industrial zone borders the urban edge of the town of Kuruman. Due to the proximity of the urban edge to the industrial zone and the current utilisation of the industrial zone, there is no capacity for the industrial area to expand further and outside of the urban edge as per the town planning for Kuruman. Therefore, the existing Kuruman Industrial Area is not considered as a feasible alternative site for the development of the Metals Industrial Cluster. This was confirmed by the Ga-Segonyana Local Municipality. Proof of this is included in **Appendix B** and **Appendix C6**.

The Northern Cape Provincial Spatial Development Framework (PSDF) also identifies specific corridors within the Province that are considered as suitable and appropriate for the development of certain industries, specifically referring to that of the mining and industrial sector. The proposed project site is located within the Spatial Plan Category (SPC) E of the SPDF and is classified as an industrial area (refer to **Figure 2.1** below).

There are other features located in proximity to the project site which contribute to the desirability and suitability of the proposed location for the establishment of the Cluster.

- a. Accessibility to the site by road.
- b. Proximity to the town and availability and accessibility to bulk services.
- c. Social considerations.
- d. Other industrial developments within the surrounding areas of the preferred project site.

In general, the development of industrial clusters contribute to the needs of economic growth and development by creating an environment which improves productivity, increases innovation, and provides a supportive atmosphere for start-ups and growing businesses. Industrial clusters are mechanisms for achieving growth in targeted industries, boosting economic activity, often in geographical areas that would not have attracted industrial development otherwise. The Metals Industrial Cluster will also focus on transferable skills development and training and promoting the education of the local residents in the area, while diversifying the economic sector. Therefore, the establishment of the proposed Cluster on Portion 6253 of Erf 1 near the town of Kuruman and in the Northern Cape Province is considered as a suitable and appropriate development that will contribute to the area through a variety of mechanisms and aid in the advancement and growth of the economy and social sectors.



**Figure 2.1:** Spatial Plan for SPC E: Industrial Areas (Source: Northern Cape PSDF 2012). The industrial areas are shaded in red, and the project site proposed for the development of the Metals Industrial Cluster is shown by the yellow star.



The project site is situated in an area that is earmarked for industrial development and that has a need for economic growth and development (as identified by the economic and social needs of the Province and the Local and District municipalities), which will be realised by the establishment and operation of the Metals Industrial Cluster.

### **2.3.1 Site Selection**

Due to the nature of the development (i.e. an industrial development), the location of the establishment is dependent on technical factors such as the accessibility to the site for the transportation of goods and services, availability of land, extent of the site and topography of the site.

The broader study area (i.e. the greater Kuruman area) was identified as having the potential for the establishment of the Metals Industrial Cluster on the basis of key technical criteria being met, including the accessibility of the site and local site topography. The project site was identified by the project developer (i.e. the Northern Cape Department of Economic Development and Tourism), in consultation with the Ga-Segonyana Local Municipality, as being technically viable and given its attributes is also considered to be commercially feasible and competitive in terms of the need for the development of the Cluster in an area where poverty and unemployment are present.

As the project site (i.e. Portion 6253 of Erf 1) is owned by the local municipality, the project site was identified and approved through consultation between the Ga-Segonyana Local Municipality and the Northern Cape Department of Economic Development and Tourism.

### **2.3.2 Receptiveness of the project site and the greater Kuruman area for the establishment of the Cluster**

The establishment of the Metals Industrial Cluster within an area in need of development and growth as a whole is considered as a hands-on approach to aid in the social and growth issues in the greater Kuruman area. The project site (Portion 6253 of Erf 1) displays characteristics which, in the opinion of the Northern Cape Department of Economic Development and Tourism, make the location of the development and the development footprint desirable and preferred. The detail regarding site-specific characteristics, and how these provide further motivation for the selection of the specific site chosen for this Cluster is provided below:

*Project site extent and land availability:* Availability of suitable land with an appropriate extent is required to ensure the success (construction and operation) of the Metals Industrial Cluster. The extent of the project site (Portion 6253 of Erf 1) is 47ha in size. The development footprint of the Cluster would occupy the full extent of the property, allowing for a sizeable industrial cluster to be established. The landowner of the project site (the Ga-Segonyana Local Municipality) is willing to allow the development of the

Metals Industrial Cluster to take place on its property and will allow the Department to establish the development for 20 years or more.

Site access: Access to the project site is considered as an important characteristic as easy access is required for the transportation of goods and employees for the establishment and operation phases. The proximity of the project site to viable access routes decreases the impact on secondary roads in terms of traffic during the lifecycle of the Cluster. Sufficient access is available in the surrounding areas and in close proximity to the project site for a development of this nature (i.e. a development which is heavily dependent on the transportation of goods). The national road, N14, is located approximately 300m to the north of the project site. This national road is extensive and links to other national roads, including the N18, N1, N12, N10 and the N7, across the country. The N14 traverses the country in an east-west direction and is the connection between the towns Springbok, Aggeneys, Pofadder, Kakamas, Keimoes, Upington, Olifantshoek, Kathu, Kuruman, Vryburg, Delareyville, Sannieshof, Coligny, Ventersdorp, Krugersdorp and Johannesburg. Another potential access route to the project site is the regional road (R31), which is located approximately 1.7km to the west of the site. Both the N14 and R31 traverse the town of Kuruman. Direct access to the project site is possible through the use of an unnamed surfaced secondary road which connects to the N14 and is located along the western boundary of the site. The development of future roads and access should also be considered, as the project will be operational over a long period of time. A future planned secondary road will exit off of the N14 and traverse the area to the south of the proposed project site and the existing Kuruman industrial area. This ring road will provide access to both the proposed Metals Industrial Cluster and the existing Kuruman industrial area. The planned future road forms part of the Municipality's Spatial Development Framework (SDF).

Electricity supply considerations: The availability of electricity for the establishment and operation of the Cluster is considered as a necessity. Electricity will be supplied by the Ga-Segonyana Local Municipality, in consultation with Eskom, to the Cluster for establishment and operation related activities.

Current land use: No formal development has taken place on the project site proposed for the Cluster. Informal and uncontrolled grazing activities are currently noted within the site and there are informal residents residing in the southern portion and along the western boundary of the project site. There is considered to be sufficient space in the surrounding properties for grazing to continue during the operation of the Cluster.

Topography and landscape features: Most of the landscape located to the south and south east is characterised by flat featureless plains of the Ghaap Plateau. The plateau gradually declines northwards to reach the non-perennial Kuruman River. From the Kuruman River the topographic gradient decreases to reach the Molopo River. The non-perennial rivers Matlhwaring and Moshaweng join the Kuruman River from the east. No perennial rivers exist within the area.

The region within which the study area is located can be described as flat rocky plains with more than 80% of the area associated with a slope of less than 8% and a relief of 30m to 90m. The gentle slope of the area is beneficial for the development of the Metals Industrial Cluster as extensive levelling of the site or erosion control measures will not be required and accessibility to the site in terms of transportation of goods and people will be of minimal effort.

Geographic location: The project site falls within a corridor identified as a geographical area/focus area most suitable for the rollout of the construction and operation of industrial developments as per the Northern Cape Provincial Spatial Development Framework. The area surrounding the project site (specifically the town of Kuruman) is in need of economic development and growth and the construction and operation of the Cluster will aid in achieving these needs.

Local labour and poverty alleviation: The project site is located ~2km south east from the town of Kuruman, and ~1km south west of Wrenchville, which will act as the source of local labour during the establishment and operation of the proposed Cluster. This will lead to social upliftment in an area where unemployment and poverty are considered as significant social issues.

Proximity to towns with a need for socio-economic upliftment: The establishment of the Metals Industrial Cluster has the potential to result in significant socio-economic opportunities for the region, which, in turn, will result in a positive social benefit. The positive impacts include creation of employment, skills development and training opportunities, and downstream business opportunities. These benefits should also be viewed within the context of the limited socio-economic opportunities in the area.

The main towns located in the Ga-Segonyana Local Municipality include Bankhara-Bodulong, Kuruman and Mothibistad. The municipality has a high unemployment rate of 33.7%. Upliftment and growth of the local economy is therefore considered as a key focus area for the Municipality. The greatest social problems within the local municipality are illiteracy, poverty and lack of basic service infrastructure. The income distribution is distorted in the area to the disadvantage of the less economically secured people, who also represents the majority of the municipal area. Poor households are a result of a lack of wage income, either due to unemployment or low-paying jobs. Access to basic services such as electricity, toilets and piped water is also closely correlated with poverty.

There is a strong need for upliftment and growth within the Ga-Segonyana Local Municipality from a social and economic perspective. The development of the Metals Industrial Cluster will aid in the relief of unemployment and other social and economic issues considered to be significant within the area. Economic benefits associated with

the development includes economic growth and development such as economic opportunities including employment creation and expenditure in the local area.

#### 2.4. Project and Site Description

The proposed project entails the development of the Metals Industrial Cluster on a project site located approximately 2km south east from the town of Kuruman and approximately 1km south west of Wrenchville. The Metals Industrial Cluster will be developed within the boundaries of Portion 6253 of Erf 1 (refer to **Figure 2.2** below). The Cluster will be established within the full extent of the project site which has been considered through the Scoping Phase of the EIA process.

Based on the specialist studies undertaken in the Scoping Phase, no fatal flaws were identified within the project site for the Metals Industrial Cluster.

The Metals Industrial Cluster is planned to be a semi-industrial and industrial park that will include a variety of businesses and enterprises relating predominantly to the industrial sector (but also including entities from other supporting sectors such as IT and retail). The Cluster will comprise of various heavy, medium and light industrial entities, however the exact composition of the entities to be located within the Cluster is not known at this point. It has however been confirmed by the Department that it is unlikely for heavy industries to be located within the Cluster in the next 10-15 years based on the Municipality's SME and SMME database as the demand for heavy industries within the area is low. Therefore, this EIA process focusses on the establishment of the "shell" of the Cluster which primarily includes a change in the land-use of the affected property and the clearance of indigenous vegetation.

The development footprint<sup>4</sup> of the Cluster will be located within the full extent of the project site and will house the establishment of the Metals Industrial Cluster (refer to **Figure 2.2** below). A basic layout has been provided by the Department which informs the establishment of the Metals Industrial Cluster and indicates zones within the development footprint that will be utilised for specific types of industrial entities (i.e. light, heavy or medium industrial developments).

The purpose of the proposed Metals Industrial Cluster will be to introduce an advancement of the industrial sector into the town of Kuruman and the larger Northern Cape Province and ensure economic development and growth within an area where poverty and unemployment are considered as serious social issues.

The section below provides the details of the Metals Industrial Cluster. It should be noted that specific detail regarding the phase specific infrastructure required for the

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<sup>4</sup> The development footprint of the Cluster will be located within the whole extent of the project site and will have an extent of 47ha.

Cluster is not available as it is not yet known which entities will be locating within the Cluster, as well as all the details of what associated infrastructure will be required.

#### **2.4.1 Overview of the Metals Industrial Cluster**

A cluster is a group of related business that are located in the same area for mutual benefit. These businesses tend to be interconnected and focus on similar industries. The prospectus for this project is based on a feasibility study commissioned by the Northern Cape Department of Economic Development and Tourism and conducted by the consultancy Redflank. The feasibility study concluded that the creation of an industrial development in the Northern Cape will benefit cluster companies and have a positive impact on job creation and economic development in the Northern Cape.

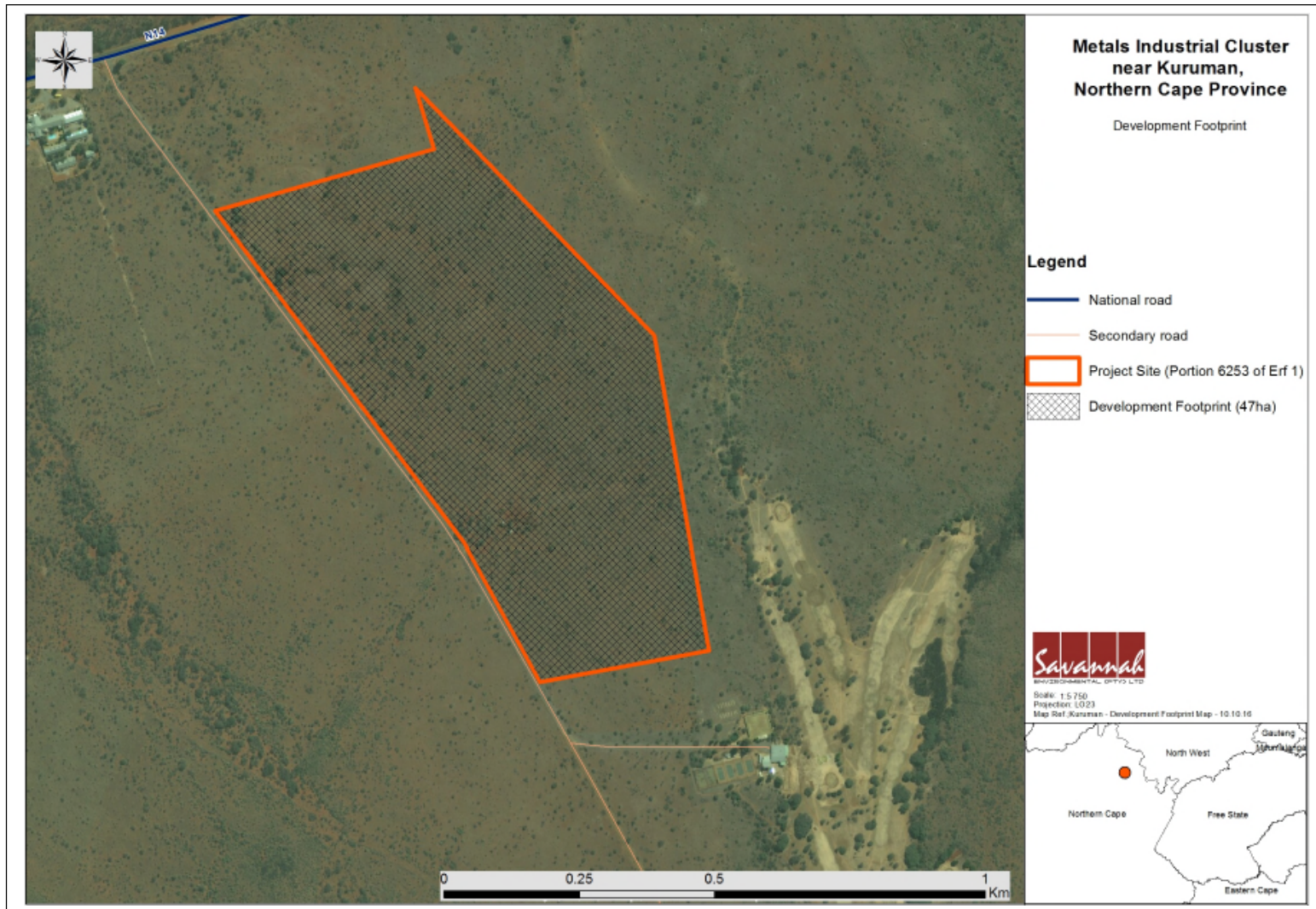
Any entity or company (CMF) planning to be located within the Metals Industrial Cluster will be required to make provision for the specific infrastructure that would be required for the operation of that specific entity, and the undertaking of its own permits and authorisations in terms of the legal requirements would be required.

The cluster will be driven by a Cluster Management Company (CMC), initially sponsored and funded by the government. The CMC will be the entity responsible for managing and operating the Cluster and the focus will be:

- » Marketing the Cluster and assisting market CMFs
- » Establishing, maintaining, and operating shared cluster infrastructure, facilities and services
- » Playing a role in establishing, maintaining, and extending institutional and knowledge linkages

Incentives will be offered to Cluster Member Firms (CMFs) and will include shared infrastructure, facilities and services, as well as access to funding. The Cluster will include basic infrastructure that will be required for the establishment of the development. The basic infrastructure to be constructed includes:

- » Buildings (warehousing, administrative buildings, skills development centre, student accommodation etc.);
- » Access roads including main access to the Cluster and internal access roads;
- » Landscaping;
- » Parking;
- » Fencing;
- » Infrastructure relating to bulk services including electricity, water, sewage and waste water; and
- » Security.



**Figure 2.2:** A map illustrating the project site and corresponding development footprint of the proposed Metals Industrial Cluster

The basic infrastructure will form part of the Phase 1 development, within which the shell of the Cluster will be constructed to make provision for the development of the subsequent project phases, and enable the development within the Cluster with the necessary essential infrastructure to do so (i.e. access roads, services etc.).

Phase specific infrastructure will also be constructed within Phases 2-4, however the specific infrastructure required for these phases are not defined as yet, due to specific tenants not being able to be defined at this stage of the planned development. It can, however, be confirmed that these phases will expand on Phase 1 which includes an increase in the CMFs located within the Cluster that will lead to a higher demand for existing or additional infrastructure or facilities. The shared infrastructure will be upgraded or expanded in order to ensure the functioning of the expanded Cluster into the subsequent phases.

For the development to be successful and thrive, not only as an industrial cluster but as a successful business venture, sufficient space is required for the development to be constructed on and operated. The development footprint of the Cluster will occupy the full extent of the property (i.e. project site), that is an area of 47ha, resulting in the entire affected property being developed. Therefore, the entire project site will be considered as total loss to the development of the Metals Industrial Cluster.

Access to the project site is possible via the unnamed secondary road located along the western boundary of the site. This road is accessed via the national road (N14), approximately 300m to the north of the project site. Another potential access route to the project site in the general Kuruman area is the R31 regional road, which is located approximately 1.7km to the west of the site. Both the N14 and R31 provide direct access to the town of Kuruman.

The proposed project plan includes the development of the cluster in multiple phases spaced over a 20-year time horizon after the initial establishment / set up. The time scale (4 Phases) will be as follows:

- i) Phase 1 which is considered to be developed in the short term (Year 0 to 2);
- ii) Phase 2 which is considered to be developed in the medium term (Year 3 to 6);
- iii) Phase 3 which is considered to be developed in the long term (Year 7 to 20); and
- iv) Phase 4 which is intended to cater to the expansion of the Cluster beyond the 20-year timeframe planned for Phases 1 to 3.

The first three phases of the development will include semi-industrial, light to medium industries, and the fourth phase will include the expansion of the first three phases, with the option of the addition of heavy industry (depending on the demand for these types of developments within the greater Kuruman area and the municipality). According to the Ga-Segonyana Local Municipality's scheme, light to medium industries are defined as developments and enterprises where no on-site manufacturing of goods, material or

equipment takes place, for example bulk retailers. Medium industries are defined as businesses that usually include minor labour works, like repair works and mechanics, but does not include manufacturing. Heavy industries are defined as entities or businesses that require intensive capital investment in weighty machinery and plant, and are considered to be less labour intensive. Heavy industries usually involve automobile, mining, petroleum, and steel industries.

**2.4.2 Size of the Cluster**

A council resolution passed by the Ga-Segonyana Local Municipality (landowner) in August 2014 confirmed the allocation of 47 hectares of land for use by the Cluster. The proposed site falls under the jurisdiction of the Ga-Segonyana Local Municipality within the greater John Taola Gaetsewe District Municipality in the Northern Cape Province. The Cluster will occupy an area located in close proximity to the N14 highway, adjacent to the Kuruman country club turn off. The proposed Cluster will be divided into four phases as reflected in **Table 2.2**.

**Table 2.2:** Hectares allocated per phase for the Metals Industrial Cluster.

Phases	Hectares (ha)	Purpose of the land	Facilities
Phase 1	7ha	The land set out for Phase 1 will serve as the enabler for the development of the initial phase.	This phase will include shared facilities, such as warehousing; a testing centre; administration buildings etc.; incubator and development facilities; and phase 1 security; parking; landscaping and roads.
Phase 2	12.4ha	The land for Phase 2-4 will be used for future development to accommodate additional CMFs, facilities and other services.	These phases will expand on Phase 1. More CMFs will locate in the cluster, which will lead to a higher demand for existing or additional facilities. The shared facilities, such as warehousing; and the incubator facilities will be upgraded or expanded upon. Similarly, Phase 1 security; parking; landscaping and roads will be expanded to accommodate expansion throughout Phase 2-4.
Phase 3	13.3ha		
Phase 4	14.3ha		

**2.4.3 Socio-economic values associated with the Metals Industrial Cluster**

The entities or companies (Cluster Member Firms - CMFs) who will be locating within the Cluster is not known at this point and will only be identified at a later stage. However, the average number of the different types of CMF's and the expected employment opportunities is provided in **Table 2.3**.



**Table 2.3:** Number of Cluster Member Firms (CMFs) and associated employment opportunities

Industry Sector	Average Jobs	Short Term (2 years): Phase 1	Medium Term (6 years): Phase 2	Long Term (20 years): Phase 3
Micro Businesses	8	4	20	47
Small Businesses	30	3	18	41
Medium Businesses	100	2	5	12
Large Businesses	500	1	2	5

The initial set up and establishment of the Cluster basic infrastructure will take approximately 12-18 months. Thereafter Phase 1 (Short term 0-2 years with 10 CMFs) will be implemented. **Table 2.4** below indicates how many employment opportunities will be created per phase and CMF.

**Table 2.4:** Number of employment opportunities per phase and per business/industry type

Industry (CMFs) / Phases	Short-Term Phase 1	Medium-Term Phase 2	Long-Term Phase 3	Total average employment opportunities per industry type
Micro Businesses	32	160	376	<b>568</b>
Small Businesses	300	540	1230	<b>2070</b>
Medium Businesses	200	500	1200	<b>1900</b>
Large Businesses	500	1000	2500	<b>4000</b>
<b>Total average employment opportunities per phase</b>	<b>1032</b>	<b>2200</b>	<b>5306</b>	<b>8538</b>

Other socio-economic values are known and are expected to be associated with the development of the Metals Industrial Cluster. These include:

- » infrastructure relating to bulk services including electricity, water, sewage and waste water;
- » capital expenditure value of about 800 million at the completion of the project;
- » the proposed Metals Industrial Cluster is expected to generate an annual income of approximately R300 million;
- » approximately 60% of the employment opportunities will be available for unskilled labourers. New skilled/semi-skilled employment opportunities are expected to be created and will comprise approximately 40% of the workforce;

- » the expected value to be generated in terms of the employment opportunities during the lifespan of the development is R20.2 billion and R4.04 billion over 10 years;
- » approximately 40% of employment opportunities generated will accrue to the previously disadvantaged individuals;
- » education and skills transfer are the primary drivers of the Cluster. A hybrid working model shall be established that enables:
  - a) member firms to utilise the Cluster training and incubation workshops for existing work packages or projects.
  - b) the Cluster Training and Development Centre to utilise selected member firms' facilities and equipment for special training needs.
- » accommodation will be offered to students enrolled in the Skills Development Centre, including students from the Assmang Technical College (located to the north of the project site, not yet constructed). The purpose of the student accommodation and residences in the Cluster is to offer students close accommodations to training and incubator facilities.

## **2.5. Project Alternatives under consideration for the Metals Industrial Cluster**

In accordance with the requirements outlined in Appendix 3 of the EIA Regulations 2014, the consideration of alternatives including site, activity, technology and site access alternatives, as well as the "do-nothing" alternative should be undertaken. The following sections address this requirement.

### **2.5.1 Site specific and layout design alternatives: PV facility**

The preferred project site (Portion 6253 of Erf 1) has been identified by the Department of Economic Development and Tourism as an area suitable for the development of the Metals Industrial Cluster. Due to the limited number of vacant land parcels available for the development of a Cluster within Kuruman's urban edge, as well as the approval from the Ga-Segonyana Local Municipality (landowner) for the intended use of the land, no other feasible alternatives for project sites were identified or considered for the development. The project site selection is also supported by preferable characteristics within and surrounding the project site, including easy access to the site, proximity to the town of Kuruman and the flat topography of the area.

### **2.5.2 Activity Alternatives**

No other activity alternatives are being considered to take place within the identified project site due to the need and desirability of the project. This is supported by the need for unemployment relief, the need for economic growth and development other than mining and the requirement to comply with the Northern Cape Provincial Spatial Development Framework (PSDF) development corridors (Spatial Plan Category (SPC) E).

### **2.5.3 Site Access Alternatives**

Access to the project site is possible via the unnamed secondary road located along the western boundary of the site. This road is accessed via the national road (N14), approximately 300m to the north of the project site. No other site access alternatives are being considered for the development due to the accessibility of the N14 and the surfaced unnamed secondary road to the project site. As a National road has as a core function to provide access and support greater volumes of traffic than local road, the use of the N14 for access is considered highly desirable. This is supported by the findings of the Traffic Assessment (Tescho, 2016) which supports this route for providing access to the site, subject to appropriate improvements of the intersection of the access road and the N14 leading to the project site.

The future planned secondary road, as included in the Municipality's SDF, would most likely be utilised once constructed. However, this alternative is not considered as a feasible and reasonable alternative in this assessment, as the timeframe for the construction of the road and exact route thereof is not known at this point and can therefore not be reasonably included in this assessment.

### **2.5.4 The 'do-nothing' Alternative**

The 'do-nothing' alternative is the option of not constructing the Metals Industrial Cluster on Portion 6253 of Erf 1. The main reasons why the do-nothing alternative is not preferred in relation to this industrial project are discussed below, namely:

- » The need for economic growth and development in the local area, local municipality area as well as the province;
- » The need to diversify the industrial sector within the area, while moving away from the mining sector;
- » The underutilisation of the site, and the current land use regime of the site.

The land use regime of the project site is limited to uncontrolled grazing activities undertaken local residents within the area. As a result of the location of the project site within the Kuruman urban edge it is not considered suitable for the undertaking of intense agricultural activities such as crop production and is limited to grazing. Therefore, the "do nothing" alternative would leave the land-use restricted to the current grazing activities, discounting the opportunity to make progress in terms of economic development and growth and the alleviation of the main significant social issues present within the area. Therefore, from a land-use perspective, the 'do nothing' alternative is not preferred.

The purpose of the proposed Metals Industrial Cluster is to add to the industrial sector within the area, as well as address some of the significant social issues that occur. The purpose is also considered at a provincial level in terms of the Northern Cape Provincial

Spatial Development Framework (PSDF). The PSDF identifies specific corridors within the Northern Cape Province which are considered to be suitable for development of certain industries, specifically referring to the mining and industrial sector. The proposed project site is located within the Spatial Plan Category (SPC) E of the SPDF and is classified as an area to be considered appropriate for the development of industrial industries.

The 'do nothing' alternative is therefore not a preferred alternative. If the Metals Industrial Cluster is not developed the following positive impacts will not be realised:

- » Job creation from the construction and operational phases.
- » Economic benefit to participating communities due to the revenue that will be gained through the development.
- » Meeting of pent up demand for additional growth in an economic and rapid manner.

## **2.6. Proposed Activities during the Project Development Stages**

In order to establish the Metals Industrial Cluster, a series of activities will need to be undertaken during the design, pre-construction, construction, operation, and decommissioning phases which are discussed in more detail below.

### **2.6.1 Design and Pre-Construction Phase**

**Pre-planning:** Several post-authorisation factors are expected to influence the final design of the Cluster and could result in small-scale modifications of the basic layout. While an objective of the Engineering, Procurement and Construction (EPC) Contractor who will be responsible for the overall construction phase of the project will be to comply with the approved facility design as far as possible, it should be understood that the construction process is dynamic and that unforeseen changes to the project specifications will take place. This final EIA Report therefore describes the project in terms of the best available knowledge at the time. Importantly, should there be any substantive changes or deviations from the original scope or layout of the project, the DENC will need to be notified and where relevant, approval obtained.

**Conduct Surveys:** Prior to initiating construction, a number of surveys will be required including, but not limited to confirmation of the facility layout and a geotechnical survey. Geotechnical surveys are executed by geotechnical engineers and geologists to acquire information regarding the physical characteristics of soil and rocks underlying a project site. The purpose is to design earthworks and foundations for structures and to execute earthwork repairs necessitated due to changes in the subsurface environment.

### **2.6.2 Site Establishment / Construction Phase**

The construction phase will entail a series of activities including:

### **Procurement and employment**

Employment will have to be sourced for the construction phase of the project. Low-skilled employment will most likely be sourced locally from the Kuruman and Wrenchville communities.

### **Establishment of an Access Road to the Site**

Access to the project site proposed for the development is possible via the unnamed secondary road located along the western boundary of the site. This road is accessed via the national road (N14), located approximately 300m to the north of the project site. Within the site itself, internal access roads will be required from new/existing roads. The final layout of the access roads will be determined following the determination of the final site layout.

### **Undertake Site Preparation**

Site preparation activities will include the clearance of vegetation. These activities will require the stripping of topsoil which will need to be stockpiled, backfilled and/or spread on site.

### **Transport of Components and Equipment to Site**

Project components will be transported to site by road. Transport of components would most likely be via the N14. Some of the components may be defined as abnormal loads in terms of the Road Traffic Act (Act No. 29 of 1989)<sup>5</sup> by virtue of the dimensional limitations. Typical civil engineering construction equipment will need to be brought to the site (e.g. excavators, trucks, graders, compaction equipment, cement trucks, etc.) as well as components required for site preparation.

### **Establishment of Laydown Areas on Site**

Laydown and storage areas will be required for the typical construction equipment. Once the required equipment has been transported to site, a dedicated equipment construction camp and laydown area will need to be established adjacent to the workshop area. The equipment construction camp serves to confine activities and storage of equipment to one designated area to limit the potential ecological impacts associated with this phase of the project. The laydown areas will be used for the general placement/storage of construction equipment.

### ***2.6.3 Operation Phase***

The proposed Cluster is expected to operate for a minimum of 20 years (which includes the transformation of the Cluster through the first three phases). Phase 4 is intended to cater for the expansion of the Cluster beyond the 20-year timeframe planned for the first three phases. It is anticipated that there will be full time security, maintenance and control room staff required at the site.

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<sup>5</sup> A permit will be required for the transportation of these abnormal loads on public roads.

#### **2.6.4 Decommissioning Phase**

The lifespan of the proposed Cluster is expected to be long term, more than 20 years. Equipment associated with the Cluster would only be decommissioned once it has reached the end of its economic life or if it is no longer required. It is most likely that decommissioning activities of the infrastructure of the Cluster would comprise the disassembly and disposal of the infrastructure. Decommissioning activities will involve disassembly of the infrastructure and ancillary infrastructure, demolishing of buildings, removal of waste from the site and rehabilitation to the desired end-use.

**REGULATORY AND LEGAL CONTEXT**

**CHAPTER 3**

This chapter provides insight into the policy and legislative context within which the Metals Industrial Cluster near Kuruman is located and document the manner in which the development of the Cluster complies with and responds to the policies and legislation. The listed activities triggered requiring environmental authorisation, as per the EIA Regulations of 2014, are also included within this chapter.

**3.1. Legal Requirements as per the EIA Regulations for the undertaking of an Environmental Impact Assessment Report, 2014**

This chapter of the final EIA report includes the following information required in terms of Appendix 3: Content of Environmental Impact Assessment Reports:

Requirement	Relevant Section
3(d)(i) a description of the scope of the proposed activity, including all listed and specified activities triggered and being applied for.	All listed activities triggered and applied for are included in section 3.2 and Table 3.1.
3(e) a description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context.	The policies and legislation associated with the establishment of the Metals Industrial Cluster is included in sections 3.3-3.5.

**3.2. Relevant Listed Activities**

In terms of sections 24 and 24D of NEMA, as read with Government Notices R982, R983, R984, R985, a Scoping and EIA process is required for the proposed Metals Industrial Cluster. The key listed activity contained in GN R984 which triggered a full EIA process is Listed Activity 15 of GN R984: The clearance of an area of 20 hectares or more of indigenous vegetation. **Table 3.1** below contains the listed activities in terms of the EIA Regulations of December 2014 which apply to the Metals Industrial Cluster, and for which an Application for Environmental Authorisation has been applied at the Northern Cape Department of Environment and Nature Conservation (DENC) as the competent authority. The table also includes a description of the specific project activities which relate to the applicable listed activities.

**Table 3.1:** Listed activities triggered by the proposed Metals Industrial Cluster

Relevant notice:	Activity No:	Description of listed activity as per the project description:
GN 983, 08 December 2014	28(i)	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares.  <b><i>The Metals Industrial Cluster is considered as an industrial development that will take place within an urban area with an extent of 47ha on land used for informal grazing activities.</i></b>
GN 984, 08 December 2014	15	The clearance of an area of 20 hectares or more of indigenous vegetation.  <b><i>The Metals Industrial Cluster will be 47ha in extent, and will require the clearance of an area exceeding 20ha of indigenous vegetation.</i></b>

On the basis of the above listed activities, an EIA process has been undertaken for the proposed Metals Industrial Cluster. This process comprised of two phases, with the Scoping Phase being completed and accepted by the competent authority, DENC, in June 2016:

- » The Scoping Phase included the identification of potential issues associated with the proposed project through a desktop study and consultation with affected parties and key stakeholders. Areas of sensitivity within the broader site were identified and delineated in order to identify any environmental fatal flaws, and sensitive or no go areas. Following a 30-day review period of the Scoping report, this phase culminated in the submission of a final Scoping report and Plan of Study for EIA to the DENC (the Scoping Phase has already been completed).
- » The EIA Phase involved a detailed assessment of potentially significant positive and negative impacts (direct, indirect, and cumulative) identified in the Scoping Phase. This phase included detailed specialist investigations and public consultation. Following a 30-day review period of the EIA report, this phase culminated in the submission of a final EIA report and an Environmental Management Programme (EMPr), including recommendations of practical and achievable mitigation and management measures, to the DENC for review and decision-making.



### **3.3. Strategic Context for Industrial Development: National, Provincial and Local Policy level**

According to the DEA Guideline on Need and Desirability (October 2014) in terms of the Environmental Impact Assessment (EIA) Regulations 2010, and in the requirements outlined in Appendix 2 of the EIA Regulations 2014, a motivation for the need and desirability of a development must be measured against the contents of the Integrated Development Plan (IDP), Spatial Development Framework (SDF) and Environmental Management Framework (EMF) for an area, and the sustainable development vision, goals and objectives formulated in, and the desired spatial form and pattern of land use reflected in the area's IDP and SDF. This section of the report provides a summary of the findings from the review of the relevant policies and guidelines at a national, provincial and local scale regarding the need for industrial development and the Metals Industrial Cluster.

#### **3.3.1. National Policy Level**

##### ***3.3.1.1 The National Development Plan 2030***

The National Development Plan aims to eliminate poverty and reduce inequality by 2030. Given the complexity of national development, the plan sets out a number of interlinked priorities, some of which include:

- » Bringing about faster economic growth, higher investment and greater labour absorption.
- » Focusing on key capabilities of people and the state.
- » Building a capable and developmental state.

Enabling milestones include:

- » Increase in employment opportunities from 13 million in 2010 to 24 million in 2030.
- » Establish a competitive base of infrastructure, human resources and regulatory frameworks.
- » Ensure that skilled, technical, professional and managerial posts better reflect the country's racial gender and disability makeup.
- » Increase the quality of education.
- » Provide affordable access to quality health care.
- » Establish effective, safe and affordable public transport.
- » Produce sufficient energy to support industry at competitive prices, ensuring access for poor households, while reducing carbon emissions per unit of power by about one-third.
- » Ensure that all South Africans have access to clean running water in their homes.
- » Make high-speed broadband internet universally available at competitive prices.
- » Realise a food trade surplus, with one-third produced by small-scale farmers or households.

The National Development Plan aims to provide a supportive environment for growth and development, while promoting a more labour-absorbing economy. The proposed Cluster will assist in creating jobs and stimulating the local economy while promoting growth.

### 3.3.2. Provincial Policy Level

#### **3.3.2.1 Northern Cape Provincial Development and Resource Management Plan/Provincial Spatial Development Framework (PSDF) (2012)**

As part of the development planning process that underlies the formulation of the Northern Cape Provincial Spatial Development Framework (PSDF). The PSDF not only gives effect to national spatial development priorities but it also sets out a series of provincial, district and local development priorities for the space economy of the Northern Cape.

The Northern Cape PSDF is premised upon and gives effect to the following five strategic objectives of the National Strategy for Sustainable Development (NSSD 2011-2014):

- » Enhancing systems for integrated planning and implementation
- » Sustaining our ecosystems and using natural resources efficiently
- » Towards green economy
- » Building sustainable communities
- » Responding effectively to climate change

The Northern Cape PSDF also discusses economic development and that it typically responds to the availability of environmental capital (e.g. water, suitable agricultural soil, mining resources etc.) and infrastructural capital (e.g. roads, electricity, bulk engineering services etc.); over time this has resulted in the distinct development regions and corridors. The project site proposed for the Cluster falls within the Spatial Plan Category (SPC) E - industrial area which is considered as an area suitable and desirable for industrial development. A key challenge of the Northern Cape is to broaden and unlock the opportunities presented by the availability of natural resources. Industrial activities, whether large- or small-scale, have the potential to stimulate economic diversification and development in the Province which will be realised by the development of the Metals Industrial Cluster.

#### **3.3.2.2 Northern Cape Provincial Growth and Development Strategy (PGDS) (2011)**

The Northern Cape Provincial Growth and Development Strategy (PGDS) sets the tone for development planning and outlines the strategic planning direction in the province. Planning for the promotion of economic growth and social development lies at the core of the Government's responsibility to provide a better life for the nation. It is essential to

ensure that planning is integrated across disciplines, coordinated within and between different planning jurisdictions and aligned with the budgeting processes of national, provincial and local government. The core purpose of the Northern Cape PGDS is to enable stakeholders from public and private sectors, together with labour and civil society, to determine a plan for sustainable growth and development of the Northern Cape. The main objectives set by the Northern Cape PGDS for development planning in the province are as follows:

- » Promoting growth, diversification and transformation of the provincial economy
- » Poverty reduction through social development
- » Developing requisite levels of human and social capital
- » Improving the efficiency and effectiveness of governance and other development institutions
- » Enhancing infrastructure for economic growth and social development

The Northern Cape PGDS aims at building a prosperous, sustainable, growing provincial economy to eradicate poverty and improve social development. The proposed Cluster will contribute to growth and development of the Province by expanding the economic base, diversifying the economy and creating employment opportunities, which will contribute towards reducing poverty.

### **3.3.2.3 Northern Cape Provincial Local Economic Development (LED) Strategy (2009)**

The Northern Cape Local Economic Development (LED) strategy is intended to build a shared understanding of LED in the Province and put into context the role of local economies in the provincial economy. It seeks to mobilise local people and local resources in an effort to fight poverty. The Northern Cape LED strategy investigated the options and opportunities available to broaden the local economic base of the province in order to promote the creation of employment opportunities and the resultant spin-off effects throughout the local economy. Areas of opportunity include:

- » Livestock products
- » Game farming
- » Horticulture
- » Agriculture
- » Ago-related industries
- » Tourism
- » Manganese and iron ore
- » Beneficiation of minerals
- » Renewable energy

The purpose of the LED is to build up the economic capacity of a local area to improve its economic future and quality of life for all. The LED provides local municipalities with

leadership and direction in policy making, in order to administer policy, programmes and projects, and to be the main initiator of economic development programmes through public spending. The Metals Industrial Cluster has the opportunity to broaden the local economic base and promote the creation of employment opportunities as well as local economy spin-off effects.

### 3.3.3. Local Policy Level

#### **3.3.3.1 John Taolo Gaetsewe District Municipality Integrated Development Plan (IDP) (2012-2019)**

Section 152 of the Constitution, 1996, stipulates as the core objects of local government are the following:

- » To provide democratic and accountable government for local communities;
- » To ensure the provision of services to communities in a sustainable manner;
- » To promote social and economic development;
- » To promote a safe and healthy environment; and
- » To encourage the involvement of communities and community organisations in the matters of local government.

The John Taolo Gaetsewe District Municipality (JTGDM) objectives/priorities are aligned to six Key Performance Areas (KPA) for Local Government. The following have been identified as long-term strategic objectives of the JTGDM, based on its role as a district municipality:

#### KPA 1: Basic Services and Infrastructure:

- » To provide road and transport services
- » To provide bulk water and sanitation services
- » To provide adequate housing to the residents of the District
- » To develop community facilities
- » To promote employee wellness
- » To provide municipal health services to the communities of the District
- » To monitor the quality of water in the District
- » To provide food quality/safety control services
- » To monitor waste management systems refuse, health care waste, hazardous waste and sewage
- » To frequently survey Health Premises
- » To manage communicable disease outbreaks (excluding immunisations)
- » To monitor the prevalence of vectors
- » To control environmental pollution
- » To manage disposal of the dead
- » To promote awareness of health risk factors
- » To provide disaster management services

KPA 2: Local Economic Development (LED)

- » To promote local economic development
- » To facilitate optimal participation of partners in the Economic Growth Initiatives of the District
- » To facilitate the coordination of CRDP
- » To promote employment opportunities in the District
- » To facilitate increased LED capacity in the District
- » To enhance tourism development and promote the District as a preferred tourism destination
- » To facilitate availability of land for Economic Development

KPA 3: Good Governance & Public Participation

- » To review and report IDP implementation progress against predetermined objectives
- » To foster and promote good inter-governmental relations
- » To govern municipal affairs
- » To improve public participation
- » To ensure legal compliance
- » To manage risks to the Municipality
- » To promote ethical behaviour
- » To promote the interests and rights of targeted groups – women, children, youth, disabled, elderly
- » To promote moral regeneration in the District
- » To achieve a clean annual audit outcome
- » To promote good governance
- » To promote financial viability
- » To contribute to good intergovernmental relations
- » To promote risk management

KPA 4: Spatial Development and Integrated Development Planning

- » To implement the Spatial Planning and Land Use Management Act (SPLUMA)
- » To ensure effective strategic integrated sustainable development planning in the District

KPA 5: Institutional Transformation and Development

- » To provide integrated human resource service
- » To provide adequate opportunities for the development of employees and councillors
- » To provide equitable employment opportunities for all
- » To promote sound labour relations
- » To provide ICT services
- » To ensure that legislative and policy systems are in place
- » To provide effective administrative support services
- » To provide records management services
- » To provide auxiliary services

KPA 6: Financial Viability and Management

- » To enhance the financial viability of the municipality

- » To ensure that the Municipality is SCOA compliant
- » To ensure that the municipal assets are properly safeguarded

The IDP aims at promoting local economic growth and social development in order to provide a better life for the communities. The Metals Industrial Cluster will provide employment opportunities and contribute through assisting the District Municipality in achieving local economic development and growth.

**3.3.3.2 Ga-Segonyana Local Municipality Integrated Development Plan (IDP) (2015-2016)**

The current vision of the Ga-Segonyana Local Municipality (GSLM) is “An integrated Municipality that is committed to the creation of a better life through sustainable development for the people of Ga-Segonyana”. The Municipality strives to epitomise this at all times by endeavouring to:

- » Involve its communities in the affairs of decision-making about basic service delivery, local economic development and the manner in which the municipality is managed;
- » Emphasise care and human dignity in its interaction with its communities; and
- » Constantly attempts to improve the efficiency, effectiveness and economy of its administration and the activities in which it engaged itself in order to render services.

Section 152 of the Constitution, 1996, stipulates the core objects of local government as the following:

- » To provide democratic and accountable government for local communities;
- » To ensure the provision of services to communities in a sustainable manner;
- » To promote social and economic development;
- » To promote a safe and healthy environment; and
- » To encourage the involvement of communities and community organisations in the matters of local government.

The Ga-Segonyana Municipality places these objects at the core of all its operations, programmes and projects, and has therefore, in compliance with the National Government’s vision for local government, structured its activities according to the following five key performance areas (refer to **Table 3.2** below):

**Table 3.2:** The key performance areas of the Ga-Segonyana Local Municipality

Objectives of the Constitution, 1996	Municipal Key Performance Areas
To provide democratic and accountable government for local communities	Good Governance and Public Participation
To encourage the involvement of communities and community organisations in the matters of local government	
To ensure the provision of services to	

communities in a sustainable manner	
To ensure the provision of services to communities in a sustainable manner	Basic Service Delivery & Infrastructure Investment
To promote a safe and healthy environment	
To promote social and economic development	Local Economic Development (including job creation)

The GSLM's focus is on economic and social development and service delivery. The proposed development will contribute to economic and social development through employment opportunities and business opportunities in the local area which will contribute towards reducing the poverty levels in the GSLM.

### 3.4. Regulatory and Legal Context

The regulatory hierarchy for the establishment of this Metals Industrial Cluster consists of three tiers of authorities who exercise control through both statutory and non-statutory instruments - that is National, Provincial and Local levels.

#### 3.4.1 Regulatory Hierarchy

At a **National Level**, the main regulatory agencies are:

- » *Department of Environmental Affairs (DEA)*: This Department is responsible for environmental policy and is the controlling authority in terms of NEMA and the EIA Regulations.
- » *National Department of Agriculture, Forestry, and Fisheries (DAFF)*: This Department is responsible for activities pertaining to subdivision and rezoning of agricultural land. This Department has published a guideline for the development of solar energy facilities on agricultural land. The forestry section is responsible for the protection of tree species under the National Forests Act (Act No 84 of 1998).
- » *Department of Water and Sanitation (DWS)*: This Department is responsible for water resource protection, water use licensing and permits.
- » *Department of Mineral Resources (DMR)*: Approval from the DMR may be required to use land surface contrary to the objects of Mineral and Petroleum Resources Development Act in terms of section 53 of the Mineral and Petroleum Resources Development Act (No 28 of 2002). In terms of the Act approval from the Minister of Mineral Resources is required to ensure that proposed activities do not sterilise a mineral resource that might occur on site.
- » *The South African Heritage Resources Agency (SAHRA)*: SAHRA is a statutory organisation established under the National Heritage Resources Act, No 25 of 1999, as the national administrative body responsible for the protection of South Africa's cultural heritage.
- » *South African National Roads Agency (SANRAL)*: This Agency is responsible for the regulation and maintenance of all national routes.

At the **Provincial Level**, the main regulatory agencies are:

- » *Northern Cape Department of Environment and Nature Conservation* – This department is the competent authority identified for the project. This department aims to conserve the environment and its resources, promote sustainable use, protect and continually enhance environmental assets, enhance socio-economic benefits and employment creation for present and future generations from a healthy environment.
- » *Ngwao-Boswa Ya Kapa Bokone (Northern Cape Provincial Heritage Resources Authority)* - a statutory body responsible for the protection, conservation, management and interpretation of the heritage resources of the Northern Cape.
- » *Department of Transport and Public Works*: This Department is responsible for roads and the granting of exemption permits for the conveyance of abnormal loads on public roads.
- » *Northern Cape Department of Agriculture, Land Reform and Rural Development*: This Department is responsible for all matters which affect agricultural land.

At the **Local Level**, the local and district municipal authorities are the principal regulatory authorities responsible for planning, land use and the environment. In the Northern Cape Province, both the local and district municipalities play a role. The local municipality is the Ga-Segonyana Local Municipality which forms part of the greater John Taolo Gaetsewe District Municipality.

### ***3.4.2 Legislation and Guidelines that have informed the preparation of this final EIA Report***

The following legislation and guidelines have informed the scope and content of this final EIA Report:

- » National Environmental Management Act (Act No. 107 of 1998)
- » EIA Regulations, published under Chapter 5 of NEMA (GNR R982 in Government Gazette No 38282 of December 2014)
- » The National Development Plan 2030
- » Northern Cape Provincial Development and Resource Management Plan/Provincial Spatial Development Framework (PSDF) (2012)
- » Northern Cape Provincial Growth and Development Strategy (PGDS) (2011)
- » Northern Cape Provincial Local Economic Development (LED) Strategy (2009)
- » John Taolo Gaetsewe District Municipality Integrated Development Plan (IDP) (2012-2019)
- » Ga-Segonyana Local Municipality Integrated Development Plan (IDP) (2015-2016)
- » International guidelines – the Equator Principles and the International Finance Corporation and World Bank Guidelines.



Several other Acts, standards or guidelines have also informed the project process and the scope of issues assessed in this report. A listing of relevant legislation is provided in **Table 3.2**, where the level of applicability of the legislation or policy to the activity/project is detailed.

**Table 3.2:** Relevant legislative permitting requirements applicable to the proposed Metals Industrial Cluster

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
<b>National Legislation</b>			
National Environmental Management Act (Act No 107 of 1998)	<p>The EIA Regulations have been promulgated in terms of Chapter 5 of the Act. Listed activities which may not commence without an environmental authorisation are identified within these Regulations.</p> <p>In terms of section 24(1) of NEMA, the potential impact on the environment associated with these listed activities must be assessed and reported on to the competent authority charged by NEMA with granting of the relevant environmental authorisation.</p> <p>In terms of GN R982, R983, R984 and R985 of December 2014, a Scoping and EIA Process is required to be undertaken for the proposed project.</p>	» Northern Cape Department of Environment and Nature Conservation (DENC) – as the Competent Authority.	<p>The listed activities triggered by the proposed Metals Industrial Cluster have been identified and assessed in the EIA process being undertaken.</p> <p>The EIA report is to be submitted to the competent in support of the application for authorisation.</p>
National Environmental Management Act (Act No 107 of 1998)	<p>In terms of the Duty of Care Provision in section 28(1) the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to ensure that any pollution or degradation of the environment associated with this project is avoided, stopped or minimised.</p> <p>In terms of NEMA, it has become the legal duty of a project proponent to consider a project holistically, and to consider the cumulative effect of a variety of impacts.</p>	» Northern Cape Department of Environment and Nature Conservation (DENC) – as the Competent Authority.	While no permitting or licensing requirements arise directly by virtue of the proposed Cluster, this section is applicable during the EIA phase (currently in process) and will continue to apply throughout the life cycle of the project.

<p>Environment Conservation Act (Act No 73 of 1989)</p>	<p>In terms of section 25 of the ECA, the national noise-control regulations (GN R154 in Government Gazette No. 13717 dated 10 January 1992) were promulgated. The NCRs were revised under Government Notice Number R55 of 14 January 1994 to make it obligatory for all authorities to apply the regulations.</p> <p>Subsequently, in terms of Schedule 5 of the Constitution of South Africa of 1996, legislative responsibility for administering the noise control regulations was devolved to provincial and local authorities. Provincial Noise Control Regulations exist in the Free State, Western Cape and Gauteng provinces, but the Northern Cape province have not yet adopted provincial regulations in this regard.</p> <p>Allows the Minister of Environmental Affairs to make regulations regarding noise, among other concerns.</p>	<ul style="list-style-type: none"> <li>» Northern Cape Department of Environment and Nature Conservation (DENC).</li> <li>» Ga-Segonyana Local Municipality.</li> </ul>	<p>Noise impacts are expected to be associated with the establishment and operation phases of the Cluster and are not likely to present a significant intrusion to the local community. There is no requirement for a noise permit in terms of the legislation.</p> <p>However, as it is not known which entities will be located within the Cluster the possibility exists that a certain entity will create noise impacts.</p>
<p>National Water Act (Act No 36 of 1998)</p>	<p>Water uses under S21 of the Act must be licensed unless such water use falls into one of the categories listed in S22 of the Act or falls under general authorisation in terms of S39 and GN 1191 of GG 20526 October 1999.</p> <p>In terms of Section 19, the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to prevent and remedy the effects of pollution to water resources from occurring, continuing or recurring.</p>	<ul style="list-style-type: none"> <li>» Department of Water and Sanitation (DWS).</li> </ul>	<p>A water use license (WUL) is required in terms of sections 21(c) and 21 (i) of the National Water Act, if wetlands or drainage lines are impacted on, or the regulated area of a watercourse (being the riparian zone or the 1:100yr floodline whichever is greatest). None of these features occur on the site.</p> <p>Should water be extracted from</p>

			groundwater/a borehole on site for use within the Cluster, a water use license will be required in terms of sections 21(a) and 21 (b) of the National Water Act.
National Environmental Management: Air Quality Act (Act No 39 of 2004)	Measures in respect of dust control (section 32) and National Dust Control Regulations of November 2013.  Measures to control noise (section 34) - no regulations promulgated yet.	<ul style="list-style-type: none"> <li>» Northern Cape Department of Environment and Nature Conservation (DENC).</li> <li>» John Taolo Gaetsewe District Municipality</li> <li>» Ga-Segonyana Local Municipality.</li> </ul>	<p>No permitting or licensing requirements arise from this legislation for the establishment of the Metals Industrial Cluster. Any entity locating within the Cluster will have to make provision for permitting or licensing if required.</p> <p>The Act provides that an air quality officer may require any person to submit an atmospheric impact report if there is reasonable suspicion that the person has failed to comply with the Act. The air quality officer may require a dust monitoring programme as per the Regulations for dust control. The EMPr however makes provision for managing and mitigating potential dust impacts (refer to <b>Appendix I</b>).</p>

<p>National Heritage Resources Act (Act No 25 of 1999)</p>	<p>Section 38 states that Heritage Impact Assessments (HIAs) are required for certain kinds of development including</p> <ul style="list-style-type: none"> <li>» the construction of a road, power line, pipeline, canal or other similar linear development or barrier exceeding 300 m in length; and</li> <li>» any development or other activity which will change the character of a site exceeding 5000m<sup>2</sup> in extent.</li> </ul> <p>The relevant Heritage Resources Authority must be notified of developments such as linear developments (such as roads and power lines), bridges exceeding 50m, or any development or other activity which will change the character of a site exceeding 5000m<sup>2</sup>; or the re-zoning of a site exceeding 10 000m<sup>2</sup> in extent. This notification must be provided in the early stages of initiating the development, and details regarding the location, nature and extent of the proposed development must be provided.</p> <p>Standalone HIAs are not required where an EIA is carried out as long as the EIA contains an adequate HIA component that fulfils the provisions of section 38. In such cases only those components not addressed by the EIA should be covered by the heritage component.</p>	<ul style="list-style-type: none"> <li>» Northern Cape Department of Environment and Nature Conservation (DENC) – where a heritage assessment is a component of the EIA.</li> <li>» SAHRA – National heritage sites (grade 1 sites) as well as all historic graves and human remains.</li> <li>» Northern Cape Provincial Heritage Resources Authority (Ngwao-Boswa Ya Kapa Bokone)</li> </ul>	<p>Archaeological and Palaeontological Impact Assessments were undertaken as part of the EIA process to identify heritage sites (refer to <b>Appendix E</b> and <b>Appendix F</b>).</p> <p>The overall project site is considered as having a low archaeological and medium palaeontological significance with the implementation of appropriate mitigation measures.</p> <p>The relevant mitigation measures for the protection of heritage resources are included in the EMPr (refer to <b>Appendix I</b>).</p>
<p>National Environmental Management: Biodiversity Act (Act No 10 of 2004)</p>	<p>Provides for the MEC/Minister to identify any process or activity in such a listed ecosystem as a threatening process (section 53).</p> <p>A list of threatened and protected species has been published in terms of section 56(1) - Government Gazette</p>	<ul style="list-style-type: none"> <li>» National Department of Environmental Affairs (DEA).</li> </ul>	<p>Under this Act, a permit would be required for any activity which is of a nature that may negatively impact on the survival of a listed protected species.</p>

	<p>29657.</p> <p>Three government notices have been published, i.e. GN R 150 (Commencement of Threatened and Protected Species Regulations, 2007), GN R 151 (Lists of critically endangered, vulnerable and protected species) and GN R 152 (Threatened or Protected Species Regulations).</p> <p>Provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. The first national list of threatened terrestrial ecosystems has been gazetted, together with supporting information on the listing process including the purpose and rationale for listing ecosystems, the criteria used to identify listed ecosystems, the implications of listing ecosystems, and summary statistics and national maps of listed ecosystems (National Environmental Management: Biodiversity Act: National list of ecosystems that are threatened and in need of protection, (G 34809, GN R1002), 9 December 2011).</p> <p>Under this Act, a permit would be required for any activity which is of a nature that may negatively impact on the survival of a listed protected species. The Act also regulates alien and invader species.</p> <p>The Proponent has a responsibility for:</p> <ul style="list-style-type: none"><li>» The conservation of endangered ecosystems and restriction of activities according to the categorisation</li></ul>		<p>An ecological study has been undertaken as part of the EIA Phase (refer to <b>Appendix D</b>). As such the potential occurrence of critically endangered, endangered, vulnerable, and protected species and the potential for them to be affected has been considered.</p> <p>A permit may be required should any listed plant species be disturbed or destroyed as a result of the proposed Metals Industrial Cluster. Potential species that could occur on the project site includes <i>Chasmatophyllum muscullinum</i>, <i>Lapeirousia kalahariensis</i>, <i>Moraea polystachya</i>, <i>Nerine laticoma</i>, <i>Acacia erioloba</i> and <i>Aloe heroensis</i>.</p>
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	<p>of the area (not just by listed activity as specified in the EIA regulations).</p> <ul style="list-style-type: none"> <li>» Promote the application of appropriate environmental management tools in order to ensure integrated environmental management of activities thereby ensuring that all development within the area are in line with ecological sustainable development and protection of biodiversity.</li> <li>» Limit further loss of biodiversity and conserve endangered ecosystems.</li> </ul>		
<p>Conservation of Agricultural Resources Act (CARA) (Act No 43 of 1983)</p>	<p>Regulation 15 of GN R1048 provides for the declaration of weeds and invader plants, and these are set out in Table 3 of GN R1048. Declared Weeds and Invaders in South Africa are categorised according to one of the following categories:</p> <ul style="list-style-type: none"> <li>» Category 1 plants: are prohibited and must be controlled.</li> <li>» Category 2 plants: (commercially used plants) may be grown in demarcated areas providing that there is a permit and that steps are taken to prevent their spread.</li> <li>» Category 3 plants: (ornamentally used plants) may no longer be planted; existing plants may remain, as long as all reasonable steps are taken to prevent the spreading thereof, except within the floodline of watercourses and wetlands.</li> </ul> <p>These regulations provide that Category 1, 2 and 3 plants must not occur on land and that such plants must be</p>	<ul style="list-style-type: none"> <li>» Department of Agriculture, Forestry and Fisheries (DAFF).</li> </ul>	<p>While no permitting or licensing requirements arise from this legislation, this Act is applicable during the EIA phase and will continue to apply throughout the life cycle of the project. In this regard, soil erosion prevention and soil conservation strategies must be developed and implemented. In addition, a weed control and management plan must be implemented. The EMPr provides mitigation for soil erosion and weed control and management (refer to <b>Appendix I</b>).</p>

	controlled by the methods set out in Regulation 15E.		
National Forests Act (Act No. 84 of 1998)	<p>Protected trees: According to this act, the Minister may declare a tree, group of trees, woodland or a species of trees as protected. The prohibitions provide that 'no person may cut, damage, disturb, destroy or remove any protected tree, or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister'.</p> <p>Forests: Prohibits the destruction of indigenous trees in any natural forest without a licence.</p>	» Department of Agriculture, Forestry and Fisheries (DAFF).	<p>A permit or license is required for the destruction of protected tree species and/or indigenous tree species within a natural forest.</p> <p>A permit will be required for the destruction, removal or relocation of the <i>Acacia erioloba</i> species present within the project site.</p>
National Veld and Forest Fire Act (Act 101 of 1998)	<p>In terms of section 12 the landowner would be required to burn firebreaks to ensure that should a veldfire occur on the property, that it does not spread to adjoining land.</p> <p>In terms of section 12 the landowner must ensure that the firebreak is wide and long enough to have a reasonable chance of preventing the fire from spreading, not causing erosion, and is reasonably free of inflammable material.</p> <p>In terms of section 17, the applicant must have such equipment, protective clothing, and trained personnel for extinguishing fires.</p>	» Department of Agriculture, Forestry and Fisheries (DAFF).	While no permitting or licensing requirements arise from this legislation, this Act will find application during the establishment and operational phase of the Metals Industrial Cluster. The relevant management and mitigation measures have been included in the EMPr (refer to <b>Appendix I</b> ).
Hazardous Substances Act (Act No 15 of 1973)	This Act regulates the control of substances that may cause injury, or ill health, or death by reason of their toxic, corrosive, irritant, strongly sensitising or inflammable nature or the generation of pressure thereby in certain instances and for the control of certain electronic products.	» Department of Health.	It is necessary to identify and list all the Group I, II, III and IV hazardous substances that may be on the site and in what operational context they are



	<p>To provide for the rating of such substances or products in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, modification, disposal or dumping of such substances and products.</p> <ul style="list-style-type: none"> <li>» Group I and II: any substance or mixture of a substance that might by reason of its toxic, corrosive etc., nature or because it generates pressure through decomposition, heat or other means, cause extreme risk of injury etc., can be declared to be Group I or Group II hazardous substance;</li> <li>» Group IV: any electronic product;</li> <li>» Group V: any radioactive material.</li> </ul> <p>The use, conveyance or storage of any hazardous substance (such as distillate fuel) is prohibited without an appropriate license being in force.</p>		<p>used, stored or handled. If applicable, a license is required to be obtained from the Department of Health.</p>
Development Facilitation Act (Act No 67 of 1995)	<p>Provides for the overall framework and administrative structures for planning throughout the Republic.</p> <p>Section 2 to 4 provide general principles for land development and conflict resolution.</p>	» Northern Cape Department of Environment and Nature Conservation (DENC).	<p>The applicant must submit a land development application in the prescribed manner and form as provided for in the Act. A land development applicant who wishes to establish a land development area must comply with procedures set out in the DFA (Development Facilitation Act).</p>
National	The Minister may by notice in the Gazette publish a list of	» National Department of	No waste disposal site is to be

<p>Environmental Management: Waste Act (Act No. 59 of 2008)</p>	<p>waste management activities that have, or are likely to have, a detrimental effect on the environment.</p> <p>The Minister may amend the list by –</p> <ul style="list-style-type: none"> <li>» Adding other waste management activities to the list.</li> <li>» Removing waste management activities from the list.</li> <li>» Making other changes to the particulars on the list.</li> </ul> <p>In terms of the Regulations published in terms of this Act (GN R921 of November 2013), a Basic Assessment or Environmental Impact Assessment is required to be undertaken for identified listed activities.</p> <p>Any person who stores waste must at least take steps, unless otherwise provided by this Act, to ensure that:</p> <ul style="list-style-type: none"> <li>» The containers in which any waste is stored, are intact and not corroded or in any other way rendered unfit for the safe storage of waste.</li> <li>» Adequate measures are taken to prevent accidental spillage or leaking.</li> <li>» The waste cannot be blown away.</li> <li>» Nuisances such as odour, visual impacts and breeding of vectors do not arise; and</li> <li>» Pollution of the environment and harm to health are prevented.</li> </ul>	<p>Environmental Affairs (DEA) – Hazardous and General Waste.</p>	<p>associated with the establishment of the Cluster. In terms of GN R921, no permit is required.</p> <p>Waste handling, storage and disposal during establishment and operation is required to be undertaken in accordance with the requirements of the Act, (GN R926, of November 2013) and as detailed in the EMPr (refer to <b>Appendix I</b> of this <u>final</u> EIA report).</p> <p>However, it is not expected that waste disposal will be undertaken at the project site.</p>
<p>National Road Traffic Act (Act No 93 of 1996)</p>	<p>The technical recommendations for highways (TRH 11): “Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads” outline the rules and conditions which apply</p>	<p>» Northern Cape Department of Transport, Safety and Liaison - Provincial Roads.</p>	<p>An abnormal load/vehicle permit may be required to transport the various components to the project site for establishment</p>

	<p>to the transport of abnormal loads and vehicles on public roads and the detailed procedures to be followed in applying for exemption permits are described and discussed.</p> <p>Legal axle load limits and the restrictions imposed on abnormally heavy loads are discussed in relation to the damaging effect on road pavements, bridges, and culverts.</p> <p>The general conditions, limitations, and escort requirements for abnormally dimensioned loads and vehicles are also discussed and reference is made to speed restrictions, power/mass ratio, mass distribution, and general operating conditions for abnormal loads and vehicles. Provision is also made for the granting of permits for all other exemptions from the requirements of the National Road Traffic Act and the relevant Regulations.</p>	<p>» South African National Roads Agency Limited (SANRAL) - National Roads.</p>	<p>and operation. These include:</p> <p>» Route clearances and permits will be required for vehicles carrying abnormally heavy or abnormally dimensioned loads.</p> <p>» Transport vehicles exceeding the dimensional limitations (length) of 22m.</p>
<b>Provincial</b>			
<p>Northern Cape Nature Conservation Act, No. 9 of 2009</p>	<p>Nature Conservation Act accompanied by all amendments is regarded by the Northern Cape Province as the legal binding, provincial documents, providing regulations, guidelines and procedures with the aim of protecting game and fish, the conservation of flora and fauna and the destruction of problematic (vermin and invasive) species. This act should be considered in its entirety, with special reference to:</p> <ul style="list-style-type: none"> <li>» Schedule 1: Specially Protected Species</li> <li>» Schedule 2: Protected Species</li> <li>» Schedule 6: Invasive Species</li> </ul>	<p>» Northern Cape Department of Environment and Nature Conservation (DENC).</p>	<p>Approval from DENC will required in terms of the protection and conservation of fish, game, flora and fauna in the Northern Cape Province.</p>

**APPROACH TO UNDERTAKING THE EIA PHASE**

**CHAPTER 4**

An Environmental Impact Assessment (EIA) process refers to the process which involves the identification of and assessment of direct, indirect, and cumulative environmental impacts associated with a proposed project/activity. The EIA process comprises two main phases: i.e. **Scoping Phase** and **EIA Phase**. The EIA process culminates in the submission of an EIA report (including an Environmental Management Programme (EMPr)) to the competent authority for decision-making. The EIA process is illustrated below:



**Figure 4.1:** The phases of an EIA process as per the EIA Regulations, 2014

The EIA process for the proposed Metals Industrial Cluster is being undertaken in accordance with section 24(5) of NEMA (No 107 of 1998). In terms of the EIA Regulations (2014) of GN R982, GN R983, GN R984 and GN R985, a Scoping and EIA process is required to be undertaken for the establishment of the Metals Industrial Cluster.

**4.1. Legal Requirements as per the EIA Regulations for the undertaking of an Environmental Impact Assessment Report, 2014**

This chapter of the final EIA report includes the following information required in terms of Appendix 3: Content of Environmental Impact Assessment Reports:

Requirement	Relevant Section
3(h)(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs.	The public participation process followed throughout the EIA process of the Metals Industrial Cluster is described in section 4.3 and copies of the supporting documents and inputs are included in Appendix C1 – C8.
3(h)(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them.	The main issues raised through the undertaking of the public participation process within the EIA Phase including consultation with I&APs are included in section 4.3.4 of <u>this final</u> EIA report and the Comments and Responses Report included in Appendix C8.

3(h)(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks.	The methodology used to determine and rank the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks is included in section 4.3.5.
3(p) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed.	A description of the assumptions and limitations is included in section 4.3.6.

## 4.2. Scoping Phase

The Scoping study provided interested and affected parties (I&APs) with the opportunity to receive information regarding the proposed project, participate in the process, and raise issues of concern. The Scoping report aimed at detailing the nature and extent of the proposed Cluster, identifying potential issues associated with the proposed project, and defining the extent of studies required within the EIA Phase. This was achieved through an evaluation of the proposed Metals Industrial Cluster, involving the project proponent, specialist consultants, and a consultation process with key stakeholders that included both relevant government authorities and I&APs.

During the Scoping Phase of the EIA process various specialist studies were undertaken to provide input into the evaluation of the proposed Metals Industrial Cluster. The specialist studies included ecology, archaeology and social assessments.

A Scoping report was released for review from 01 April 2016 – 04 May 2016 for a 30-day comment period. Following the comment and review period, a final Scoping report was submitted to the DENC (Northern Cape Department of Environment and Nature Conservation) in May 2016. This together with the Plan of Study for the EIA was accepted by the DENC, as the competent authority, in June 2016. In terms of this acceptance, and in line with Regulation 23, an EIA phase was required to be undertaken for the establishment of the Metals Industrial Cluster.

## 4.3. Environmental Impact Assessment Phase

The EIA Phase aims to achieve the following:

- » Provide a comprehensive assessment of the social and biophysical environments affected by the proposed phases put forward as part of the project.
- » Assess potentially significant impacts (direct, indirect, and cumulative, where required) associated with the proposed Cluster.
- » Comparatively assess any alternatives put forward as part of the project.
- » Identify and recommend appropriate mitigation measures for potentially significant environmental impacts.

- » Undertake a fully inclusive public participation process to ensure that I&APs are afforded the opportunity to participate, and that their issues and concerns are recorded.

This final EIA Report addresses potential direct, indirect, and cumulative<sup>6</sup> impacts (both positive and negative) associated with the project. In this regard the final EIA report aims to provide the relevant authorities with sufficient information to make an informed decision regarding the proposed Metals Industrial Cluster.

#### **4.3.1. Tasks completed during the EIA Phase**

The EIA Phase for the proposed Cluster has been undertaken in accordance with the EIA Regulations published in GN 38282 in December 2014, in terms of the NEMA. Key tasks undertaken within the EIA phase included:

- » Consultation with relevant decision-making, commenting and regulating authorities (at National, Provincial and Local levels).
- » Undertaking a public participation process throughout the EIA process in accordance with Chapter 6 of Government Notice R982 of 2014 in order to identify any additional issues and concerns associated with the proposed project.
- » Preparation of a Comments and Response Report detailing key issues raised by I&APs as part of the EIA Process (including Scoping Phase and EIA Phase).
- » Undertaking of independent specialist studies in accordance with Appendix 6 of Government Notice R982 of 2014.
- » Preparation of an EIA Report in accordance with Appendix 3 of the EIA Regulations, Government Notice R982 of 2014.

These tasks are discussed in detail below.

#### **4.3.2 Authority Consultation**

The DENC is the competent authority for the proposed Metals Industrial Cluster proposed to be located within the town of Kuruman, Northern Cape Province. Consultation with the regulating authorities (i.e. the DENC) has continued throughout the EIA process. On-going consultation included the following:

- » Submission of the application for authorisation to the DENC;
- » Submission of the Scoping report for review by the competent authority from 01 April 2016 to 04 May 2016.

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<sup>6</sup> "Cumulative environmental change or cumulative effects may result from the additive effect of individual actions of the same nature or the interactive effect of multiple actions of a different nature" (Spaling and Smit, 1993).

- » The final Scoping report was submitted to the DENC in May 2016. Acceptance of the Scoping report was received from the competent authority in June 2016.
- » Review of the EIA report for a 30-day review period for comment and input.

The following consultations will also be undertaken as part of this EIA process:

- » Submission of a final EIA report to the DENC following the 30-day review period of the EIA report including the receipt of the comments from the DENC on the EIA report.
- » If required, an opportunity for DENC representatives to visit and inspect the proposed project site.
- » Notification and consultation with Organs of State (refer to **Table 4.1**) that may have jurisdiction over the project, including:
  - \* National and Provincial departments
  - \* Parastatals and Non-Governmental Organisations
  - \* Local Municipality and District Municipality

A record of the authority consultation with the DENC in the EIA process is included within **Appendix B** and includes the acceptance of Scoping received from the competent authority.

#### **4.3.3. Public Involvement and Consultation**

The aim of the public participation process is primarily to ensure that:

- » Information containing all relevant facts in respect of the proposed Cluster is made available to potential stakeholders and I&APs.
- » Participation by potential I&APs is facilitated in such a manner that all potential stakeholders and I&APs are provided with a reasonable opportunity to comment on the proposed project.
- » Comments received from stakeholders and I&APs are recorded and incorporated into the EIA process.

In order to accommodate the varying needs of stakeholders and I&APs within the broader study area, as well as capture their inputs regarding the project, various opportunities for stakeholders and I&APs to be involved in the EIA Phase of the process have been provided, as follows:

- » Telephonic consultation sessions (consultation with various parties from the EIA project team, including the public participation consultant, lead EIA consultant as well as specialist consultants).
- » Written, faxed or e-mail correspondence.
- » Focus group meetings (pre-arranged and stakeholders invited to attend, including the directly affected and surrounding landowners).

- » The EIA Report 30-day review period from 02 November 2016 – 02 December 2016. The comments received from I&APs, the competent authority and the relevant Organs of State departments have been captured within a Comments and Response Report, and included within this final EIA Report, for submission to the competent authority (DENC) for decision-making.

In terms of the requirement of Chapter 6 of the EIA Regulations of December 2014, the following key public participation tasks are required to be undertaken:

- » Fixing a notice board at a place conspicuous to the public at the boundary or on the fence of—
  - (i) the project site where the activity to which the application relates or is to be undertaken; and
  - (ii) any alternative site mentioned in the application;
- » Giving written notice to:
  - (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
  - (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  - (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
  - (v) the municipality which has jurisdiction in the area;
  - (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
  - (vii) any other party as required by the competent authority.
- » Placing an advertisement in:
  - (i) one local newspaper.
- » Open and maintain a register/database of interested and affected parties and organs of state.
- » Release of an EIA Report for a 30-day comment and review period
- » Preparation of a Comments and Responses Report which documents all of the comments received and responses from the project team.

In compliance with the requirements of Chapter 6: Public Participation of the EIA Regulations, 2014, the following summarises the key public participation activities conducted to date.

- » **Placement of Site Notices**

Site notices (in English and Afrikaans) were placed at visible points on the affected property (i.e. Portion 6253 of Erf 1) boundary fence in two locations in accordance



with the requirements of the EIA Regulations. Further notices were placed at the Ga-Segonyana Local Municipality offices and the Kuruman Public Library located in the town of Kuruman (School Street). Copies of all the site notices and proof of the placement thereof are included within **Appendix C2**.

» **Identification of I&APs and establishment of a database**

Identification of I&APs was undertaken by Savannah Environmental through existing contacts and databases, recording responses to site notices and the newspaper advertisements, as well as through the process of networking. The key stakeholder groups identified include authorities, local and district municipalities, public stakeholders, Parastatals and Non-Governmental Organisations (refer to **Table 4.1** below).

**Table 4.1:** Summary of Stakeholders identified for inclusion in the project database during the Public Participation Process of the Metals Industrial Cluster EIA Process

<b>Organs of State</b>
<b>National Government Departments</b>
Department of Agriculture, Forestry and Fisheries (DAFF)
Department of Water and Sanitation
Department of Mineral Resources
<b>Government Bodies and State Owned Companies</b>
Eskom SOC Limited
South African Civil Aviation Authority (CAA)
South African Heritage Resources Agency (SAHRA)
South African National Roads Agency Limited (SANRAL)
Ngwao-Boswa Ya Kapa Bokone (Northern Cape Provincial Heritage Resources Authority)
Square Kilometre Array: Southern Africa
Telkom SA Ltd
<b>Provincial Government Departments</b>
Northern Cape Department of Environment and Nature Conservation (Competent Authority)
Northern Cape Department of Agriculture, Land Reform and Rural Development
Northern Cape Department of Roads and Public Works
Northern Cape Department of Economic Development and Tourism
<b>Local Government Departments</b>
Ga-Segonyana Local Municipality - Municipal Manager - Ward Councillor (Ward 1)
John Taolo Gaetsewe District Municipality
<b>Key Stakeholders</b>
Neighbouring landowners and tenants and other entities in the vicinity of the project site.

All relevant stakeholder and I&AP information, including those of businesses located in the vicinity of the site, has been recorded within a database of affected parties (refer to **Appendix C1**). While I&APs were encouraged to register their interest in the project

from the onset of the process undertaken by Savannah Environmental, the identification and registration of I&APs has been on-going for the duration of the EIA phase of the process.

» **Newspaper Advertisements**

During the scoping phase, a newspaper advert was placed to notify and inform the public of the commencement of the EIA process for the proposed Cluster and the availability of the Scoping report for review. The advert was placed in the Kalahari Bulletin on 07 April 2016 which is distributed and read in the surrounding areas of the proposed project site.

During the EIA phase, a second newspaper advert has been placed to inform the public of the availability of the EIA report for review. The advert has been published in the Kalahari Bulletin on 03 November 2016.

Proof of the newspaper advertisements are included in **Appendix C2**.

» **Consultation**

Consultation undertaken during the Scoping Phase included focus group meetings and telephonic discussions with adjacent landowners, officials from the Ga-Segonyana Local Municipality as well as key stakeholders. Opportunities for consultation were provided to introduce the project and the EIA process in order to record issues of specific concern raised by stakeholders.

The comments and issues raised by I&APs during the public consultation meetings held in April 2016 were considered and responded to in the Comments and Responses Report included in the draft Scoping Report that was made available for review. The Scoping Report was accepted by the Northern Cape Department of Environment and Nature Conservation (DENC) in June 2016, however, it was requested that the concerns raised by the El Dorado Hotel be addressed in the EIA Report. A focus group meeting was therefore arranged with the applicant, representatives from the El Dorado Hotel and representatives of the Ga-Segonyana Local Municipality on 16 August 2016. The purpose of the meeting was to provide the representatives of the El Dorado Hotel with an opportunity to reiterate the issues and concerns raised during the Scoping Phase regarding the project and to determine a way forward in addressing the concerns raised. The outcome of the meeting was that the representatives of the El Dorado Hotel supported the concept of developing an organised business environment and that opportunities for collaborating with the Cluster can be explored further. In addition, it was noted that the Hotel supports the development as long as the enterprises located adjacent to the Hotel are not noisy and messy. The minutes of the meeting are contained in **Appendix C7**.

Since no further issues of specific concern were raised by I&APs to date, telephonic consultation interviews with stakeholders during the 30-day review period was considered to be sufficient in terms of the public participation process undertaken for the EIA Phase.

No comments were submitted by the EL Dorado Hotel during the 30-day review period of the EIA report. Therefore, it is considered that the issues raised by the El Dorado Hotel have been resolved.

A summary of the public participation activities undertaken in the Scoping and EIA phases of the project to date is provided in **Table 4.2** below.

**Table 4.2:** Consultation undertaken with I&APs for the Metals Industrial Cluster

Activity	Date
<b>Scoping Phase</b>	
Placement of site notices on-site.	11 December 2015
Distribution of letters announcing the EIA process. These letters were distributed to organs of state departments, ward councillors, landowners within the broader study area, neighbouring landowners and key stakeholder groups.	23 March 2016
Distribution of letters announcing the availability of the Scoping report for review for a 30—day comment period. These letters were distributed to organs of state departments, ward councillors, landowners within the broader study area, neighbouring landowners and key stakeholder groups.	01 April 2016
30-day review period for the Scoping report for comment.	01 April 2016 – 04 May 2016
Advertisement for the EIA process and the availability of the Scoping report for review placed in the Kalahari Bulletin.	07 April 2016
Focus Group Meetings with the following key stakeholders: » Kuruman Country Club » El Dorado Hotel » Ga-Segonyana Local Municipality & Ward Councillor	26 April 2016
<b>EIA Phase</b>	
Focus Group Meeting with the representative of the El Dorado Hotel and the Department of Economic Development and Tourism to address concerns and issues raised during the Scoping Phase Focus Group Meetings held on 26 April 2016	16 August 2016
Telephonic Consultations with newly elected Ward Councillors of the Ga-Segonyana Local Municipality	05 September 2016
Distribution of letters announcing the availability of the EIA Report for review for a 30-day comment period. These letters were distributed to organs of state departments, ward councillors, landowners within the study area, neighbouring landowners and key stakeholder groups.	02 November 2016
The availability of the EIA Report for review advertised in the Kalahari Bulletin.	03 November 2016

30-day review period of the EIA Report for comment	02 November 2016 – 02 December 2016
Telephonic Discussions with I&APs	To take place during the 30-day review period

Records of all consultation undertaken are included in **Appendix C6 - C8**.

**4.3.4 Identification and Recording of Issues and Concerns**

During the Scoping Phase of the EIA process focus group meetings were held with key stakeholders in order to provide them with background information regarding the project. These key stakeholders included the adjacent landowners and the Ward Counsellor of the affected ward within which the project site is proposed (Ward 1). The project information was also distributed to the relevant I&APs and Organs of State. Consultation continued through the EIA Phase, with additional information being shared.

Issues and comments raised by I&APs over the duration of the EIA process have been synthesised into a Comments and Response Reports which is included in **Appendix C8**. The Comments and Responses Report includes detailed responses from members of the EIA project team and/or the project proponent. The following summarises the main comments raised through the process, as well as how the comment has been addressed through the EIA process:

El Dorado Hotel	A Focus Group Meeting was held on 16 August 2016 with the representative of the El Dorado Hotel and the Department of Economic Development and Tourism, to address the issues raised in the Scoping Phase. These issues mainly related to the location of the Metals Industrial cluster in relation to the El Dorado Hotel and the types of industrial development to be located within the Cluster. The meeting provided the opportunity for the Applicant and the Hotel representative to further engage and the El Dorado Hotel gained an improved understanding of the project through discussion of the project details with the Applicant. The issues raised by the El Dorado Hotel during the Scoping Phase were addressed and resolved. The minutes of the meeting is included as <b>Appendix C7</b> and has also been incorporated within the Comments and Responses report ( <b>Appendix C8</b> )
South African National Roads Agency Limited (SANRAL)	Through correspondence with the South African National Roads Agency Limited (SANRAL) during the Scoping Phase a Traffic Assessment was requested to be undertaken as part of the project. This assessment forms part of the EIA report in order to comply with the requirement.
South African Heritage Resources Agency (SAHRA)	Through correspondence with the South African Heritage Resources Agency (SAHRA) during the Scoping Phase a Palaeontological Impact Assessment (PIA) was requested to be undertaken as part of the project. This assessment forms part of the EIA report in order to

comply with the requirement.

**4.3.5 Assessment of Issues Identified through the Scoping Process**

Issues which required further investigation within the EIA Phase, as well as the specialists involved in the assessment of these impacts are indicated in **Table 4.3** below.

**Table 4.3:** Specialist consultants who have assessed the potential impacts associated with the Metals Industrial Cluster

Specialist	Area of Expertise	Refer Appendix
Johann du Preez of Enviro-Niche Consulting Biodiversity and Environmental Consultants	Ecology, Flora, Fauna, Water Resources and Ecosystems	Appendix D
Jaco van der Walt of Heritage Contracts and Archaeological Consulting	Heritage and archaeological resources	Appendix E
Elize Butler of Banzai Environmental	Palaeontology	Appendix F
Stephen Fautley of Techso	Traffic	Appendix G
Candice Hunter of Savannah Environmental and Neville Bews of Neville Bews and Associates	Social impacts	Appendix H and Appendix H(a)

Specialist studies considered direct and indirect environmental impacts associated with the establishment of the Metals Industrial Cluster. Issues were assessed in terms of the following criteria:

- » The **nature**, a description of what causes the effect, what will be affected, and how it will be affected
- » The **extent**, wherein it is indicated whether the impact will be local (limited to the immediate area or site of development), regional, national or international. A score of between 1 and 5 is assigned as appropriate (with a score of 1 being low and a score of 5 being high)
- » The **duration**, wherein it is indicated whether:
  - \* The lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1
  - \* The lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2
  - \* Medium-term (5–15 years) – assigned a score of 3
  - \* Long term (> 15 years) - assigned a score of 4
  - \* Permanent - assigned a score of 5
- » The **magnitude**, quantified on a scale from 0-10, where a score is assigned:
  - \* 0 is small and will have no effect on the environment
  - \* 2 is minor and will not result in an impact on processes
  - \* 4 is low and will cause a slight impact on processes
  - \* 6 is moderate and will result in processes continuing but in a modified way

- \* 8 is high (processes are altered to the extent that they temporarily cease)
- \* 10 is very high and results in complete destruction of patterns and permanent cessation of processes
- » The **probability of occurrence**, which describes the likelihood of the impact actually occurring. Probability is estimated on a scale, and a score assigned:
  - \* Assigned a score of 1–5, where 1 is very improbable (probably will not happen)
  - \* Assigned a score of 2 is improbable (some possibility, but low likelihood)
  - \* Assigned a score of 3 is probable (distinct possibility)
  - \* Assigned a score of 4 is highly probable (most likely)
  - \* Assigned a score of 5 is definite (impact will occur regardless of any prevention measures)
- » The **significance**, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high
- » The **status**, which is described as either positive, negative or neutral
- » The degree to which the impact can be reversed
- » The degree to which the impact may cause irreplaceable loss of resources
- » The degree to which the impact can be mitigated

The **significance** is determined by combining the criteria in the following formula:

$S = (E+D+M) P$ ; where

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

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

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

As the Northern Cape Department of Economic Development and Tourism (applicant) has the responsibility to avoid or minimise impacts and plan for their management (in terms of the EIA Regulations), the mitigation of significant impacts is discussed. Assessment of impacts with mitigation is made in order to demonstrate the effectiveness of the proposed mitigation measures. An EMPr is included as **Appendix I**.

#### **4.3.6 Assumptions and Limitations**

The following assumptions and limitations are applicable to the studies undertaken within this EIA Phase:

- » All information provided by the developer and I&APs to the environmental team was correct and valid at the time it was provided.
- » It is assumed that the development site/footprint for the Cluster identified by the developer represents a technically suitable site for the establishment of the proposed Metals Industrial Cluster.
- » This report and its investigations are project and site-specific, and consequently the environmental team did not evaluate any other project sites.

Refer to the specialist studies in **Appendices D – H** for specialist study specific limitations.



## DESCRIPTION OF THE RECEIVING ENVIRONMENT

## CHAPTER 5

This section of the final EIA Report provides a description of the environment that may be affected by the Metals Industrial Cluster. This information is provided in order to assist the reader in understanding the receiving environment within which the proposed Cluster will be located. Features of the biophysical, social and economic environment that could directly or indirectly be affected by, or could affect, the proposed project have been described. This information has been sourced from existing information available for the area, as well as from the specialist investigations undertaken for this EIA, and aims to provide the context within which this EIA process is being conducted. A comprehensive description of each aspect of the affected environment is included within the specialist reports contained within **Appendices D-H**.

### 5.1 Legal Requirements as per the EIA Regulations for the undertaking of an Environmental Impact Assessment Report, 2014

This chapter of the final EIA report includes the following information required in terms of Appendix 3: Content of Environmental Impact Assessment Reports:

Requirement	Relevant Section
3(h)(iv) the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects	The environmental attributes associated with the surrounding areas and the project site/development footprint is included in this chapter as a whole.

### 5.2 Regional Setting: Location of the Study Area

The vast and arid Northern Cape is by far the largest and most sparsely populated province in South Africa, taking up nearly a third of South Africa's land area. The capital city of the Province is the town of Kimberley. The Province houses the Kalahari Gemsbok National Park, which forms part of the Kgalagadi Transfrontier Park. The Orange River (Gariiep River) traverses the Province and acts as the boundary between the Northern Cape Province and Namibia located to the north.

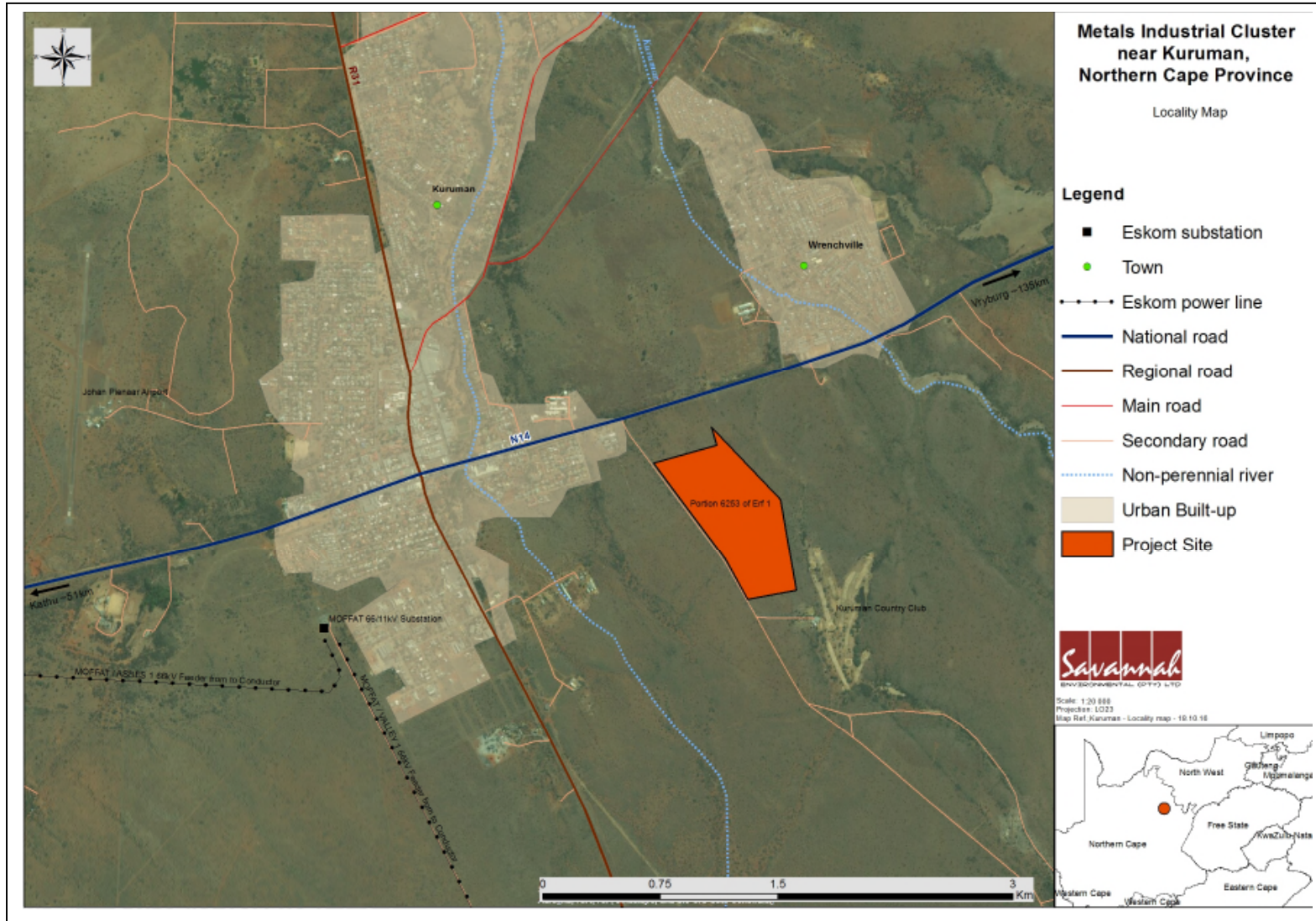
The town of Kuruman is the closest town located in the vicinity of the project site and the main town in the Kalahari region of the Namakwari Route. Kuruman is also known as the "Oasis of the Kalahari". The town is set on the Ghaap Plateau and is located 1131m above sea level. A permanent and abundant source of water in the form of a mineral spring is present within the area known as "The Eye". Mining and agricultural activities (including cattle and game) support Kuruman's growing economy. Various minerals are being mined within the area including manganese ore, iron ore, tiger's eye

and crocidolite (blue asbestos). The deposits of crocidolite found in the Kuruman district are considered to be the richest of the world.

The site for the proposed Metals Industrial Cluster is located ~2km south east of the town of Kuruman on Portion 6253 of Erf 1 (refer to **Figure 5.1**) and falls under the jurisdiction of the Ga-Segonyana Local Municipality (GSLM) and within the greater John Taolo Gaetsewe District Municipality (JTGDM) in the Northern Cape Province. The site is located within the urban edge of Kuruman with the areas surrounding the site mostly transformed as a result of the construction of infrastructure such as roads and buildings utilised by the town. Developments located in close proximity to the site is the Kuruman Country Club located approximately 200m south east of the site and the El Dorado Hotel (three star rating) located approximately 250m north west of the site. Located ~2.2km west of the proposed site is an existing industrial development, known as the Kuruman Industrial Park. The built-up area of the town of Kuruman is located approximately 250m north west of the site and has ~13 057 inhabitants. A low density housing development known as Wrenchville is located ~1km north east of the project site.

An airport, known as the Johan Pienaar Airport, is located to the west of Kuruman (~1.2km) and is located ~3.7km north west of the proposed site for the development of the Metals Industrial Cluster.

The land portion proposed for the development of the Metals Industrial Cluster is owned by the GSLM, and an agreement to establish and operate the development with the Northern Cape Department of Economic Development and Tourism has been put in place. The site is accessible by road, with the N14 national road being located approximately 300m north of the site, and an unnamed secondary road located along the western boundary of the project site. Other existing infrastructure in the surrounding area includes power lines and a substation. The Moffat 66/11kV Substation is located ~2.5km to the west of the site and the Moffat/Asbes 1 66kV and the Moffat/Valley 1 66kV power lines are also located approximately ~2.5km west of the site.



**Figure 5.1:** Regional context and location of the Metals Industrial Cluster project site.

### 5.3 Existing land-uses within and surrounding the project site

Portion 6253 of Erf 1 has no formal land-use and is associated with informal and uncontrolled grazing activities. These uncontrolled grazing activities have led to degradation and transformation. A number of footpaths occur in a criss-cross manner within the project site. These footpaths also cause degradation of the natural vegetation by the trampling effect of people and animals. No formal development has taken place within the property boundaries. There are informal residents residing in the southern portion of the project site along the western boundary.

Land-uses surrounding the project site include:

- » Adjacent roads including the N14 and an unnamed secondary road located along the western boundary of the project site which leads to the Kuruman Country Club,
- » The Kuruman Country Club,
- » A shooting range,
- » The El Dorado Hotel,
- » The existing Kuruman Industrial Park, and
- » The Kuruman Hospital.

### 5.4 Access and Transport Routes in the Region

Access to the project site is possible via the unnamed secondary road located along the western boundary of the site. This secondary road is accessed via the national road (N14), located approximately 300m to the north of the project site, which creates an intersection at the turn-off towards the project site. The national road (i.e. the N14) is extensive and links to other national roads, including the N18, N1, N12, N18, N10 and the N7, across the country. The road traverses the country in an east-west direction and is the connection between the towns Springbok, Aggeneys, Pofadder, Kakamas, Keimoes, Upington, Olifantshoek, Kathu, Kuruman, Vryburg, Delareyville, Sannieshof, Coligny, Ventersdorp, Krugersdorp and Johannesburg. Other routes that provide access to the project site is the regional road (R31) which is located to approximately 1.7km west of the site. Both the N14 and R31 traverses the town of Kuruman and creates an intersection within the town of Kuruman.

Possible future access to the project site will include the construction of a new secondary road which will aid in diverting the traffic of Kuruman around the town rather than through the town. The planned secondary road will be located off of the N14 and traverse the area south of the proposed project site and the existing Kuruman industrial area. This diversion will provide access to both the proposed Metals Industrial Cluster and the existing Kuruman industrial area. This proposed access road forms part of the Municipality's SDF. However, the timeframe for the construction of the secondary road is not yet known. As there is no timeframe allocated to the proposed secondary road it can be assumed that improvements to existing road infrastructure will be required for the development of the Metals Industrial Cluster.

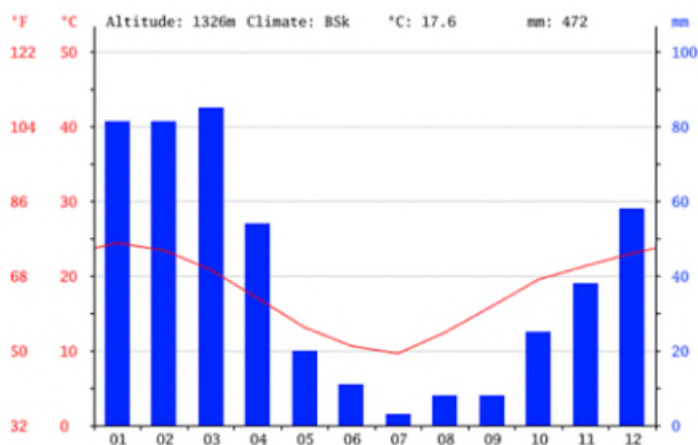
## 5.5 Biophysical Characteristics of the Study Area

The following section provides an overview and description of the biophysical characteristics of the study area.

### 5.5.1 Climatic Conditions

The climate associated with the study area has been derived from recorded and extrapolated climatic data for Kuruman (as illustrated in **Figure 5.2** below).

The following characteristics describe the climate associated with Kuruman: i) the climate can be described as semi-arid, ii) rainfall is fairly low with an average rainfall of 472mm and occurs mainly in late summer or early autumn with the highest precipitation occurring in March (85mm), iii) rainfall occurs mainly in the form of thunderstorms when tropical air from the north reaches the area due to frontal systems, iv) July is the driest month with only 3mm of precipitation expected, v) the average annual temperature in Kuruman is 17.6°C with January being the warmest (Ave. 24.4°C) and July being the coldest (Ave 9.6°C), vi) frost incidence frequent in winter and may range up to 36 frost days per year, vii) the humidity is generally the highest in February and lowest in August, viii) the average gross potential mean annual evaporation (as measured by Class A-pan) ranges from 2 646mm to 2 690mm which is nearly five times the annual precipitation, and ix) the mean annual wind speed is 3.5m/s, while speeds in excess of 8 m/s occur about 6% of the time.



**Figure 5.2:** Climate graph for the town of Kuruman, Northern Cape Province.

### 5.5.2 Topography and landscape features

The landscape can be described as flat rocky plains containing some sloping hills with a very well developed closed shrub layer and open tree stratum consisting predominantly of *Acacia erioloba* (*Vachellia erioloba*) (Mucina & Rutherford, 2006). According to the

terrain description provided within the land type classification data (AGIS 2007) most of the landscape can be classified as Class A2, which relates to little or no erosion hazard, with more than 80% of the area containing a slope of less than 8%.

### **5.5.3 Geology**

The project site is dominated by dolomite. The entire property is situated on carbonate rock; fine and coarse-grained dolomite, chert and dolomitic limestone; of the Campbell Rand Supergroup (AGIS, 2007) (refer to **Figure 5.3**). Some areas may contain overlying younger superficial Kalahari Group sediments, with red wind-blown sand. Another feature of this Supergroup is the presence of locally, rocky pavements formed in places (Mucina & Rutherford, 2006).

### **5.5.4 Soil and land types**

The area within and surrounding the project site is relatively flat with a number of dolomite outcrops supporting a different plant community than the tree-dominated plant community on the deeper sandy soils. This is common to the larger Kuruman area.

The entire site as well as the immediate surroundings are located within the Ae9 land type (refer to **Figure 5.4**). The Ae group of land types refer to red-yellow apedal, freely drained soils. These soils are moderately deep (on average 500mm – 1200mm) red, freely drained and apedal (structureless). These soils generally occur in areas associated with low to moderate rainfall (300mm – 700mm per annum) in the interior of South Africa and have a high fertility status. A wide range of texture occurs (usually sandy loam to sandy clay loam) within these land types. Common soil forms are Mispah and Hutton and, to a lesser extent, Clovely, Stertkspruit and Rensburg.

### **5.5.5 Hydrology**

The project site falls within the Lower Vaal Water Management Area (WMA) and within quaternary catchment D41L.

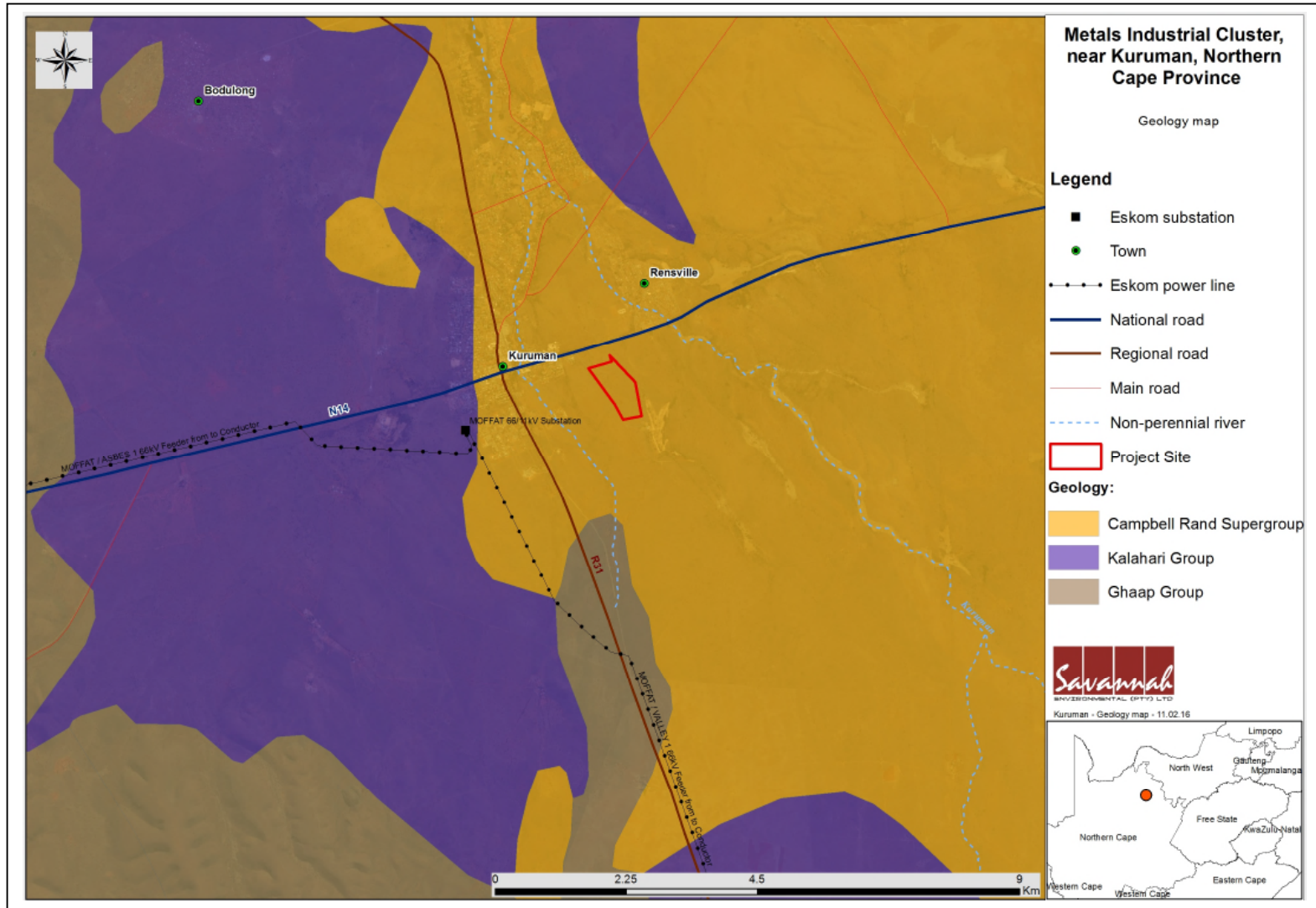
Most of the landscape to the south and south east is characterised by flat featureless plains of the Ghaap Plateau. The plateau gradually declines northwards to reach the non-perennial Kuruman River. From the Kuruman River the topographic gradient decreases to reach the Molopo River. The non-perennial rivers Matlhwaring and Moshaweng join the Kuruman River from the east. No perennial rivers and run-off accumulation in surface depressions can persist for several weeks until water has evaporated or infiltrated into the ground. The Matlhwaring River flows almost every year for a short distance, however flood waters reach the confluence with the Kuruman River only every 20 years.

There are no seasonal drainage- or wetland features located within the project site. All wetland and drainage features present within the surrounding areas (i.e. outside of the boundaries of the site) are located between ~65-110m away from the site. Other features located outside of the site are unchannelled valley bottom wetlands and channelled valley bottom wetlands located to the east and south east of the site as identified within the National Freshwater Priority Areas (NFEPA) (refer to **Figure 5.5** and **Figure 5.6** below). The study area gently slopes in a north-eastern direction towards an ephemeral tributary which flows in a northern direction to join the non-perennial Kuruman River located 1.4 km west from the site. Just south-east of the proposed study area, this ephemeral tributary has been severely impacted by the Kuruman Country Club located to the south of the site. Approximately 60km west from the proposed site another ephemeral stream is located, flowing in a north-western direction to join the Kuruman River to the north.

Intergranular, karst, weathered and fractured bedrock aquifers are present in the different geological formations charactering the D41L sub-quaternary catchment area. The karst aquifers associated with the Ghaap Plateau dolomite formations, are highly productive. Intrusive dykes with low to impervious hydraulic conductivity compartmentalise some of these dolomite aquifers.

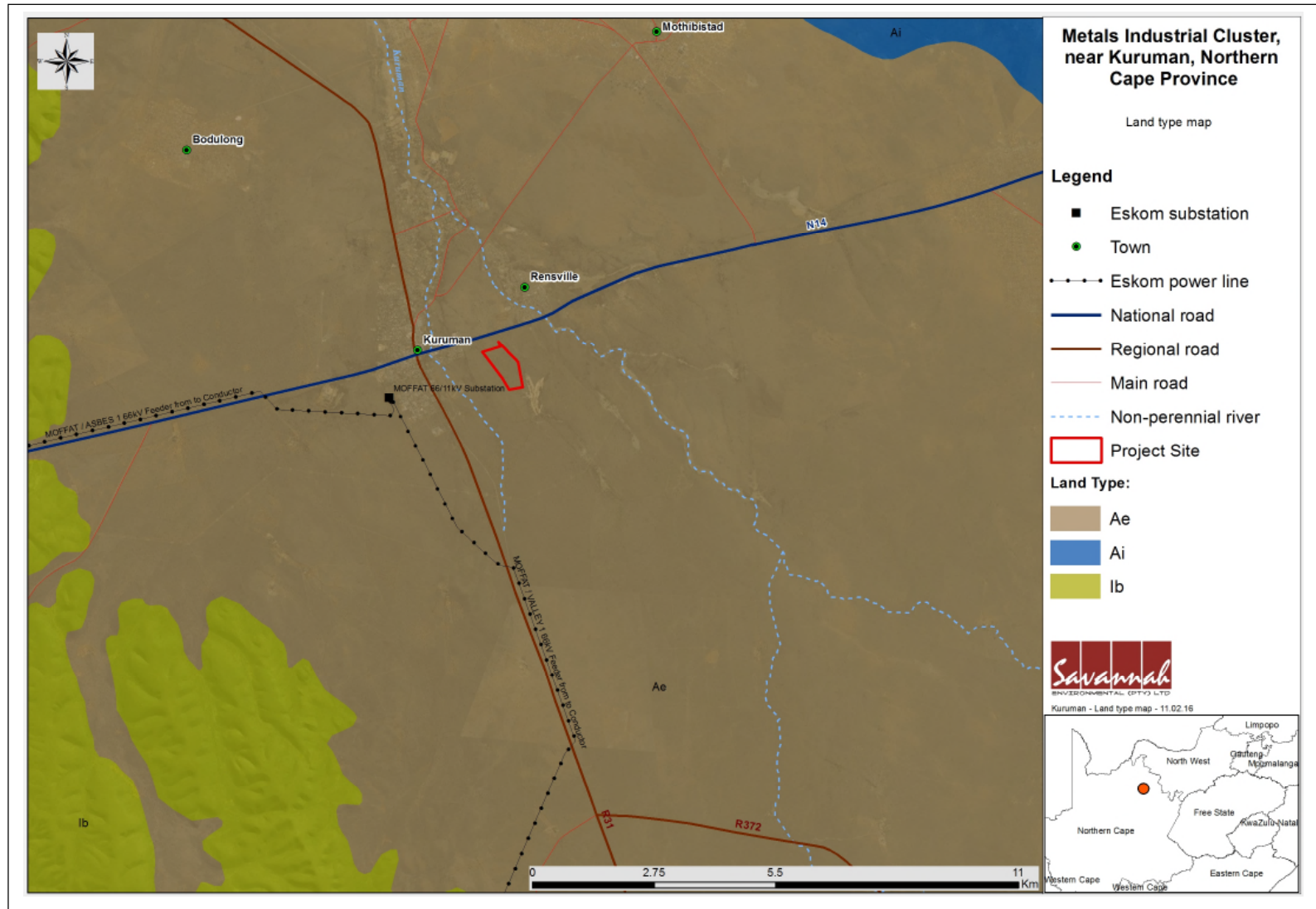
Intergranular aquifers are present by the upper (Eden Formation) as well as basal sand and gravel beds (Wessel Formation) of the Kalahari sediments. These aquifers are characterised by lower productivity than karst aquifers, but have the ability to store large volumes of water. They are separated by the red clays of the Budin Formation acting as a confining layer. The basal sand and gravel formation and underlying bedrock can be regarded as one aquifer. In the absence of red clays, the upper sand and gravel aquifer of the Eden Formation are in hydraulic conductivity with the bedrock aquifers. The importance of all aquifers in the D41L has been classified according to the aquifer classification system developed by the Water Research Commission, "A South African Aquifer System Management Classification" (Parsons, 1995). According to this system the aquifers are classified as follows:

- » Karst and fractured aquifers (Dolomite): Major Aquifer System
- » Weathered and fractured aquifer (Dolomite and Banded Iron Formation): Major Aquifer System
- » Intergranular Kalahari sediments (Basal sand and Eden Gravel): Minor Aquifer System
- » Intergranular and fractured Rock Aquifer (Lava): Poor Aquifer System.

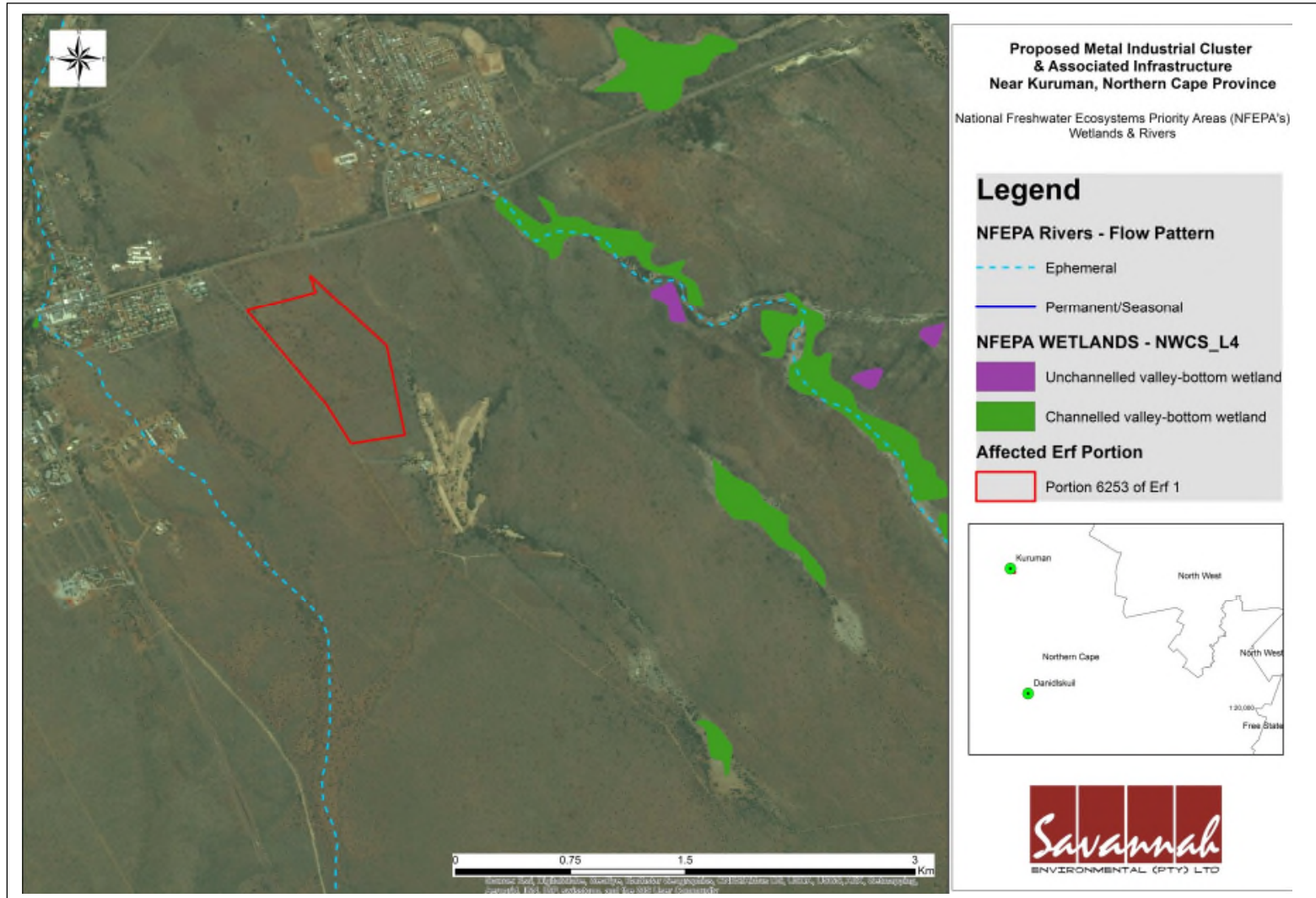


**Figure 5.3:** Geological map for the broader study area, including the project site earmarked for the Metals Industrial Cluster.

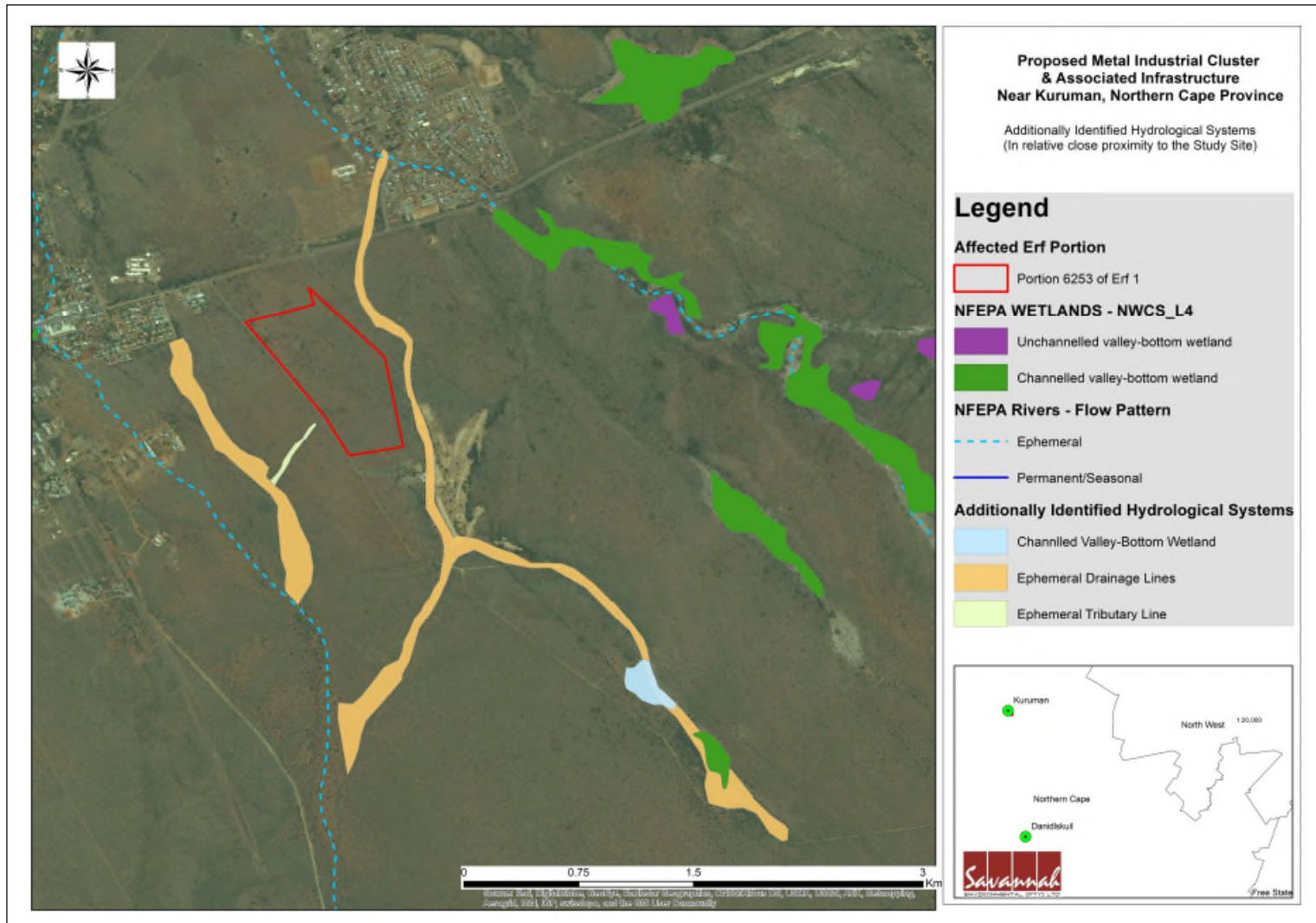




**Figure 5.4:** Soil and land type map for the broader study area, including the project site earmarked for the Metals Industrial Cluster.



**Figure 5.5:** Wetlands and ephemeral rivers as identified within the National Freshwater Priority Areas (NFEPA) found within the surrounding environment (no watercourses or wetlands have been identified within project site).



**Figure 5.6:** Wetlands and ephemeral streams identified (apart from those identified within NFEPA) using satellite imagery (no watercourses or wetlands have been identified within the project site).

## 5.6 Ecological Profile

The following section provides a description of the ecological profile present within the project site and the surrounding areas.

### 5.6.1 Vegetation description

#### Broad-scale vegetation types

The study area and project site is situated in the Savanna biome and Eastern Kalahari Bushveld Bioregion. The vegetation in and surrounding the study area and project site is the Kuruman Thornveld (SVk 9).

The distribution of the vegetation type is limited to the Northern Cape, from Postmasburg area to Hotazel in the north. This vegetation type has been described by Mucina and Rutherford (2006) as a flat plateau with a well-developed shrub layer with *Tarchonanthus camphoratus* and *Acacia erioloba*. The open tree layer has *Ziziphus mucronata*, *Acacia erioloba*, *A. tortilis*, *A. hebeclada* and *A. mellifera* as dominant species.

A species list from POSA (<http://posa.sanbi.org>, Grid reference 2723AD) of the Kuruman area was obtained. POSA generated species lists also contain updated Red Data species status according to the Red List of South African Plants published by SANBI in *Strelitzia* 25 (Raimondo et al. 2009, updated 2013). The actual field survey confirmed which of the protected and red data species, recorded by the POSA list, actually occur in the study area. In addition, some species not listed by POSA are listed in Annexure B of **Appendix D**.

A total of 72 species have been recorded to occur on the site while only 26 species have been recorded for the degree square around Kuruman.

#### Conservation of the broad-scale vegetation types

According to Mucina and Rutherford (2006) none of the vegetation type (i.e. Kuruman Thornveld) is protected within formal conservation areas, but only 2% of this unit has been transformed. The conservation status of this unit is classified as Least Threatened and is not listed under the National List of Ecosystems that are Threatened and in need of protection (GN1002 of 2011), published under the National Environment Management: Biodiversity Act (Act No. 10 of 2004).

#### Red list and protected plant species of the broader study area

Of the species that are considered to occur within the geographical area under consideration, there were 28 species which are regarded conservation worthy. Three species recorded in the degree grids are listed on the Red List plant species. The remaining 25 species are protected within Northern Cape Nature Conservation ordinance.

#### Fine-scale vegetation description

The project site is located within the Kuruman Thornveld as described by Mucina & Rutherford 2006. Small variations especially in terms of the dominant grass species and rocky outcrops species occur throughout the site. Geology and the soil forms appear to be the driving force between the variations found between the different units.

Two different plant communities occur within the project site:

**a) Acacia erioloba – Searsia lancea tree community.** Covers the majority of the surface area and is dominated by trees and shrubs. This is a typical savanna community which occurs on deeper sandy soils. It consists of a grass layer which is dominated by *Schmidtia pappophoroides*, *Heteropogon contortus* and *Eragrostis trichophora* and scattered trees and shrubs such as *Acacia erioloba*, *Searsia lancea*, *Ziziphus mucronata*, *Acacia hebeclada*, *A. mellifera*, *Searsia tridactyla* and *Diospyros lycioides*. The species richness is quite high with about **70** species noted (Annexure A of **Appendix D**).

#### **Red List and protected plant species noted during the survey in this community:**

A total of two conservation worthy species were noted within the project site namely:

- » *Acacia erioloba* (Declining)
- » *Aloe heroensis* (NCNCO)

#### **Ecosystem function:**

- » Grazing and browsing;
- » Trees and shrubs provide nesting areas for avifauna and occasional shelter for terrestrial fauna;
- » Niche habitats for fauna – providing sheltered burrows and nesting sites, hence the high presence of fauna observed on and around these areas;
- » Niche habitats for specific flora species;
- » Micro-climate is created by the shrubs and trees housing species sensitive to direct sunlight or frost.

This community has a relatively high density of Camel Thorn (*Acacia erioloba*) individuals. Species of conservation concern (e.g. Aloes) can be relocated to a suitable and similar habitat where these plants can grow without any disturbance.

**b) Oropetium capense – Aristida congesta dolomite sheet community.** This community is limited to areas where dolomite outcrops occur. The soil is very shallow and it supports a sparsely distributed plant community which consists of grasses such as *Oropetium capense*, *Aristida congesta*, *Enneapogon desvauxii*, *Eragrostis obtusa*, *Fingerhuthia africana* and forbs such as *Limeum aethiopicum*, *Indigofera alternans*, *Euphorbia inaequilatera*, *Sesamum triphyllum*, as well as bulbous species such as *Nerine laticoma*, *Dipcadi ciliare*, *Moraea polystachya*, *Ornithoglossum vulgare* and the recently

described *Lapeirousia kalahariensis*. The species richness is about **25** species noted (Annexure A of **Appendix D**).

### **Red List and protected plant species noted during the survey in this community:**

A total of four conservation worthy species were noted within the project site namely:

- » *Chasmatophyllum muscullinum* (Declining)
- » *Lapeirousia kalahariensis* (NCNCO)
- » *Moraea polystachya* (NCNCO)
- » *Nerine laticoma* (NCNCO)

### **Ecosystem function:**

- » Niche habitats for fauna – providing sheltered burrows and nesting sites, hence the high presence of fauna observed on and around these areas;
- » Niche habitats for specific flora species.

In terms of its species composition (especially the very shallow soil on dolomite) this unit must be regarded as unique and contains rocky outcrops throughout the project site. However, these features are considered to be of a medium ecological sensitivity due to the distribution of these rocky outcrops within the broader study area. Therefore, these features can be considered as acceptable loss to the development of the Metals Industrial Cluster without detrimental environmental effects.

### Confirmed Alien Invasive Plants

The largest concentration of alien plant species is along the road reserve, located along the western boundary of the project site, where species such as *Verbesina encelioides*, *Argemone mexicana*, *Datura stramonium*, *Tagetes minuta*, *Bidens bipinnata* and *Conyza bonariensis* were noted.

## **5.6.2 Faunal Communities**

### Mammals

Although the potential diversity of mammals within the study area is high with as many as 55 terrestrial mammals and 9 bat species present, there are several factors which will reduce the actual number of species present within the project site. The presence of humans and roads and the hunting of animals, the grazing and browsing of plants by domestic animals, has had a major impact on the natural animal populations in the Kuruman area.

Listed mammals which may occur in the area include the White-tailed Mouse *Mystromys albicaudatus* (Endangered), Brown Hyaena *Hyaena brunnea* (Near Threatened), Black-footed Cat *Felis nigripes* (Vulnerable), Honey badger *Mellivora capensis* (IUCN LC, SA RDB EN), South African hedgehog *Atelerix frontalis* (SA RDB NT) and Ground Pangolin *Smutsia temminckii* (VU).

During the site visit the following faunal species were confirmed within the project site:

- » Small colony of rodent burrows (most likely Pouched Mouse – *Saccostomus campestris* and/or Bushveld Gerbil – *Gerbilliscus leucogaster* and/or Four-striped Grass Mouse – *Rhabdomys pumilio*)
- » Single rodent burrows (most likely Pygmy Hairy-footed Gerbil – *Gerbillurus paeba*)
- » Common Mole-rat (*Cryptomys hottentotus*)
- » Cape Porcupine (*Hystrix africaeaustralis*)
- » Slender Mongoose (*Galerella sanguinea*)
- » Yellow Mongoose (*Cynictis penicillata*)
- » Relative large burrows (likely to have been made and utilized by Aardwolf – *Proteles cristatus* and/or Aardvark – *Orycteropus afer*)
- » Steenbok (*Raphicerus campestris*)
- » Common Duiker (*Sylvicapra grimmia*)

None of these species noted within the project site are listed and or protected species. Furthermore, most of these species are highly mobile and will move away from the construction area and some may move back during the operation phase of the project.

#### Reptiles and Amphibians

Of the 27 reptilian species that have been recorded with the region none of these species are listed as Red Data species.

Fifteen amphibian species have been recorded within the region and of these 15 species eight species were recorded within close proximity of the project site. One near threatened species namely the Giant Bullfrog (*Pyxicephalus adspersus*) has been recorded for the quarter degree grid square (QDGS). Although this species was found on site (not a suitable habitat), it is still likely for this species to occur near the project site as potential suitable habitat (pans and drainage lines) is available east of the project site.

## **5.7 Heritage features of the region**

### **5.7.1 Heritage and archaeology**

The Northern Cape Province has a wealth of heritage sites (Beaumont & Morris 1990; Morris & Beaumont 2004). Archaeological sites include the world renowned Wonderwerk Cave located 42km south of Kuruman, the major Tswana town and the LIA stone-walled settlements at Dithakong located 40km north of Kuruman. Other important sites in the larger area include Tsantsabane, an ancient specularite working site on the eastern side of Postmasburg and Doornfontein, another specularite working site north of Beeshoek. In terms of the archaeological component of Section 35 of the NHRA, no sites of archaeological significance were recorded within the project site. Similarly, no sites of significance were recorded by other studies in the area (e.g. Tobias & George 2012 and

Van der Walt 2012). Also, no standing structures older than 60 years or burial sites occurring within the project site.

### **5.7.2 Palaeontology (Fossils)**

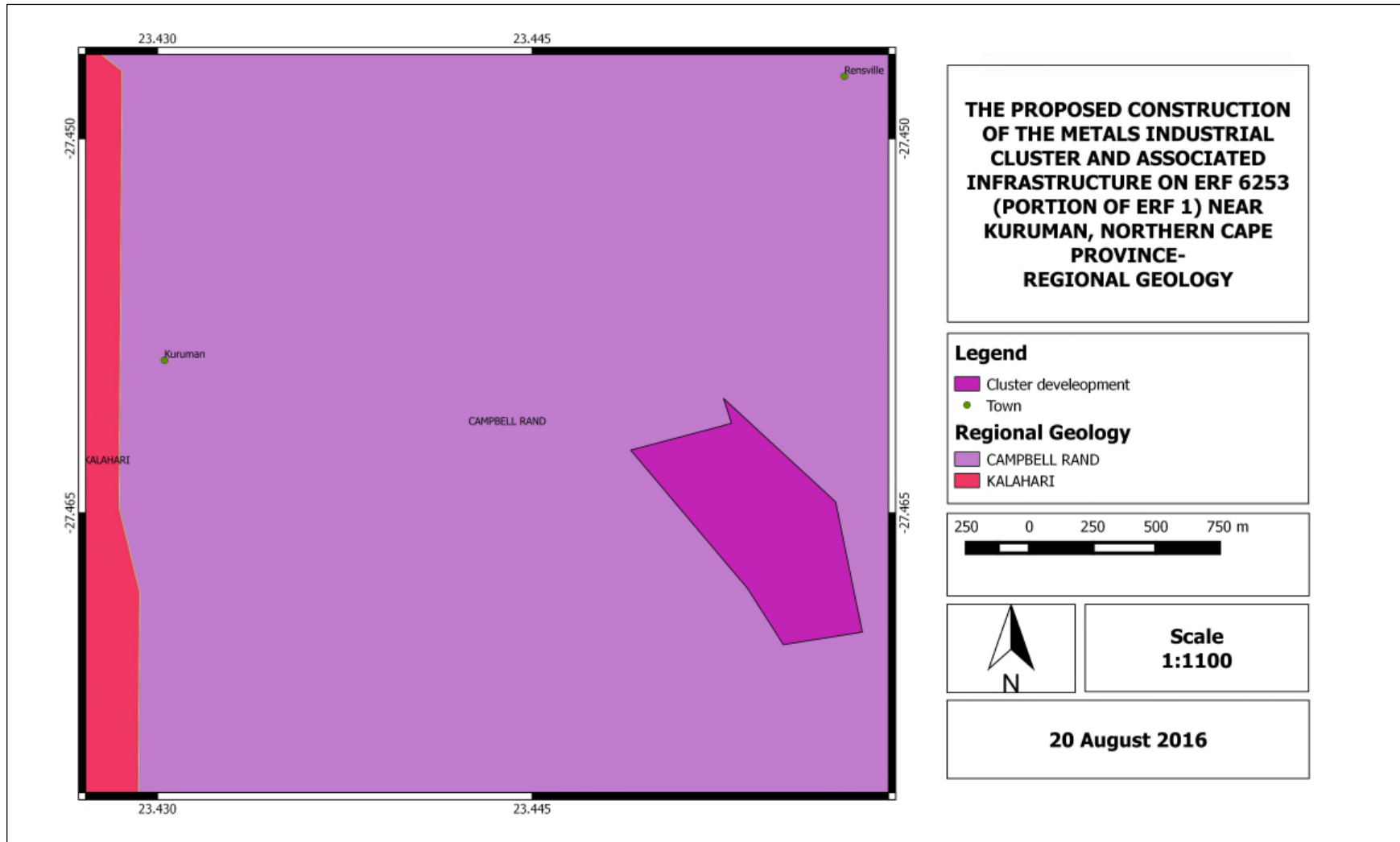
The project site (Portion 6253 of Erf 1) is completely underlain by sediments of the Early Precambrian, Transvaal Supergroup, Ghaap Group and Campbell Rand Subgroup. The Campbell Subgroup sediments were deposited on the shallow submerged Kaapvaal Craton, approximately 2.6 to 2.5 Ga (billion years ago) (refer to **Figure 5.7**). This Subgroup is a very thick (1.6-2.5 km) carbonate platform succession of dolomites, dolomitic limestones and cherts with some subordinated ironstone and lenses of siltstone or shale. A variety of shallow water facies, often developed depositional cycles reflecting sea level changes, including stromatolitic limestones and dolomites, oolites, oncolites, laminated calcilutites, cherts and marls, with subordinate siliclastics (shales, siltstones) and minor tuffs (Eriksson *et al.* 2006) are recorded.

Stromatolites are concentrated on the north, eastern and central portion of the project site. Most of the stromatolites are found *in situ* although several specimens were found loose. Exposed stromatolites are badly weathered, but there is a possibility that specimens still covered by sediments could be better preserved.

## **5.8 Social Characteristics of the Study Area and Surrounds**

This section provides a strategic understanding of the socio-economic profile of the Northern Cape Province, John Taolo Gaetsewe District Municipality (JTGDM) and Ga-Segonyana Local Municipality (GSLM), in order to develop a better understanding of the socio-economic performance as a background to the development of the Cluster. The data presented in this section has been largely derived from the IDPs, the most recent (2011) Census, as well as the local government handbook 2012. Overall, this section will provide a brief overview of the broader study area within which the project site is located; from a regional context, local context (which includes the baseline description of the local social environment), site context and surrounding land use context (which includes the land use character of the immediate area of influence).





**Figure 5.7:** The surface geology of the Metals Industrial Cluster project site. The site is completely underlain by the Campbell Rand Subgroup (Ghaap Group, Transvaal Supergroup)

### **5.8.1 Regional Context**

#### 1. Northern Cape Province

The vast and arid Northern Cape is by far the largest Province in South Africa, taking up nearly a third of South Africa's land area. The area covers 372 899km<sup>2</sup>, which is 30.5% of South Africa's total area. However, the Northern Cape has the country's smallest population with a little over 1 million people (population 1 145 861), which is 2.2% of South Africa's population, and an extremely low population density of three people per square kilometre. Just over half of the population speak Afrikaans (53.8%), with other languages being Setswana (33.1%), isiXhosa and English. The capital of the Northern Cape is Kimberley, located on the Province's eastern border. Other important towns are Kuruman, the centre of the karakul sheep and dried fruit industries, and the most northerly wine-making region of South Africa; Springbok, located in the heart of the Namaqualand spring flower country; and De Aar, the hub of the South African railway network.

#### 2. John Taolo Gaetsewe District Municipality (JTGDM)

The JTGDM is situated in the Northern Cape Province and is bordered by (1) the Siyanda and Francis Baard District Municipalities to the south and west; (2) the North West Province (Dr. Ruth Segomotsi Mompati District Municipality) to the east and north-east; and (3) Botswana to the north-west. Administratively, the JTGDM comprises three Local Municipalities: (1) the Gamagara Local Municipality; (2) the Ga-Segonyana Local Municipality; and (3) the Joe Morolong Local Municipality. JTGDM is the second smallest district in the Northern Cape, occupying only 6% of the Province (27 293 km<sup>2</sup>). The JTGDM comprises of 186 towns and settlements of which the majority (80%) are villages in the Joe Morolong Municipality. The JTGDM has an established rail network from Sishen South and between Black Rock and Dibeng. It is characterised by a mixture of land uses, of which agriculture and mining are dominant economic sectors. The district holds potential as a viable tourist destination and has numerous growth opportunities in the industrial sector. The main cities and towns in the JTGDM include: Bankhara-Bodulong, Deben, Hotazel, Kathu, Kuruman, Mothibistad, Olifantshoek, Santoy and Van Zylsrus.

According to the Mineral Beneficiation Cluster Feasibility Study and Business Plan the JTGDM has the following characteristics;

- » The 2<sup>nd</sup> largest contributor to the Province's mining industry
- » Major minerals mined – manganese, iron ore, tiger's eye and crocidolite
- » Location of two of South Africa (SA's) most important iron ore mining operations – Kumba Sishen and Assmang Beeshoek mines
- » Produces most of the manganese ore in SA especially in Hotazel
- » Has Jasper and Suglite deposits in Kuruman and Hotazel respectively

## **5.8.2 Local Context**

### 1. Ga-Segonyana Local Municipality (GSLM)

The GSLM was established in 2000 through the amalgamation of Kuruman and Mothibistad Municipalities. The municipality consists of 33 residential areas of which 20% is constituted of urban and peri-urban areas and 80% is rural areas. The area is also administered through a traditional authority system with two paramount chiefs and headmen. The municipality covers an area of 4 491km<sup>2</sup>. The CBD of the municipality is situated in Kuruman and residential areas of the municipality are within the 80km with the population estimated at 93 652 (Census, 2011). The municipality is divided into 13 wards with 13 Ward Councillors and 12 Proportional Representative Councillors. Council seating is located in Kuruman. All rural residential areas are administered by the Traditional Authorities. These areas do not obtain title deeds because they are not formalised. There are two Paramount Chiefs representing the Batlharo Ba-ga Motlhwane and the Batlhaping Ba-ga Jantjie in the municipal council. This dynamic administration process marks the challenge in the general development and planning of the municipality. As such the two administrations are claiming to be working together, sprawling development in the rural areas which is not aligned to municipal development plan. These challenges create a strain on the municipal resource planning and allocation. The main towns include Bankhara-Bodulong, Kuruman and Mothibistad. The GSLM economy contribution to the JTGD economy is approximately 38.4%. The dominant economic contributors within the local Ga-Segonyana Local Economy:

- » Mining –32.3%
- » Trade –15.0%
- » General government services –14.0%
- » Finance and Business Services –13.9%
- » Community, personal and social services –12.0%

Kuruman is situated on the N14, on the Namaquari route, forming part of the main route between Gauteng and Namibia and Cape Town via Upington. This route is growing in popularity because of the unspoiled nature and the wide variety of tourist attractions found on the route. Tourist attractions in or near Kuruman in the GSLM include:

- » **The Eye of Kuruman:** located in the centre of the town (located approximately ~800m south west from the proposed site), the Eye of Kuruman is a spring in the town of Kuruman in the province of Northern Cape. It is the largest known natural spring in the southern hemisphere.
- » **Kuruman Country Club:** this is located 200m south east from the proposed site and comprises a 9 hole golf course and Country Club that is owned by the GSLM.
- » **Moffat Mission:** the Kuruman Moffat Mission is in Seodin, just outside of the town of Kuruman (approximately ~6km north west from the proposed site). The Moffat Mission comprises the original homestead, the foundations for a schoolroom (dating back to 1829) and the Moffat Church.
- » **Wonderwerk Cave:** located in the GSLM, ~45km south of Kuruman / proposed site, Wonderwerk Cave, located in the Northern Cape Province of South Africa, is an

archaeological treasure that preserves a record of human activity spanning almost two million years. The Wonderwerk Cave Research Project is an international collaboration brought together to explore this spectacular site as well as other, early archaeological sites in the region including those around the town of Kathu and the Hutton Sands at Canteen Kopje on the Vaal River.

- » **Boesmangat Sinkhole:** Boesmangat is a natural sinkhole on the farm Mount Carmel, located some 55km south of Kuruman in the GSLM on the Danielskuil road. The sinkhole was formed when underground water dissolved the dolomite rocks above.

## 2. Baseline Characteristics of the Ga-Segonyana Local Municipality

General baseline characteristics and challenges of the GSLM are as follows (Census, 2011 & GSLM IDP 2015/2016):

- » The GSLM has a population of ~93 652 which is 29% of the total population of the JTGD. The GSLM has the largest population size when compared to other local municipalities under JTGD.
- » It is clear that the trend in the GSLM area is towards a growing population. This is largely attributable to the mining activities in the area. This movement of people is predominantly from the municipal jurisdiction area of the Joe Morolong municipality.
- » Of the ~93 652 population, about 52% are female, while 48% are male.
- » In the GSLM there are approximately ~26 816 households with an average household size of ~3.4 persons per household. Of the ~26 816 households in GSLM approximately 81% live in formal dwellings.
- » Only 24.7% of the total population of GSLM resided in urban areas.
- » Africans constitute more than 87% of the population in the municipal area. Together with the Coloured population, almost 95% of the population of the area could be regarded as historically disadvantaged. This reality must be reflected in the manner in which the municipality plans and prioritise service delivery and economic opportunities.
- » The most spoken language in the GSLM is Tswana (79.2% of the population).
- » The Economically Active Population (EAP) (individuals that are aged 15-64 that are either employed or actively seeking employment) accounts for 63.2% of the entire population. This emphasises the importance of local economic development initiatives to create employment opportunities for jobseekers.
- » The population aged 0–14 years comprise 32.5% of the population and those aged 65 years and above accounts for 4.3% of the entire municipal population.
- » The dependency ratio is the amount of individuals that are below the age of 15 and over the age of 64, that are dependent on the EAP. The dependency ratio in the GSLM comprises 36.8% of the population.

- » There are low levels of literacy amongst the members of the community. The level of education influences growth and economic productivity of a region. In the GSLM 9.7% of the population have no schooling, 23.6% have completed matric and only 9.9% of the population have higher education. This means that majority of the population have a low-skill level and would need employment in low-skill sectors.
- » Unemployment is rife in the local municipality. The municipality's unemployment rate is high at 33.7%.
- » Households that have either no income or low income fall within the poverty level (R0- R38 200 per annum) accounts for 64.2%. A middle-income is classified as earning between R38 201 - R307 600 per annum. Approximately 31.8% of the households earn a middle income and 4.1% of households earn a high income that is classified as earning R307 601 or more per annum. A high percentage of household income falls within the poverty level. The high poverty level has social consequences such as not being able to pay for basic needs and services.
- » Approximately 80% of the population have access to electricity. Approximately 23.4% of households within the municipality have access to a flush toilet. Approximately 44.2% of the population are using a pit toilet without ventilation. 63.9% of the municipal households have their own refuse dump and 17.6% have the disposal removed by the municipality. Lastly approximately 87.8% of households have access to piped (tap) water. This is further emphasised by the fact that the main development needs in the municipality lies in the rural areas. The service delivery profile of GSLM area is still largely based on traditional patterns of development and under-development, although enormous progress has been made since 1994 to ensure access to basic services to the most vulnerable sections of the population.
- » The economy of the municipality is reliant on the mining, agriculture, tourism and commercial sectors in and around Kuruman town. Rapid mining development lead to extreme pressure on resources planning and allocation in that these developments do not allow for thorough assessment of availability of resources like the availability of water, electricity, waste management, sanitation and other municipal services. The GSLM depends on underground water supply for its domestic, agricultural and commercial demand and use.
- » Mining and agriculture remain the core economic activities in the municipal area, and attract job-seekers. The constant increase in the population, causes pressure on infrastructure and the service capacity of the Municipality.

The greatest social problems in the GSLM are illiteracy, poverty and lack of basic service infrastructure. The income distribution is distorted in the GSLM to the disadvantage of the less economically secured people, who also represents the majority of the municipal area. Poor households are a result of a lack of wage income, either due to unemployment or low-paying jobs. Access to basic services such as electricity, toilets and piped water is also closely correlated with poverty.

### 3. Direct area of influence

The proposed development may affect the major service providers which include the local municipality and local businesses in the area. The local municipality that will be directly impacted by the proposed development will be GSLM. The municipality will absorb a number of social impacts (positive and negative), especially impacts related to an influx of people, since they will be responsible to deliver services to people residing within their municipal area. Negative dimensions of impacts such as influx of jobseekers into the area putting pressure on the provision of basic services and poverty level will need to be assessed.

The proposed development will however contribute towards social and economic development through enabling skills development and training in order to empower individuals and promote employment creation within the local area. The development would mainly focus on economic benefits to the area and introduce a new industry into the local economy. There are a number of local businesses in the area that could benefit from the proposed development in terms of an increase in demand for goods and services (positive impacts).

### 4. Indirect areas of influence

The indirect areas of influence extend to all areas that will be indirectly affected by the proposed development. There are a number of stakeholders that reside outside the direct area of influence but who may be affected by the proposed development. These include road users that use the N14 on a frequent basis as part of their daily or weekly movement patterns. Construction vehicles and trucks will be utilising these roads during the planned phases which will increase the traffic and may increase the wear and tear of the roads. The proposed development may also have an indirect effect on the town's local residents; with a possible influx of in-migrants and growth in the local economy.

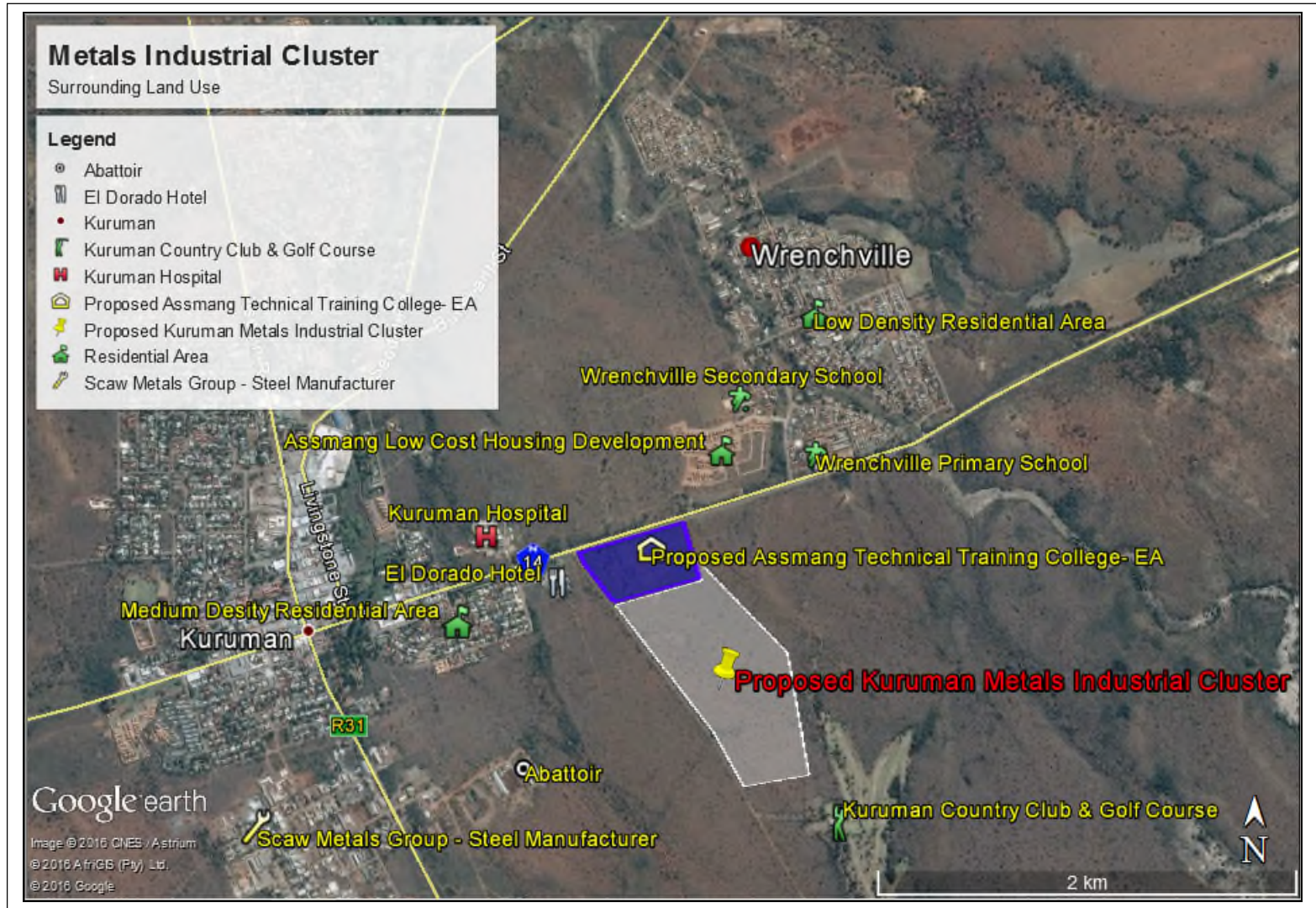
### 5. Immediate area of influence

The immediate area of influence includes the site and adjacent areas. This section will describe the land use characteristics of the immediate area of influence. Kuruman is surrounded by a number of mines that is considered as the economic lifeblood of the region. The site proposed for the development is located within the urban edge of Kuruman. The majority of the land surrounding the proposed project site comprises vacant land. The following prominent features and land use features occur within a 500-1000m radius of the proposed development site:

- » The Kuruman Country Club and Golf Course located approximately 200m south east from the proposed site. The Country Club is owned by the GSLM.
- » The proposed site is located within the urban edge of Kuruman. The residential area forming part of Kuruman starts approximately 250-450m west from the proposed Cluster site boundary. Kuruman CDB is approximately 2km north west from the proposed site and is a town with 13 057 inhabitants in the Northern Cape. The town is widely known as 'the fountain of Christianity' in Africa, or the

- 'Oasis of the Kalahari', due to the flowing springs of *Die Oog* (the Eye of Kuruman); located 800m west from the proposed site.
- » The proposed Assmang Technical Training College is planned to be located directly adjacent to the Cluster, to the north of the proposed site (Environmental Authorisation has been received for the College). **Figure 5.7** below illustrates the location of the Assmang Technical Training College in relation to the Cluster. The Metals Industrial Cluster will offer accommodation to students from the Assmang Technical College and students enrolled in the Skills Development Centre which is to form part of the Cluster.
  - » The El Dorado Hotel is a three star hotel located 250m north west of the proposed site. The Hotel is situated on the N14 main road that passes through Kuruman and offers 73 en-suite rooms. El Dorado Hotel has an a la carte restaurant that serves breakfast and dinner to guests and is also open to the public. Four conferencing facilities are available that cater for all group sizes up to 200 people.
  - » The N14 national road is located 300m north of the proposed site.
  - » Kuruman Hospital is located approximately 450m north west of the site boundary.
  - » Wrenchville residential area and schools, are approximately 600m to the north-east of the site boundary.
  - » Assmang Low Cost Housing Development is located 370m north of the proposed site. The main objective of the residential developments in Kuruman, was to provide approximately 130 new houses and related infrastructure for mine employees residing in Kuruman.
  - » Kuruman industrial area is located approximately ~2.2km west from the proposed Metals Industrial Cluster (**Figure 5.7** below illustrates where the abattoir is located and where the Scaw Metals Group - Metals Manufacturer is located).

There are a few community members that reside in shacks on the impacted site and utilise the land for informal grazing activities. Other than these informal activities taking place on the land, the land is vacant and is owned by the Local Municipality (the land is not zoned for any particular purpose and is classified as an undetermined zone).



**Figure 5.7:** Surrounding land use in close proximity to the proposed Metals Industrial Cluster project site and Kuruman.



## ASSESSMENT OF POTENTIAL IMPACTS

## CHAPTER 6

This chapter serves to assess the significance of the positive and negative environmental impacts (direct, indirect, and cumulative) expected to be associated with the establishment of the proposed Metals Industrial Cluster. This assessment has considered the establishment of a Cluster, within the Ga-Segonyana Local Municipality (GSLM) and the John Taolo Gaetsewe District Municipality (JTGDM), which will include basic and phase specific infrastructure that will be required for the establishment and operation of the development.

The proposed project plan includes the development of the cluster in multiple phases spaced over a 20-year time horizon after the initial establishment / set up. The time scale (4 Phases) will be as follows:

- i) Phase 1 which is considered to be developed in the short term (Year 0 to 2);
- ii) Phase 2 which is considered to be developed in the medium term (Year 3 to 6);
- iii) Phase 3 which is considered to be developed in the long term (Year 7 to 20); and
- iv) Phase 4 which is intended to cater to the expansion of the Cluster beyond the 20-year timeframe planned for Phases 1 to 3.

There will be an establishment phase which will form part of Phase 1 and will include the preparation of the Cluster and construction of the basic infrastructure and essential services. This establishment phase is expected to take 12-18 months.

The first three phases of the development will include semi-industrial, light to medium industries, and the fourth phase will include the expansion of the first three phases, with the option of the addition of heavy industry (depending on the demand for these types of developments within the greater Kuruman area and the municipality).

The Cluster will include basic infrastructure that will be required for the operation of the development. The basic infrastructure to be constructed includes:

- » Buildings (warehousing, administrative buildings, skills development centre, student accommodation etc.);
- » Access roads including main access to the Cluster and internal access roads;
- » Landscaping;
- » Parking;
- » Fencing;
- » Infrastructure relating to bulk services including electricity, water, sewage and waste water; and
- » Security.

The basic infrastructure will form part of Phase 1 within which the shell of the Cluster will be constructed to make provision for the development of the other project phases and

enable the development of entities within the Cluster with the necessary infrastructure to do so (i.e. access roads).

Phase specific infrastructure will also be constructed within Phases 2-4, however the specific infrastructure required for these phases are not defined as yet, due to specific tenants not being able to be defined at this stage of the planned development. It can, however, be confirmed that these phases will expand on Phase 1 which includes an increase in the CMFs located within the Cluster that will lead to a higher demand for existing or additional infrastructure or facilities. The shared infrastructure will be upgraded or expanded in order to ensure the functioning of the expanded Cluster into the subsequent phases.

Any entity or company (CMF) planning to be located within the Metals Industrial Cluster will be required and responsible to make provision for the specific infrastructure that would be required for the operation of that specific entity, and the undertaking of its own permits and authorisations in terms of the legal requirements.

The Metals Industrial Cluster will have a development footprint of 47ha. **Figure 6.1** provides a schematic illustration of the basic layout (i.e. within the development footprint) envisaged for the Cluster, following the pre-feasibility study. The establishment of the Cluster will comprise the following phases:

- » *Establishment Phase (i.e. pre-construction and construction)* – will include i) pre-construction surveys; ii) site preparation activities for the establishment of basic infrastructure which will include the clearance of vegetation and excavations for foundations (i.e. the stripping of topsoil); iii) establishment of the site access and access roads to the project site; iv) civil works which involves concrete works for structures such as foundations; v) the establishment of mechanical and electrical installation works vi) establishment of ancillary infrastructure such as security and warehousing; vii) the establishment of infrastructure relating to bulk services including electricity, water, sewage and waste water; and viii) undertaking site rehabilitation where practical and reasonable.
- » *Operation* – will include the operation of the Metals Industrial Cluster within which a variety of entities will be located providing services relating to the metals industrial sector, as well as other associated sectors. The proposed Cluster is expected to operate for a minimum of 20 years (which includes the first three development phases). Phase 4 is intended to cater for the expansion of the Cluster beyond the 20-year timeframe. It is anticipated that there will be full time security, maintenance and control room staff required at the Cluster.
- » *Decommissioning* – the lifespan of the proposed Cluster is expected to be exceed the 20 year timeframe for the first three development phases. Equipment associated with the Cluster would only be decommissioned once it has reached the end of its economic life or if it is no longer required. It is most likely that decommissioning activities of the infrastructure of the Cluster would comprise the disassembly and

disposal of the infrastructure. Decommissioning activities will involve disassembly of the production units and ancillary infrastructure, demolishing of buildings, removal of waste from the site and rehabilitation to the desired end-use.



**Figure 6.1:** Schematic illustration showing a basic layout of the Metals Industrial Cluster located within Portion 6253 of Erf 1, indicating the area earmarked for the Phase 1 development area (refer to **Appendix J** for an A3 figure)

### 6.1. Legal Requirements as per the EIA Regulations for the undertaking of an Environmental Impact Assessment Report, 2014

This chapter of the final EIA report includes the following information required in terms of Appendix 3: Content of Environmental Impact Assessment Reports:

Requirement	Relevant Section
<p>3(h)(v) the impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts (aa) can be reversed, (bb) may cause irreplaceable loss of resources, and (cc) can be avoided, managed or mitigated.</p>	<p>The impacts and risks identified to be associated with the establishment and operation of the Metals Industrial Cluster is included within this chapter. This assessment of the impacts and risks include the nature, significance, magnitude, extent, duration and probability of the impacts as well as the degree to which the impacts can be reversed, may cause irreplaceable loss of resources and can be voided or mitigated. This is included in the sections 6.2.3, 6.3.3, 6.4.3</p>
<p>3(h)(viii) the possible mitigation measures that could be applied and the level of residual risk.</p>	<p>Possible mitigation measures and the residual risks are included in sections 6.2.3, 6.3.3, 6.4.3.</p>
<p>3(i) a full description of the process undertaken to identify, assess and rank the impacts, the activity and associated structures and infrastructure will impose on the preferred location through the life of the activity, including (i) a description of the environmental issues and risks that were identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures,.</p>	<p>A description of the environmental issues and risks that were identified during the environmental impact assessment process and an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures are included in sections 6.2.2, 6.2.3, 6.3.2, 6.3.3, 6.4.2, 6.4.3.</p>
<p>3(j) an assessment of each identified potentially significant impact and risk, including (i) cumulative impacts, (ii) the nature, extent, and consequences of the impact and risk, (iii) the extent and duration of the impact and risk, (iv) the probability of the impact and risk occurring, (v) the degree to which the impact and risk can be reversed, (vi) the degree to which the impact and risk may cause irreplaceable loss of resources and (vii) the degree to which the impact and risk can be mitigated.</p>	<p>An assessment of each potentially significant impact and risk including the cumulative impacts, the nature, extent, and consequences of the impact and risk, the extent and duration of the impact and risk, the probability of the impact and risk occurring, the degree to which the impact and risk can be reversed, the degree to which the impact and risk may cause irreplaceable loss of resources and the degree to which the impact and risk can be mitigated is included in sections 6.2.3, 6.3.3, 6.4.3. A separate cumulative assessment is included in Chapter 7.</p>

3(m) based on the assessment, and where applicable, recommendations from the specialist reports, the recording of proposed impact management objective and, the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions for authorisation.

Recommendations from the specialists and mitigation measures from the specialist reports for inclusion in the EMPr is included within sections 6.2.3, 6.3.3, 6.4.3 and within the EMPr which is included as **Appendix I**. The EMPr also includes the recording of the management objective and the impact management outcomes.

## **6.2 Potential Impacts on Ecology (Ecology, Flora, Fauna, Water Resources and Functional Ecosystems)**

A project site and development footprint of 47ha has been assessed for the development of the Metals Industrial Cluster. Negative impacts on ecological resources will be due to loss of habitat and vegetation which may have direct or indirect impacts on individual species, however due to the conservation status of the vegetation, which is classified as a Least Threatened ecosystem, the impacts are not considered to be significant. Potential impacts and the relative significance of the impacts are summarised below (refer to **Appendix D** for more details).

### **6.2.1. Results of the Ecological Study**

The entire project site is located within the Kuruman Thornveld vegetation type, which is not considered as sensitive (low ecological sensitivity), however there are individuals of trees and aloes that are protected, including the Camel Thorn Tree (*Acacia erioloba*) and Aloes (*Aloe heroensis*). On a plant community level there are sensitive habitats present (medium ecological sensitivity) within the project site that mainly relate to dolomite and rocky outcrops.

No seasonal drainage lines or wetlands occur within the project site that will be affected by the development. All watercourses are located outside of the project site boundary to the east and west. Therefore, there will be no direct impact on these features.

The following ecological sensitivity analysis provides an assessment of the ecological sensitivities within and outside of the project site as well as the appropriate mitigation measure for the minimisation of the impact.

#### **Seasonal streams**

Episodic streams with a medium sensitivity occur on the eastern and western boundary of the project site but are not located within the project site itself. There will be no direct impact on these features.

- » Potential impacts: Pollutants from the construction and operation of the Metals Industrial Cluster within the project site may contaminate the seasonal stream, and in turn the downstream aquatic systems (such as the non-perennial Kuruman River).

- » Mitigation measures: A berm can protect the seasonal stream by containing the storm water runoff of the Cluster. The stormwater from the site can be treated by allowing the water to flow through a biofilter system of reeds, bulrush, aquatic grasses and sedges.

### **Sensitive Vegetation**

The plant community of the shallow soils (i.e. rocky outcrops) on a dolomite outcrops is of medium ecological sensitivity. The species composition is unique to these outcrop areas, and a number of bulbous species occur in this community.

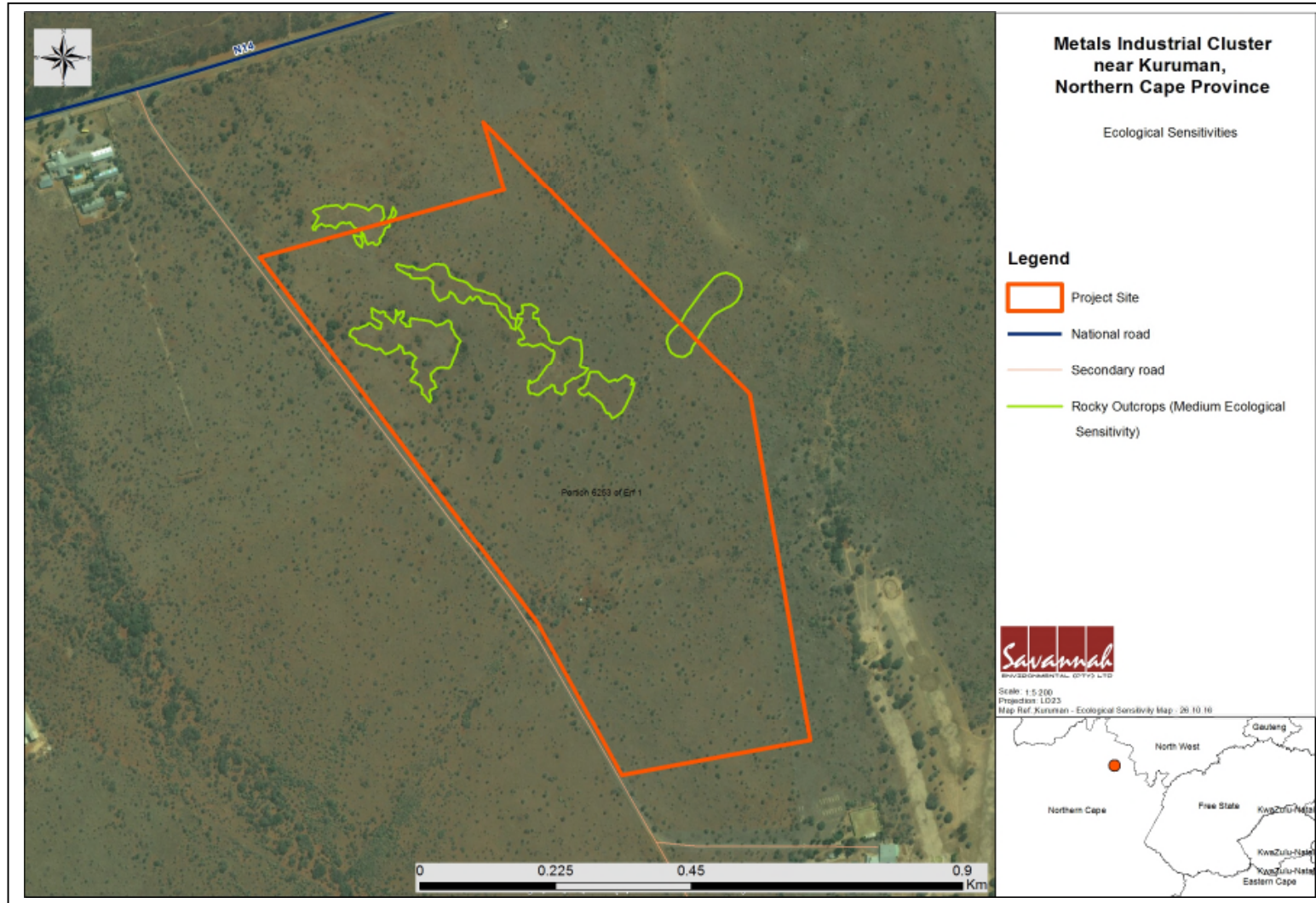
- » Potential impacts: The loss of the plant community.
- » Mitigation measures: None, as the entire project site will be developed and the features destroyed. The destruction of these features are considered to be acceptable loss due to the distribution of these features within the surrounding areas of the project site, that is, not unique to the project site alone.

### **Threatened and protected plant species**

There are a number of protected and Red Data species present on the project site.

- » Potential impacts: The loss of species through the clearance of the site during the construction phase.
- » Mitigation measures:
  - \* Aloes can be translocated to similar suitable sites where they will not be negatively affected.
  - \* The minimum number of Camel Thorn (*Acacia erioloba*) trees to be removed from the site (destruction permit required from DAFF). The relocation of the species must be considered where feasible.

**Figure 6.2** provides the detail of the ecological sensitivities located within the project site of the Metals Industrial Cluster.



**Figure 6.2:** Ecological sensitivity map of the Metals Industrial Cluster project site. Areas of medium ecological sensitivity are considered acceptable loss.



### **6.2.2 Description of Ecological Impacts**

The following impacts are identified as the major impacts associated with the development of the Metals Industrial Cluster which are assessed, for the preconstruction, construction and operational phases of the development.

» Impacts on vegetation and protected plant species:

The most likely and significant impact will be on the vegetation. The proposed development will lead to a direct loss of vegetation. Consequences of the impact occurring may include:

- » general loss of habitat for sensitive species;
- » loss in variation within the medium sensitive habitat due to loss of portions of it;
- » general reduction in biodiversity;
- » increased fragmentation (depending on the location of the impact);
- » disturbance to processes maintaining biodiversity and ecosystem goods and services; and
- » loss of ecosystem goods and services.

From a vegetation perspective this site's vegetation is similar to the region's vegetation (which is classified as a Least Threatened ecosystem) and it is not situated in a critical Biodiversity Area, therefore the impact on the vegetation within the project site will not be significant.

A number of protected and red data species (28) occur on the quarter degree square (2723AD) of the project site. Of these listed species six species were noted on the project site. Although these species are listed as protected species, the loss of individuals or localised populations is unlikely to lead to a change in the conservation status of the species. On a local level the proposed project will impact on such individuals or populations. Consequences may include:

- » fragmentation of populations of affected species;
- » reduction in area of occupancy of affected species; and
- » loss of genetic variation within affected species.

These impacts can be largely mitigated through avoidance of listed species, by allowing a minimum clearance of vegetation (restricted to the absolute necessary areas). Protected plants can also be relocated to similar habitats nearby.

» Direct faunal impacts:

Faunal species will primarily be affected by the overall loss of habitat. Increased levels of noise, pollution, disturbance and human presence will be detrimental to fauna. Sensitive and shy fauna would move away from the broader area during the construction phase as a result of noise and human activity, while some slow-moving species and species confined and dependent on specified habitats would not be able to avoid the construction activities and might be killed. Some mammals and reptiles

would be vulnerable to illegal collection or poaching during the construction and operation phases. This impact is highly likely to occur during the construction phase and would also occur with resident fauna within the Cluster during operation.

Threatened species (red data species) include those listed as critically endangered, endangered or vulnerable. For any other species a loss of individuals or localised populations is unlikely to lead to a change in the conservation status of the species. However, in the case of threatened animal species, loss of a population or individuals could lead to a direct change in the conservation status of the species, and possible extinction. This may arise if the proposed infrastructure is located where it will impact on such individual or populations. Consequences may include:

- » fragmentation of populations of affected species;
- » reduction in area of occupancy of affected species; and
- » loss of genetic variation within affected species.

These may all lead to a negative change in the conservation status of the affected species, which implies a reduction in the chances of the species' overall survival.

Disturbance of faunal species can be maintained to a minimum and low significance by implementing effective mitigation measures.

» Impacts on ephemeral tributaries and other water bodies:

No ephemeral streams occur on site, however an episodic stream with a medium sensitivity is located on the eastern side of the project site about 70m from site boundary. Pollutants from the construction and operation of the Metals Industrial Cluster within the project site may potentially contaminate seasonal streams due to uncontrolled run-off. A berm can protect the seasonal stream by containing stormwater runoff from the Metals Industrial Cluster. Stormwater can be treated by allowing the water to flow through a biofilter system of reeds, bulrush, aquatic grasses and sedges. Consequences to downstream systems may include:

- » increased loss of soil on site and deposition of sediment in streams surrounding the project site;
- » loss of sensitive wetland habitats;
- » loss or disturbance to individuals of rare, endangered, endemic and/or protected species that occur in wetlands;
- » impairment of wetland function; and
- » reduction in water quality in wetlands downstream.

By implementing mitigation measures, including the construction of a berm to prevent contaminated stormwater from entering seasonal streams, the impacts on the stream can be reduced significantly.

» Soil erosion and associated degradation of ecosystems:

Soil erosion is a risk associated with developments where vegetation clearing and disturbance is taking place. Service roads, pavements and roofs of buildings will generate an increase in runoff during intense rainfall events and may potentially exaggerate the effects of erosion. These eroded materials may enter the nearby streams and may potentially impact these systems through siltation and change in chemistry and turbidity of the water.

With effective mitigation measures in place, including regular monitoring, the occurrence, spread and potential effects of erosion may be limited to an absolute minimum.

» Alien Plant Invasions:

Major factors contributing to an invasion by alien invader plants includes habitat disturbance and associated destruction of indigenous vegetation. Consequences of this may include:

- » change in vegetation structure leading to change in various habitat characteristics;
- » change in plant species composition;
- » change in soil chemistry properties;
- » change in flammability of vegetation, depending on alien species;
- » hydrological impacts due to increased transpiration and runoff; and
- » impairment of wetland function.

The largest concentration of alien plant species is along the road reserve, located along the western boundary of the project site, where species such as *Verbesina encelioides*, *Argemone mexicana*, *Datura stramonium*, *Tagetes minuta*, *Bidens bipinnata* and *Conyza bonariensis* were noted. Consequences of this may include loss and displacement of indigenous vegetation outside of the project site due to invasion by alien species.

Although the potential severity of this impact may be high, it can be easily mitigated to acceptable levels through regular alien control.

» Impacts on Critical Biodiversity Areas and Broad-Scale Ecological Processes:

No impacts are applicable as no Critical Biodiversity Areas occur on the project site or in the surrounding areas.

» Impact risk factors for the different phases of the project:

Potential ecological impacts resulting from the development would stem from a variety of different activities and risk factors associated with the construction and operation phases of the project including the following:

*a) Construction Phase*

- » Vegetation clearing for roads, buildings, storage areas, etc. could impact listed plant species as well as high biodiversity plant communities. Vegetation clearing will also lead to habitat loss for fauna and potentially the loss of sensitive faunal species, habitats and ecosystems.
  
- » Erosion risk may result due to the loss of plant cover and soil disturbance created during the construction phase. This may impact the nearby seasonal streams and the larger downstream seasonal streams if large amounts of sediment enters the drainage systems (although unlikely to be at this extent). Although the effects would probably only become apparent during the operation phase, the impact stems from the construction phase and suitable mitigation measures will also need to be applied at this stage.
  
- » Presence and operation of construction machinery on site. This will create a physical impact as well as generate dust and noise pollution and other forms of disturbance on site.
  
- » Increased human presence can lead to poaching, wood harvesting, illegal medicinal plant harvesting and other forms of disturbance such as veld fires.
  
- » Loss of connectivity and habitat fragmentation may result due to the presence of the roads, site fencing and other support infrastructure of the development.

*b) Operation Phase*

- » The daily maintenance and operation activities of the facilities would generate some noise and disturbance which may deter some fauna from the area.
  
- » Loss and displacement of indigenous vegetation outside of the project site due to invasion by alien species.

**6.2.3 Impact table summarising the significance of impacts on ecology during the construction, operation and decommissioning phases (with and without mitigation)**

The impacts assessed below apply to the project site and the development footprint of the Metals Industrial Cluster. The project site is very homogenous in terms of the vegetation type (i.e. Kuruman Thornveld) and the rocky outcrop areas are widespread, and not confined to the project site.

Upgrading and/or creation of site access road and internal roads

<b>Nature:</b> Removal of vegetation, compaction and disturbance of soils, creation of runoff zone, increased erosion risk, destruction of animal burrows, impact on protected species, alteration of soil surface properties		
<b>Relevant listed activities:</b> GN R983 Activity: 28(i) GNR 984 Activity: 15		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent (E)</b>	Local (2)	Local (1)
<b>Duration (D)</b>	Long-term (4)	Long-term (4)
<b>Magnitude (M)</b>	Low (4)	Minor (2)
<b>Probability (P)</b>	Highly Probable (4)	Highly Probable (4)
<b>Significance (S = E+D+M)*P</b>	<b>Medium (40)</b>	<b>Low (28)</b>
<b>Status (positive, neutral or negative)</b>	Negative	<ul style="list-style-type: none"> <li>» Neutral where situated on transformed areas or on existing access roads.</li> <li>» Negative on undisturbed areas.</li> <li>» Minimal new negative impacts expected.</li> </ul>
<b>Reversibility</b>	Not reversible	Relatively reversible
<b>Irreplaceable loss of resources?</b>	Probable	Not likely
<b>Can impacts be mitigated?</b>	Reasonably well	
<b>Mitigation:</b> <ul style="list-style-type: none"> <li>» After the final layout has been approved, conduct a thorough footprint investigation (walk-through) to detect and map (by GPS) all protected plant species, especially Camel Thorn Tree individuals which will have to be removed, and where application for a permit would be required, and animal burrows present within the project site.</li> <li>» Protected plant species must be relocated if possible.</li> <li>» Animal burrows must be monitored by the ECO prior to construction for activity/presence of animal species. If detected, such animals must be removed and relocated by a qualified professionals/contractor.</li> <li>» During construction create designated turning areas and strictly prohibit any off-road driving or parking of vehicles and machinery outside designated areas.</li> <li>» Keep the clearing of natural and semi-natural grasslands to a minimum.</li> <li>» If fill material is to be used, this should be sourced from areas free of invasive species.</li> <li>» Topsoil (the upper 25 cm of soil) is an important natural resource with a seedbank; where it has to be stripped, never mix it with subsoil or any other material. Store and protect it separately until it can be re-used, and minimise the handling of the topsoil.</li> <li>» Reinforce portions of existing access routes that are prone to erosion, create structures or low</li> </ul>		

<p>berms to drain the access roads rapidly during rainfall events, yet preventing erosion of the track and surrounding areas.</p> <ul style="list-style-type: none"> <li>» Ensure that runoff from compacted or sealed surfaces is slowed down and dispersed sufficiently to prevent accelerated erosion from being initiated (stormwater and erosion management plan required).</li> <li>» Monitor the establishment of (alien) invasive species and remove as soon as detected, before regenerative material can be formed.</li> <li>» After decommissioning, if access roads or portions thereof will not be of further use to the landowner, remove all foreign material and rip area to facilitate the establishment of vegetation, followed by a suitable revegetation program.</li> </ul>
<p><b>Cumulative impacts:</b></p> <ul style="list-style-type: none"> <li>» Possible erosion of areas lower than the access roads,</li> <li>» Possible spread and establishment of alien invasive species.</li> </ul>
<p><b>Residual impacts:</b></p> <ul style="list-style-type: none"> <li>» Altered vegetation composition and structure</li> <li>» Altered topsoil conditions</li> <li>» Potential barren areas</li> <li>» Potential for erosion and invasion by weed or alien species</li> </ul>

Installation of fencing around the project area – may also serve as maintenance track and as fire-break

<p><b>Nature:</b> Removal of vegetation, compaction of soils, creation of runoff zone, impact on protected species, impact on terrestrial vertebrates. <i>Note: Fencing already exists around the entire project site, but will most likely be upgraded and reinforced.</i></p>		
<p><b>Relevant Listed activities:</b> GN R983 Activity: 28(i) GNR 984 Activity: 15</p>		
	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Low (4)	Small (0)
<b>Probability</b>	Highly Probable (4)	Probable (3)
<b>Significance</b>	<b>Medium (36)</b>	<b>Low (15)</b>
<b>Status</b>	Negative	<ul style="list-style-type: none"> <li>» Neutral where present on transformed areas.</li> <li>» Slightly Negative on natural areas.</li> <li>» Minimal new negative impacts expected.</li> </ul>
<b>Reversibility</b>	Partially reversible	Reversible
<b>Irreplaceable loss of resources</b>	Probable	Not likely
<b>Can impacts be mitigated?</b>	Reasonably well	

**Mitigation**

- » After the final layout has been approved, conduct a thorough footprint investigation to detect and map (by GPS) any protected plant species and animal burrows.
- » Protected plant species must be relocated if possible.
- » Animal burrows must be monitored by the ECO prior to construction for activity/presence of animal species. If detected, such animals must be removed and relocated by a qualified professional/contractor.
- » During the design phase, the possible impact of burrowing vertebrates and rodents on the development must be determined, and fencing must be designed to either exclude these animal species if it will be detrimental or enable occasional migration of smaller vertebrates onto and across the site (which could be beneficial to small vertebrate populations).
- » Minimise the area affected, especially during construction.
- » During construction strictly prohibit any off-road driving or parking of vehicles and machinery outside the footprint areas.
- » Strictly prohibit littering of any kind.
- » Monitor the establishment of alien and indigenous invasive species and remove as soon as detected, whenever possible before regenerative material can be formed.
- » If the area will be used as a fire-break, maintain a suitably low grass layer by regular mowing or appropriate species selection, but do not leave soil bare. Alternatively, ensure that the soil is covered to prevent erosion.

**Cumulative Impacts**

- » Possible erosion of cleared areas and associated accelerated erosion from surrounding areas.
- » Possible loss of ecosystem functioning due to an increase in invasive species

**Residual Impacts**

- » Altered vegetation composition
- » Compacted topsoils.
- » Possibility for erosion and invasion by alien invasives.

Construction and operation of buildings and loading zones on semi-natural vegetation and disturbed areas

**Nature:** Removal of or excessive damage to vegetation, compaction of topsoil, creation of runoff zone, redistribution and concentration of runoff from surfaces, displacement of terrestrial vertebrates, reduced buffering capacities of the landscapes during extreme weather events.

**Relevant Listed activities:**

GN R983 Activity: 28(i)

GNR 984 Activity: 15

	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Extent</b>	Local (2)	Local (1)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Probability</b>	Definite (5)	Definite (5)
<b>Significance</b>	<b>High (60)</b>	<b>Medium (45)</b>
<b>Status</b>	Negative	Negative

<b>Reversibility</b>	Partially reversible	Partially reversible
<b>Irreplaceable loss of resources</b>	Highly Probable	Slight Probability
<b>Can impacts be mitigated?</b>	Reasonably	
<p><b>Mitigation</b></p> <ul style="list-style-type: none"> <li>» After the final layout has been approved, conduct a thorough footprint investigation to detect and map (by GPS) any protected plant species and active animal burrows.</li> <li>» Protected plant species must be relocated if possible.</li> <li>» Animal burrows must be monitored by the ECO prior to construction for activity/presence of animal species. If detected, such animals must be removed and relocated by a qualified professional/contractor.</li> <li>» Keep areas affected to a minimum, strictly prohibit any disturbance outside the demarcated footprint area.</li> <li>» Clear as little indigenous vegetation as possible, aim to maintain vegetation where it will not interfere with the construction or operation of the development, rehabilitate an acceptable vegetation layer according to rehabilitation recommendations of the relevant EMP, if possible.</li> <li>» Use only species that were part of the original indigenous species composition as listed in the specialist report.</li> <li>» Remove all invasive vegetation before and after construction and continuously up to decommissioning.</li> <li>» If fill material is to be used, this should be sourced from areas free of invasive species.</li> <li>» Topsoil (the upper 25 cm of soil) is an important natural resource; where it must be stripped, never mix it with subsoil or any other material, store and protect it separately until it can be re-applied, minimise the handling of topsoil.</li> <li>» Temporarily stored topsoil must be re-applied within 6 months, topsoil stored for longer need to be managed according to a detailed topsoil management plan.</li> <li>» Monitor the area regularly after larger rainfall events to determine where erosion may be initiated and then mitigate by modifying the soil micro-topography and revegetation or soil erosion control efforts accordingly.</li> <li>» Prevent leakage of oil or other chemicals, and strictly prohibit littering of any kind.</li> <li>» Monitor the establishment of all invasive species and remove as soon as detected, whenever possible before regenerative material can be formed</li> </ul>		
<p><b>Cumulative Impacts</b></p> <p>If mitigation measures are not strictly followed the following could occur:</p> <ul style="list-style-type: none"> <li>» Contamination of drainage lines, lower-lying rivers or wetlands located outside of the project site.</li> <li>» Alteration of occupancy by terrestrial fauna beyond the project site, possible reduction of available habitat and food availability to terrestrial fauna</li> <li>» Spread and establishment of invasive species.</li> </ul>		
<p><b>Residual Impacts</b></p> <ul style="list-style-type: none"> <li>» Altered topsoil characteristics</li> <li>» Altered vegetation composition</li> </ul>		

Temporary construction camps and site where machinery is kept during construction

**Nature:** Removal of vegetation, compaction of soils, creation of runoff zone, displacement of terrestrial vertebrates, possible contamination of topsoil and groundwater by hydrocarbons.



<b>Relevant Listed activities:</b>		
GN R983 Activity: 28(i)		
GNR 984 Activity: 15		
	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Extent</b>	Regional (4)	Local (1)
<b>Duration</b>	Medium-term (3)	Short-term (2)
<b>Magnitude</b>	Moderate (6)	Minor (2)
<b>Probability</b>	Definite (5)	Probable (3)
<b>Significance</b>	<b>High (65)</b>	<b>Low (15)</b>
<b>Status</b>	Negative	Slightly negative
<b>Reversibility</b>	Partially reversible	Reversible
<b>Irreplaceable loss of resources</b>	Probable	Not likely
<b>Can impacts be mitigated?</b>	Reasonably	
<b>Mitigation</b>		
<ul style="list-style-type: none"> <li>» After the final layout has been approved, conduct a thorough footprint investigation to detect and map (by GPS) any protected plant species and animal burrows.</li> <li>» Protected plant species must be relocated where deemed necessary.</li> <li>» Animal burrows must be monitored by the ECO prior to construction for activity/presence of animal species. If detected, such animals must be removed and relocated by a qualified professional/contractor.</li> <li>» Place infrastructure as far as possible on sites that have been transformed already.</li> <li>» Stay within demarcated temporary construction areas and strictly prohibit any off-road driving or parking of vehicles and machinery outside designated areas.</li> <li>» Prevent spillage of construction material and other pollutants, contain and treat any spillages immediately, strictly prohibit any pollution/littering according to the relevant EMPr.</li> <li>» No fires may be lit for cooking or any other purposes.</li> <li>» Facilities may not be used as staff accommodation.</li> <li>» Topsoil (the upper 25 cm of soil) is an important natural resource; where it must be stripped, never mix it with subsoil or any other material, store and protect it separately until it can be re-applied, minimise handling of topsoil.</li> <li>» Temporarily stored topsoil must be re-applied within 6 months, topsoil stored for longer need to be managed according to a detailed topsoil management plan.</li> <li>» After construction remove all foreign material prior to starting the rehabilitation.</li> <li>» Monitor the establishment of invasive species and remove as soon as detected, whenever possible before regenerative material can be formed.</li> </ul>		
<b>Cumulative Impacts</b>		
If mitigation measures are not strictly followed the following could occur:		
<ul style="list-style-type: none"> <li>» Contamination of drainage lines, lower-lying ephemeral streams and wetlands located outside of the project site.</li> <li>» Contamination of groundwater which is an extremely important source of water supply for the region.</li> <li>» Spread and establishment of invasive species.</li> </ul>		
<b>Residual Impacts</b>		
<ul style="list-style-type: none"> <li>» Altered topsoil characteristics.</li> </ul>		

- » Altered vegetation composition.

Transport of materials to site, movement of vehicles on site during construction and operation.

**Nature:** Compaction of soils, possible contamination by hydrocarbons, possible introduction and spread of weeds and alien invasive species, temporary disturbance of terrestrial fauna.

**Relevant Listed activities:**

GN R983 Activity: 28(i)

GNR 984 Activity: 15

	Without Mitigation	With Mitigation
<b>Extent</b>	Regional (4)	Local (1)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Low (4)	Small (0)
<b>Probability</b>	Definite (5)	Highly Probable (4)
<b>Significance</b>	<b>Medium (60)</b>	<b>Low (20)</b>
<b>Status</b>	Negative	Neutral
<b>Reversibility</b>	Partially reversible	Reversible
<b>Irreplaceable loss of resources</b>	Probable	Not likely
<b>Can impacts be mitigated?</b>	Reasonably	

**Mitigation**

- » Restrict all movement of vehicles and heavy machinery to permissible areas, these being designated access roads, maintenance roads, turning points and parking areas. No off-road driving beyond designated areas may be allowed.
- » Parking areas should be regularly inspected for oil spills and covered with an impermeable or absorbent layer (with the necessary stormwater control) if oil and fuel spillages are highly likely to occur.
- » Strict speed limits must be set and adhered to.
- » Driving between dusk and dawn should be permissible to emergency situations only.
- » Prevent spillage of any, oils or other chemicals, strictly prohibit other pollution.
- » Monitor the establishment of invasive species and remove as soon as detected, whenever possible before regenerative material can be formed, destroy all material to prevent re-establishment.

**Cumulative Impacts**

- » Possible pollution of surrounding areas if no mitigation is implemented.
- » Contamination of groundwater which is an extremely important source of water supply for the region.
- » Possible spread of alien invasive species beyond the site if no mitigation is implemented.

**Residual Impacts**

- » Related to access roads and internal maintenance tracks only.

#### **6.2.4 Implications for Project Implementation**

With the implementation of mitigation measures by the developer, contractors, and operational staff, the severity and significance of ecological impacts of the Cluster can be reduced to low. The Cluster can be developed and ecological impacts managed by taking the following into consideration:

- » Care should be taken regarding the presence of *Acacia erioloba* (presence confirmed during the field-survey), which is a protected species according to the National Forest Act (NFA).
- » Care must be taken to prevent the encroachment and spread of alien species.
- » Due care would need to be taken in order to prevent water and wind erosion in exposed areas. Excavated topsoil will require appropriate management to ensure no loss of this resource. Mitigation procedures as well as hands on maintenance (good soils management measures) will ensure that medium to long term impacts can be avoided.
- » Poor topsoil management may lead to the loss of nutrient rich topsoil. Levelling of slopes/topographical high points, excavations for discharge water and discarding of building rubble storage significantly affect soil resources. With the implementation of appropriate management measures, these impacts are unlikely to occur and would be of low significance.

#### **6.3 Assessment of Impacts on Heritage Sites**

The Cluster will have a development footprint of 47ha. Negative impacts on heritage resources are linked to excavations and loss of heritage resources during construction activities. Potential impacts and the relative significance of the impacts are summarised below (refer to **Appendix E** – Archaeological Impact Assessment Report and **Appendix F** – Palaeontology Impact Assessment Report for more details).

##### **6.3.1 Results of the Heritage Survey**

**Palaeontological context:** The project site is completely underlain by sediments of the Early Precambrian, Transvaal Supergroup, Ghaap Group and Campbell Rand Subgroup. The Campbell Subgroup sediments were deposited on the shallow submerged Kaapvaal Craton, approximately 2.6 to 2.5 Ga (billion years ago). Stromatolites are concentrated on the north, eastern and central portion of the proposed site. Most of the stromatolites are found in situ although several specimens were found loose. Exposed stromatolites are badly weathered, but there is a possibility that specimens still covered by sediments could be better preserved. The PalaeoMap (SAHRA website) indicates that the palaeontological significance of the Transvaal Group, Campbell Rand Subgroup is moderate and therefore the overall impact of the proposed Metals Cluster development on Portion 6253 of Erf 1 is rated as negative medium significance (without the

implementation of mitigation measures). The implementation of mitigation measures will reduce the significance of the impact to low. This should take place after the initial vegetation removal has taken place but before the ground is levelled or compacted. Where relevant, excavation of this fossil heritage will require a permit from SAHRA and the material must be housed in a permitted institution. All fieldwork and reports should meet the minimum standards for palaeontological impact studies developed by SAHRA.

**Archaeological context:** In terms of Section 35 of the National Heritage Resources Act (NHRA) no sites of archaeological significance were recorded within the development footprint. Similarly, no sites of significance were recorded by other studies in the area. No further mitigation prior to construction is recommended in terms of Section 35 for the proposed development to proceed. In terms of the built environment of the area (Section 34), no standing structures older than 60 years occur within the development footprint. The project site is surrounded by a township and recreational developments and no significant cultural landscapes or viewsapes were noted during the fieldwork.

In terms of Section 36 of the Act no burial sites were recorded. However, if any graves are identified in future they should ideally be preserved *in-situ* or alternatively relocated according to existing legislation. Due to the subsurface nature of archaeological remains and the fact that graves can occur anywhere on the landscape, it is recommended that a chance find procedure is implemented for the project.

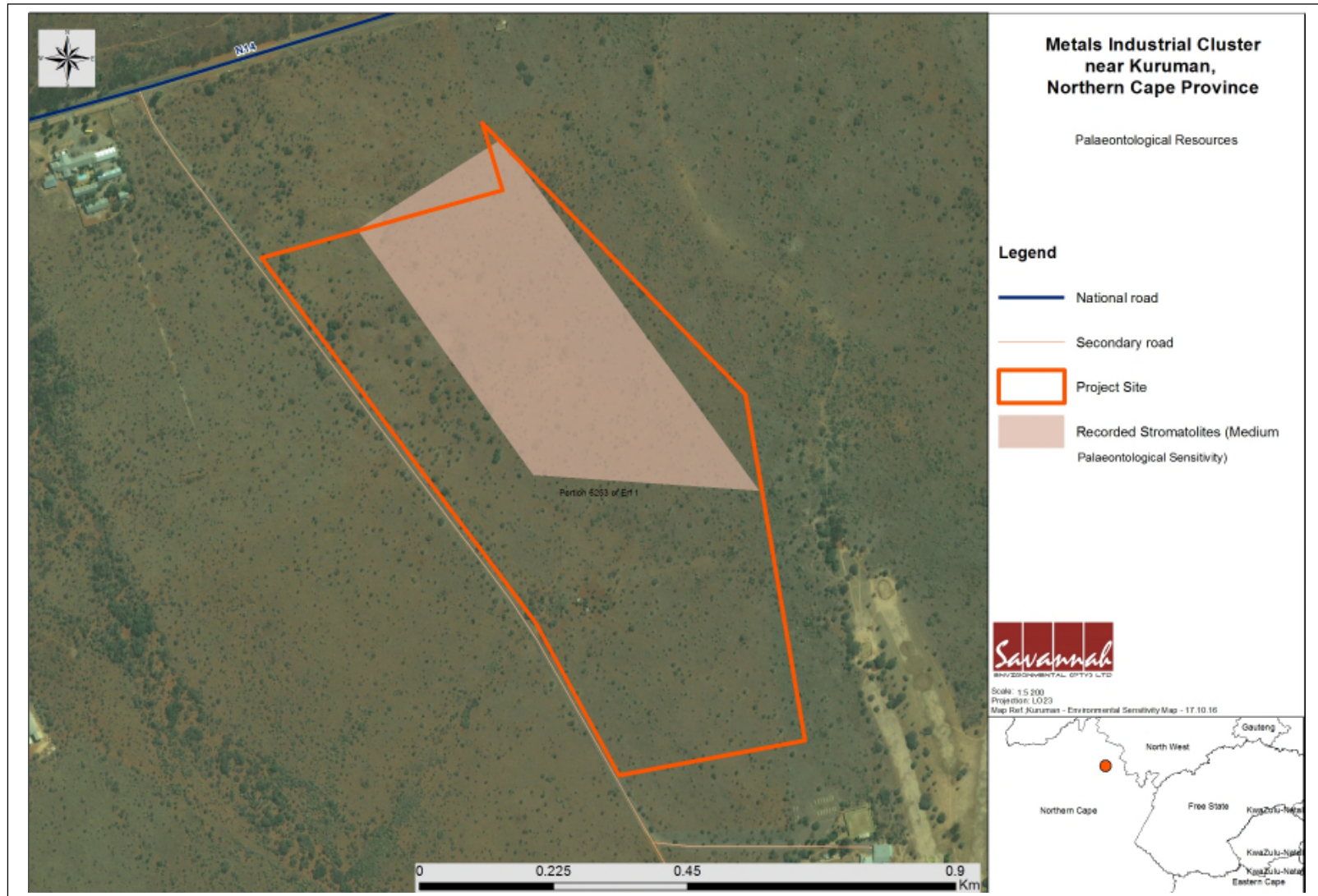
### **6.3.2 Description of heritage impacts**

**Palaeontological resources:** Several weathered stromatolites were located *in situ* on the project site. Fossil heritage is more prominent in the north eastern and central portion of the site (refer to **Figure 6.3**).

**Archaeological resources:** No archaeological material has been identified during the field survey undertaken by the specialist. Similar observations have been made to the east of the project site, where limited Stone Age material or no archaeological material was recorded at all. However, more than 65km to the west of the project site close to Black Rock and Hotazel higher frequencies of Stone Age material have been recorded dating from the Early to Later Stone Age.

From an archaeological perspective, the project site is considered to be of a low archaeological significance. This could be due to the lack of shelters or pans in the area that would have attracted humans in antiquity.

No permanent structures occur in the project site, and no structures of heritage significance.



**Figure 6.3:** Illustration of the area within the project site where stromatolite outcrops are most likely to be identified

**6.3.3 Impact tables summarising the significance of impacts on heritage resources (i.e. palaeontology and archaeology) (with and without mitigation)**

The impacts assessed below apply to the development footprint of 47ha that will be developed for the Metals Industrial Cluster. The project site is located within the urban edge of the town of Kuruman.

Palaeontological resources

**Nature:** The excavations and site clearance during the construction phase will involve substantial excavations into the superficial sediment cover as well as locally into the underlying bedrock. These excavations will modify the existing topography and may disturb, damage, destroy or permanently seal-in fossils at or below the ground surface that are then no longer available for scientific research. The excavations could also impact on the stromatolites present within the project site.

This impact is likely to occur only during the construction phase. No impacts are expected to occur during the operation phase.

**Relevant Listed activities:**

GN R983 Activity: 28(i)  
 GNR 984 Activity: 15

	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Long term/permanent (5)	Long term/permanent (4)
<b>Magnitude</b>	Low (4)	Minor (2)
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Significance</b>	<b>Medium (30)</b>	<b>Low (14)</b>
<b>Status (positive or negative)</b>	Negative	Neutral
<b>Reversibility</b>	Irreversible	Irreversible
<b>Irreplaceable loss of resources?</b>	Yes	No
<b>Can impacts be mitigated?</b>	Yes	

**Mitigation:**

Mitigation includes surveying, recording, describing and sampling of well-preserved fossils within the area proposed for the development by a palaeontologist.

This should take place after the initial vegetation clearance was undertaken but before the ground is levelled for construction.

Excavation of this fossil heritage (stromatolites) will require a permit from SAHRA and the material must be housed in a permitted institution.

**Residual Impacts:**

Residual risk will be low after mitigation has been implemented as all relevant fossils will be documented and removed from the site.

Archaeological Resources

**Nature:** During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological material or objects.

**Relevant Listed activities:**

GN R983 Activity: 28(i)

GNR 984 Activity: 15		
	<b>Without mitigation</b>	<b>With mitigation (preservation/excavation of the site)</b>
<b>Extent</b>	Regional (4)	Regional (4)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Magnitude</b>	Low (4)	Low (3)
<b>Probability</b>	Not probable (2)	Not probable (2)
<b>Significance</b>	<b>Low (26)</b>	<b>Low (24)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Not reversible	Not reversible
<b>Irreplaceable loss of resources?</b>	Yes	Yes - unless sites can be preserved
<b>Can impacts be mitigated?</b>	Yes	Yes - through preservation or excavation of sites
<b>Mitigation:</b> Due to the lack of apparent significant archaeological resources no further mitigation is required prior to construction (refer to <b>Appendix E</b> ).		
<b>Cumulative impacts:</b> A Chance Find Procedure should be followed to report any sites identified during the construction process.		
<b>Residual Impacts:</b> If sites are destroyed this results in the depletion of the archaeological record of the area. However, if sites are recorded and preserved or mitigated this adds to the record of the area.		

### 6.3.4 Implications for Project Implementation

With the implementation of mitigation measures by the developer, contractors, and operational staff, the severity of impacts of the Cluster can be reduced to low, or avoided. The Metals Industrial Cluster can be developed and impacts on heritage resources managed by taking the following into consideration:

- » The weathered and *in situ* stromatolites scattered throughout the project site, as well as the collection thereof.

## 6.4 Assessment of Social Impacts

Potential social impacts and the relative significance of the impacts associated with the development of the Metals Industrial Cluster are summarised below (refer to **Appendix H** - Social Report for more details).

### 6.4.1 Results of the Social Study

From a social perspective, it is concluded that the project is supported, but that mitigation measures should be implemented and adhered to. Positive and negative social impacts have been identified. The assessment of the key issues indicated that

there are no negative impacts that can be classified as fatal flaws and which are of such significance that they cannot be successfully mitigated. Positive impacts could be enhanced by implementing appropriate enhancement measures and through careful planning.

Majority of the surrounding area is considered as urban areas with open spaces in between, as the project site is located within the urban edge of the town of Kuruman. The affected property is currently being utilised as grazing space by informal farmers and also includes temporary residents living on the property. Other land-uses within the area includes the presence of roads (i.e. national roads, regional and main roads). The development of the Cluster will impact on the daily commuters utilising the roads.

Based on the social assessment, the following general conclusions and findings have been made:

- » The potential negative social impacts relate to an influx of non-local workforce and jobseekers, intrusion and disturbance impacts, safety and security, could be reduced with the implementation of the mitigation measures proposed.
- » A significant number of employment opportunities will be created throughout the different phases and the impact is rated as positive as a significant number of individuals will benefit in this regard.
- » The proposed project could assist the local economy in creating entrepreneurial development, especially if local business is to be involved in the provision of general material and services during the different phases.
- » Capacity building and skills training among employees are critical and would be highly beneficial to those involved, especially if they receive portable skills to enable them to also find work elsewhere and in other sectors.
- » The Cluster will help address a number of issues that are related to social and economic challenges experienced by local communities in the Northern Cape, Kuruman, Ga-Segonyana Local Municipality, and John Taolo Gaetsewe District Municipality this includes:
  - \* Increase in the size of the manufacturing industry: The Cluster in itself is a manufacturing centre, but demand generated by the cluster should also boost demand in other local areas;
  - \* Increase in employment and earning levels: The Cluster will result in a significant number of direct and indirect jobs as well as more skilled and semi-skilled roles;
  - \* The cluster will create the local industry presence that will enable supply options for relevant SIP initiatives;
  - \* Locally produce more of the goods consumed in the Northern Cape: The Cluster will increase the number of local supply options for goods consumed in the Northern Cape, through the people which the cluster will attract to the area, and through the increased economic activity that will stem from cluster activity; and
  - \* Improve conditions for business development: The metals industrial cluster, will provide extensive skill-building and business support opportunities to CMFs and associated businesses.



Social impacts are assessed according to the phase of development due to the phased nature of the proposed Cluster and the different social requirements and impacts expected within each phase.

#### **6.4.2 Description of Social Impacts**

Benefits and/or impacts associated with the construction and operation phase of the Cluster project could have long-term effects on the surrounding social environment. The Cluster will consist of large, medium, small and micro sized entities. The number of Cluster Member Firms (CMFs) is expected to increase over time. A key consideration with regards to the CMFs is how the Cluster will attract and retain entities related to the industrial sector, as well as other sectors. The time scale and number of CMFs for which the Cluster is expected to transition over the years is as follows:

- » Cluster start-up / establishment - the initial start-up and establishment of the Cluster will take approximately 12-18 months. Incentives to be offered to Cluster Member Firms (CMFs) that will be implemented include shared infrastructure, facilities, and services, as well as access to funding. Shared infrastructure will include a common boundary fence, security checkpoint, utility connection points, and road infrastructure within the Cluster. CMFs will have access to shared manufacturing and warehousing facilities (e.g. machining and design facilities, shared warehouse) as well as to supporting facilities (e.g. on-site canteen, banking agencies, recreational centre). CMFs will also have access to shared services (including wireless network, marketing and linkages).
- » Phase 1 - this is the establishment phase and the short-term phase that will be 0-2 years. During the short-term there will be 10 metal businesses in the Cluster - approximately 4 micro, 3 small, 2 medium and 1 large business.
- » Phase 2 - medium term phase will be 3-6 years. During the medium-term there will be 45 metal businesses in the Cluster - approximately 20 micro, 18 small, 5 medium and 2 large businesses.
- » Phase 3 - long term phase that will be 7-20 years. During the long-term there will be 105 metal businesses in the Cluster - approximately 47 micro, 41 small, 12 medium and 5 large businesses.
- » Phase 4 - this phase is planned to cater for expansion beyond the 20-year timeframe planned for the 3 phases; with the option to extend for another 40 years. It is unknown at this stage the estimated number of employment opportunities that will be available in Phase 4 as well as type of entities that will be locating within the Cluster during this phase.

An increasing portion of this Industrial Cluster will become occupied as the development expands from 10 companies in the short-term to 105 companies in the long-term. The Cluster will consist predominantly of SMME and SME companies, with an increasing number of large firms over time.

### **6.4.3 Impact tables summarising the significance of social impacts associated with the construction phase (with and without mitigation measures or with and without enhancement)**

The impacts assessed below apply to the nature and the extent of the project site for the Metals Industrial Cluster.

#### Direct employment and skills development

Each phase of the Cluster will require a workforce and therefore direct employment will be generated. The proposed Cluster will create employment opportunities for the local community. The nearest town to the study area within the GSLM is Kuruman, located ~2km north west of the proposed site. The other two towns in the GSLM include, Wrenchville, (located 1km north east of the proposed site), Mothibistad (located ~10km north east of the proposed site) and Bankhara-Bodulong (located ~7km north west of the proposed site). There is a large economically active population in search of employment opportunities in the impacted local municipality (GSLM). It is estimated that during each phase the following number of employment opportunities will be created:

- » **Cluster start-up / establishment** - it is estimated that approximately ~500 employment opportunities will be created.
- » **Phase 1 (short term – 0 to 2 years)** - it is estimated that approximately ~1032 employment opportunities will be created.
- » **Phase 2 (medium term- 3 to 6 years)** - it is estimated that approximately ~2200 employment opportunities will be created.
- » **Phase 3 (long term – 7 to 20 years)** - it is estimated that approximately ~5306 employment opportunities will be created.
- » **Phase 4** - this phase is planned to cater for expansion beyond the 20-year timeframe planned for the 3 phases. It is unknown at this stage what the number of employment opportunities will be in Phase 4, however, it is estimated that if this phase is an extension of the existing three phases then it is anticipated that the total number of employment opportunities created for the three phases will continue, which will be approximately ~8538 for the extended 40 years in phase 4.

In terms of skills requirements, it is expected that approximately 60% of the employment opportunities will be available for unskilled labourers. New skilled / semi-skilled employment opportunities are expected to be created and will comprise approximately 40% of the workforce. The expected current value of the employment opportunities during the first 10 years is approximately R4.04 billion. The expected value to be generated in terms of the employment opportunities during the lifespan of the development is R20.2 billion. The percentage of the value to be generated in terms of the employment opportunities that will accrue to previously disadvantaged individuals is expected to be approximately 40%. The injection of income into the area in the form

of wages will represent an opportunity for the local economy and businesses in the area to grow and develop.

The GSLM is characterised by high levels of unemployment and poverty. The unemployment rate is at 33.7% which is significantly high in relation to the provincial unemployment level at 27.4%. There will be significant job opportunities available for low skilled (construction, security and maintenance workers) and semi-skilled workers, which can be sourced from the local area and communities.

A primary drive of the Cluster is education and skills transfer. Although the focus is on technical trades, specifically related to the industrial sector, the Cluster shall also offer business and management courses. Courses shall range from long-term qualifications to short one-day certificate courses. The purpose is to offer training and up skilling to employees of CMFs and other workers in the region. A plan for on the job training (OTJ) will be implemented and undertaken across all trades.

Skills training for local community members has the opportunity to develop local employee potential. This is crucial to long-term development of skills and education in the area. This will accelerate the positive benefits and impacts of the development and skills capacity on the local economy.

<b>Construction and Operation Phase</b>										
<b>Nature:</b> The creation of employment opportunities and skills development opportunities for the country and local economy										
<b>Relevant listed activities:</b>										
GN R983 Activity: 28(i)										
GNR 984 Activity: 15										
	<b>START-UP / ESTABLISHMENT</b>		<b>PHASE 1</b>		<b>PHASE 2</b>		<b>PHASE 3</b>		<b>PHASE 4</b>	
	Without enhancement	With enhancement	Without enhancement	With enhancement	Without enhancement	With enhancement	Without enhancement	With enhancement	Without enhancement	With enhancement
<b>Extent</b>	Local-Regional (3)	Local-Regional (3)	Local-Regional (3)	Local-Regional (3)	Local-Regional (3)	Local-Regional (3)	Local-Regional (3)	Local-Regional (3)	Local-Regional (3)	Local-Regional (3)
<b>Duration</b>	Short term (2)	Short term (2)	Short term (2)	Short term (2)	Short term (2)	Short term (2)	Moderate term (3)	Moderate term (3)	Long term (4)	Long term (4)
<b>Magnitude</b>	Minor (2)	Minor (2)	Low (4)	Low (4)	Low (4)	Low (4)	Moderate (6)	Moderate (6)	High (8)	High (8)
<b>Probability</b>	Highly probable (4)	Definite (5)	Highly probable (4)	Definite (5)	Highly probable (4)	Definite (5)	Highly probable (4)	Definite (5)	Highly probable (4)	Definite (5)
<b>Significance</b>	<b>Low (28)</b>	<b>Medium (35)</b>	<b>Medium (36)</b>	<b>Medium (45)</b>	<b>Medium (36)</b>	<b>Medium (45)</b>	<b>Medium (48)</b>	<b>Medium (60)</b>	<b>Medium (60)</b>	<b>High (75)</b>
<b>Status (positive or negative)</b>	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive
<b>Reversibility</b>	N/A									
<b>Irreplaceable loss of resources</b>	N/A									
<b>Can impacts be enhanced</b>	Yes									
<b>Enhancement measures:</b>										
<ul style="list-style-type: none"> <li>» Employ local contractors that are Broad Based Black Economic Empowerment (BBBEE) compliant</li> <li>» Adopt a local employment policy to maximise the opportunities made available to the local labour force (sourced from Kuruman, Wrenchville and within the GSLM)</li> <li>» The recruitment selection process should seek to promote gender equality and the employment of women</li> <li>» Training and skills development programmes should be initiated throughout the phases</li> </ul>										

- » A Community Liaison Officer should be appointed from the local community. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the phases.

**Residual impacts**

- » Improved pool of skills and experience in the local area
- » Economic growth for small-scale entrepreneurs

During each phase the positive impact of employment opportunities and skills development will differ as follows:

- » Start-up / Establishment Phase - the positive impact is considered to be local and regional in extent, temporary in duration, of minor intensity, and definite with enhancement measures implemented. The benefit is of medium significance.
- » Phase 1 - the positive impact is considered to be local and regional in extent, short in duration, of low intensity, and definite with enhancement measures implemented. The benefit is of medium significance.
- » Phase 2 - the positive impact is considered to be local and regional in extent, short in duration, of low intensity, and definite with enhancement measures implemented. The benefit is of medium significance.
- » Phase 3 - the positive impact is considered to be local and regional in extent, moderate in duration, of moderate intensity, and definite with enhancement measures implemented. The benefit is of medium significance.
- » Phase 4 - the positive impact is considered to be local and regional in extent, long in duration, of high intensity, and definite with enhancement measures implemented. The benefit is of high significance.

*Economic multiplier effects*

There are likely to be opportunities for local businesses to provide services and materials for different phases of the proposed development, the local services sector will also benefit. It is important that a fair and equal opportunity is provided when allowing local service providers to tender for work, and that the Municipality is involved throughout the process.

The site is located near the town of Kuruman. Given the relative proximity of the site to Kuruman and Wrenchville, limited on-site accommodation is envisaged to be required (including student accommodation). Off-site accommodation in the nearest towns would be required for contract workers and certain employees for the construction and operation stage of each phase. The economic multiplier effects from the use of local goods and services opportunities will be a positive impact for the local community. In terms of business opportunities for local companies, expenditure during the various phases will create business opportunities for the regional and local economy. The increase in demand for new materials and services in the nearby area will stimulate local business and local economic development. There is likely to be a direct increase in industry and indirect increase in secondary businesses.

Also the injection of income into the area in the form of wages will represent an opportunity for the local economy and businesses in the area. Through the stimulation of employment and income, creation of new demand within the local and regional economies is expected. With increased income comes additional income for expenditure on goods and services supplied. The intention is to maximise local labour employment opportunities, which is likely to have a positive impact on local communities and have downstream impacts on household income, education and other social aspects. The implementation of the enhancement measures below can increase the opportunities for the local area.

<b>Construction and Operation Phase</b>										
<b>Nature:</b> Significance of the impact from the economic multiplier effects from the use of local goods and services										
<b>Relevant listed activities:</b>										
GN R983 Activity: 28(i)										
GNR 984 Activity: 15										
	<b>START-UP / ESTABLISHMENT</b>		<b>PHASE 1</b>		<b>PHASE 2</b>		<b>PHASE 3</b>		<b>PHASE 4</b>	
	Without enhancement	With enhancement	Without enhancement	With enhancement	Without enhancement	With enhancement	Without enhancement	With enhancement	Without enhancement	With enhancement
<b>Extent</b>	Local-Regional (3)	Local-Regional (3)	Local-Regional (3)	Local-Regional (3)	Local-Regional (3)	Local-Regional (3)	Local-Regional (3)	Local-Regional (3)	Local-Regional (3)	Local-Regional (3)
<b>Duration</b>	Short term (2)	Short term (2)	Short term (2)	Short term (2)	Short term (2)	Short term (2)	Moderate term (3)	Moderate term (3)	Long term (4)	Long term (4)
<b>Magnitude</b>	Minor (2)	Minor (2)	Low (4)	Low (4)	Low (4)	Low (4)	Moderate (6)	Moderate (6)	High (8)	High (8)
<b>Probability</b>	Probable (3)	Highly probable (4)	Probable (3)	Highly probable (4)	Probable (3)	Highly probable (4)	Probable (3)	Highly probable (4)	Probable (3)	Highly probable (4)
<b>Significance</b>	<b>Low (21)</b>	<b>Low (28)</b>	<b>Low (27)</b>	<b>Medium (36)</b>	<b>Low (27)</b>	<b>Medium (36)</b>	<b>Medium (36)</b>	<b>Medium (48)</b>	<b>Medium (45)</b>	<b>Medium (52)</b>
<b>Status (positive or negative)</b>	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive
<b>Reversibility</b>	N/A									
<b>Irreplaceable loss of resources</b>	N/A									
<b>Can impacts be enhanced</b>	Yes									
<b>Enhancement measures:</b>										
<ul style="list-style-type: none"> <li>» A local procurement policy should be adopted by the developer and EPC contractor to maximise the benefit to the local economy.</li> <li>» Where feasible, the developer should create a database of local companies, specifically Historically Disadvantaged (HD) which qualify as potential service providers (e.g. construction companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction contractors; these companies should be notified of the tender process and invited to bid for project-related work where applicable.</li> </ul>										

- » Goods and services should be sourced from the local area as much as possible; engage with local authorities and business organisations to investigate the possibility of procurement of construction materials, goods and products from local suppliers where feasible.

**Residual impacts**

- » Improved local service sector, growth in local business

During each phase the positive impact of multiplier effects from local procurement will differ as follows:

- » Start-up / Establishment Phase - the positive impact is considered to be local - regional in extent, short in duration, of minor intensity, and highly probably with enhancement measures implemented. The benefit is assessed to be of low significance.
- » Phase 1- the positive impact is considered to be local - regional in extent, short in duration, of low intensity, and highly probably with enhancement measures implemented. The benefit is assessed to be of medium significance.
- » Phase 2 - the positive impact is considered to be local - regional in extent, short in duration, of low intensity, and highly probably with enhancement measures implemented. The benefit is assessed to be of medium significance.
- » Phase 3 - the positive impact is considered to be local - regional in extent, moderate in duration, of moderate intensity, and highly probably with enhancement measures implemented. The benefit is assessed to be of medium significance.
- » Phase 4 - the positive impact is considered to be local - regional in extent, long in duration, of high intensity, and highly probably with enhancement measures implemented. The benefit is assessed to be of medium significance.



*In-migration of people (non-local workforce and jobseekers)*

The in-migration of people to the area as either non-local workforce and/or economic seekers could result in pressure on economic and social infrastructure on the local population. The influx of people into the area, could lead to a temporary increase in the level of crime, cause social disruption and put pressure on basic services and pressure on the local population such as rise in social conflicts and change in social dynamics. Adverse impacts could occur if a large in-migrant workforce, culturally different from the local indigenous group, is brought in during the development. The high unemployment rate (33.7%) and expectations of job creation is already a source of competition among locals and could be exacerbated through outsiders coming into the area resulting in conflict. Such influx could also result in increased pressure on social infrastructure such as existing community infrastructure, social services, municipal services, accommodation, health facilities, transport facilities, basic services and so forth. The GSLM's availability of basic services to meet the current needs of the local population is strained due to a lack of infrastructure required. This places tremendous strain on the environment and the local municipality. There is an available workforce in the GSLM. Therefore, it is not considered to be necessary to bring in additional low-skilled and semi-skilled people from outside, as the GSLM population could fulfil the majority of the lower and semi-skilled employment opportunities and requirements that arise.

The degree to which societies are disrupted largely depends on the level of local employment achievable and in the case of this project a significant portion of the workforce is expected to be sourced locally and the overall number of outsiders coming into the area during each phase is likely to be improbable and would not be significant to cause great disruption to the area.

<b>Construction and Operation Phase</b>										
<b>Nature:</b> Added pressure on economic and social infrastructure and increase in social conflicts during the different phases as a result of an in-migration of people										
<b>Relevant listed activities:</b>										
GN R983 Activity: 28(i)										
GNR 984 Activity: 15										
	<b>START-UP / ESTABLISHMENT</b>		<b>PHASE 1</b>		<b>PHASE 2</b>		<b>PHASE 3</b>		<b>PHASE 4</b>	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
<b>Extent</b>	Local (2)	Local (2)	Local (2)	Local (2)	Local (2)	Local (2)	Local (2)	Local (2)	Local (2)	Local (2)
<b>Duration</b>	Short term (2)	Short term (2)	Short term (2)	Short term (2)	Short term (2)	Short term (2)	Moderate term (3)	Moderate term (3)	Long term (4)	Long term (4)
<b>Magnitude</b>	Minor (2)	Small (0)	Low (4)	Minor (2)	Low (4)	Minor (2)	Moderate (6)	Low (4)	Moderate (6)	Low (4)
<b>Probability</b>	Probable (3)	Improbable (2)	Probable (3)	Improbable (2)	Probable (3)	Improbable (2)	Probable (3)	Improbable (2)	Probable (3)	Improbable (2)
<b>Significance</b>	<b>Low (18)</b>	<b>Low (8)</b>	<b>Low (24)</b>	<b>Low (12)</b>	<b>Low (24)</b>	<b>Low (12)</b>	<b>Medium (33)</b>	<b>Low (18)</b>	<b>Medium (36)</b>	<b>Low (20)</b>
<b>Status (positive or negative)</b>	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative
<b>Reversibility</b>	Yes									
<b>Irreplaceable loss of resources</b>	No									
<b>Can impacts be mitigated</b>	Yes									
<b>Mitigation measures:</b>										
<ul style="list-style-type: none"> <li>» A 'locals first' policy should be advertised for employment opportunities, especially for semi and low-skilled job categories. Enhance employment opportunities for the immediate local area; Kuruman, Wrenchville and other towns within the GSLM. A local employment policy must also be adopted to maximize the opportunities available to the local labour force</li> <li>» Tender documents should stipulate the use of local labour as far as possible</li> <li>» Recruitment of temporary workers at the gates of the development should not be allowed. A recruitment office with a Community Liaison officer (that's been appointed from the local community) should be established in a nearby town to deal with jobseekers</li> </ul>										

- » A security company is to be appointed and appropriate security procedures to be implemented
- » Implement procedures for the control and removal of loiters at the proposed site
- » A Community Liaison Officer should be appointed from the local community. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the process

**Residual impacts**

Possibility of outside workers remaining in the area after development is completed and subsequent pressures on local infrastructure and services.

During each phase the negative impact of in-migrants of labourers or jobseekers will differ as follows:

- » Start-up / Establishment Phase - the impact is considered to be local - regional in extent, short in duration, of small intensity, and improbably with mitigation measures implemented. The impact is assessed to be of low significance.
- » Phase 1 - the impact is considered to be local in extent, short in duration, of minor intensity, and improbable with mitigation measures implemented. The impact is assessed to be of low significance.
- » Phase 2 - the impact is considered to be local in extent, short in duration, of minor intensity, and improbable with mitigation measures implemented. The impact is assessed to be of low significance.
- » Phase 3 - the impact is considered to be local in extent, moderate in duration, of low intensity, and improbable with mitigation measures implemented. The impact is assessed to be of low significance.
- » Phase 4 - the impact is considered to be local in extent, long in duration, of low intensity, and improbable with mitigation measures implemented. The impact is assessed to be of low significance.

Impacts on daily living and movement patterns (traffic & nuisance impacts)

An increase in traffic due to construction and operation vehicles and heavy vehicles could create disruptions and safety hazards for current road users. Increased traffic due to vehicles and heavy vehicles could cause disruptions to road users and increase safety hazards. Vehicular / trucking transport will be utilised to deliver project components, equipment and personnel to the site, as well as allowing for the distribution of the products manufactured, via the N14 national (primary) road and the Kuruman Country Club turn off (secondary road). The Kuruman Country Club turn off is an unnamed serviced secondary tarred road that is currently in a poor condition with potholes and in need of maintenance. The secondary road currently has a low frequency use and is primarily utilised by local people residing in the area or people commuting to the Kuruman Country Club. This road would require initial repair, and on-going maintenance. The use of local roads and transport systems may result in increased road deterioration and congestion.

There will be an increase in the movement of people during the different phases. Noise, vibrations, dust and visual pollution from vehicles and heavy vehicle traffic during the different phases could cause temporary disruptions in daily living, movement patterns and quality of life for local community members.

An increase in traffic within the area associated with the establishment of the Cluster has been considered to understand how the associated traffic can be accommodated at the N14/R31 intersection in the Kuruman CBD (refer to **Appendix G**). A traffic assessment has considered the N14/R31 intersection located within the town of Kuruman and the intersection located north of the project site, which is the intersection between the N14 and the secondary unnamed surface road which provides direct access to the project site. The following conclusions can be made regarding the traffic increase associated with the development, and the changes required to the local road network:

- » The N14/R31 intersection, the Cluster access road and the N14/Cluster access road intersection would need to be upgraded to accommodate the development of the Cluster;
- » Additional road network links would be required to accommodate further development of the Cluster beyond Phase 1; and
- » More extensive town and road network planning would be required by the Municipality as the development progresses and as traffic numbers associated with the Cluster development are seen to increase over the long-term.

There are residential areas located approximately 400m away from the proposed Cluster. Impacts associated with other industrial developments such as noise, dust and disruption to daily living are a potential concern for this development. Experience from establishments of other industrial developments indicate that the industrial Cluster will increase the risk of dust and noise being generated, which can in turn impact/disrupt adjacent areas. Sensitive social receptors within a 500m radius include:

- » The El Dorado Hotel (3-star hotel), located 250m north west from the proposed site. The Hotel is situated on the N14 main road that passes through Kuruman and offers 73 en-suite rooms, a swimming pool, safe parking and on site security. El Dorado Hotel has an a la carte restaurant that serves breakfast and dinner to guests and is also open to the public. Four conferencing facilities are available that cater for all group sizes up to 200 people. The manager / owner of the hotel raised the following concerns and issues at the Scoping Phase:
  - \* "There is an already existing industrial area which has not been used to its full potential. It does not make sense to build a new industrial area next to a hotel and golf course. There will be a lot of noise, trucks and dust during construction and operation which will negatively impact the hotel. There will also be light pollution at night. One of the main reasons guests come to the hotel is because it is quite and safe. The Cluster will also have a negative visual impact and an impact on the areas sense of place which will negatively impact the hotel".
  - \* As a result of the concerns raised by the El Dorado Hotel, a follow-up meeting was held on 16 August 2016. The attendees included the El Dorado Hotel representative, the Ga-segonyana Local Municipality Municipal Manger, the Local Municipality town planner, the Northern Cape Department of Economic Development and Tourism Chief Director and the Director (Trade and Sector Development) and the Public Participation Consultant. The following was explained and agreed:
    - The existing industrial area had reached its capacity and could not extend further than the urban edge of the town of Kuruman. Therefore, a new location was required for the development of the Cluster.
    - The development will mainly include medium and light developments within the first three phases of the project, within only heavy development being included in phase 4. This is supported by the fact that the need for heavy development within the Local Municipality is low.
    - The El Dorado Hotel accepted the explanation and expressed support of the development.
- » The Kuruman Country Club and Golf Course is located approximately 200m south west from the proposed site and raised the following issues:
  - \* "The secondary road off the N14 is used to access the golf club, this road is in poor condition and this will be the same road that will be utilised for the Cluster development. A lot of local farmers use this road as well and the road is currently deteriorating and is not maintained. The road will need maintenance. From the country clubs' side, we have no issues with the development as it brings in employment opportunities and might also attract more people to the golf course. The only issues would probably be noise, dust and wear and tear on the secondary road off the N14. This road wasn't built to support all the traffic that will come into the area. However, the project will have a positive impact on Kuruman and the surrounding local area and economy".

- \* The points raised by the Country Club have been noted, and the condition of the access road considered in the planning. This would be required to be upgraded and maintained as part of the development of the Cluster.
- » No issues were raised by community members of the town of Kuruman regarding the location, nature or extent of the Cluster.
- » No issues were raised by community members of the Assmang low cost housing development in Wrenchville regarding the location, nature or extent of the Cluster.

The primary sources of noise during the different phases would be from the construction equipment and other sources of noise including vehicle/truck traffic commuting to the industrial cluster and operation of the CMFs. Noise levels can be audible over a large distance however are generally short in duration. Generation of dust would come from construction and operation activities as well as trucks/ vehicles driving on gravel roads. There are residential areas located near the proposed site as well as the student accommodation that will be located within the cluster. Nuisances such as dust and noise due to construction activities and an increase in the number of heavy vehicles in the area may result in a short-term impact. Dust control measures must be considered to reduce the potential for negative impacts. The potential impacts can be reduced by implementing mitigation measures.

<b>Construction and Operation Phase</b>										
<b>Nature:</b> Increase in traffic disruptions, movement patterns and noise and dust pollution during the different phases of the Metals Industrial Cluster										
<b>Relevant listed activities:</b>										
GN R983 Activity: 28(i)										
GNR 984 Activity: 15										
	<b>START-UP / ESTABLISHMENT</b>		<b>PHASE 1</b>		<b>PHASE 2</b>		<b>PHASE 3</b>		<b>PHASE 4</b>	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
<b>Extent</b>	Local (2)	Local (2)	Local (2)	Local (2)	Local (2)	Local (2)	Local (2)	Local (2)	Local (2)	Local (2)
<b>Duration</b>	Short term (2)	Short term (2)	Short term (2)	Short term (2)	Short term (2)	Short term (2)	Moderate term (3)	Moderate term (3)	Long term (4)	Long term (4)
<b>Magnitude</b>	Moderate (6)	Low (4)	Moderate (6)	Low (4)	Moderate (6)	Low (4)	High (8)	Moderate (6)	High (8)	Moderate (6)
<b>Probability</b>	Probable (3)	Probable (3)	Probable (3)	Probable (3)	Probable (3)	Probable (3)	Probable (3)	Probable (3)	Probable (3)	Probable (3)
<b>Significance</b>	<b>Medium (30)</b>	<b>Low (24)</b>	<b>Medium (30)</b>	<b>Low (24)</b>	<b>Medium (30)</b>	<b>Low (24)</b>	<b>Medium (39)</b>	<b>Medium (33)</b>	<b>Medium (42)</b>	<b>Medium (36)</b>
<b>Status (positive or negative)</b>	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative
<b>Reversibility</b>	Yes									
<b>Irreplaceable loss of resources</b>	No									
<b>Can impacts be mitigated</b>	Yes									
<b>Mitigation measures:</b>										
<ul style="list-style-type: none"> <li>» Dust suppression measures must be implemented for gravel roads and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers when travelling on roads</li> <li>» All vehicles must be road worthy and drivers must be qualified, obey traffic rules, follow speed limits and be made aware of the potential dust, noise and safety issues</li> <li>» Heavy vehicles should be inspected regularly to ensure their road safety worthiness</li> <li>» Roads and intersections (N14/R31 and the access road intersection to the site) must be maintained and improved as required</li> <li>» Provision of adequate and strategically placed traffic warning signs and control measures along the N14 to warn road users of the construction activities taking place. Warning signs must be visible at all times</li> </ul>										

- » Implement penalties for reckless driving for the drivers of heavy vehicles as a way to enforce compliance to traffic rules
- » The developer and engineering, procurement and construction (EPC) contractor's responsibility is to ensure roads utilised are either maintained in the present condition or upgraded if disturbed due to project activities
- » A comprehensive employee induction programme must be implemented to cover land access protocols and road safety
- » A Community Liaison Officer should be appointed from the local community. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the process

**Residual impacts**

None anticipated

During each phase the negative impacts on daily living and movement patterns will differ as follows:

- » Start-up / Establishment Phase - the impact is considered to be local in extent, short in duration, of low intensity, and improbable with mitigation measures implemented. The impact is assessed to be of low significance.
- » Phase 1 - the impact is considered to be local in extent, short in duration, of minor intensity, and probable with mitigation measures implemented. The impact is assessed to be of low significance.
- » Phase 2 - the impact is considered to be local in extent, short in duration, of minor intensity, and probable with mitigation measures implemented. The impact is assessed to be of low significance.
- » Phase 3 - the impact is considered to be local in extent, moderate in duration, of moderate intensity, and probable with mitigation measures implemented. The impact is assessed to be of medium significance.
- » Phase 4 - the impact is considered to be local in extent, long in duration, of moderate intensity, and probable with mitigation measures implemented. The impact is assessed to be of medium significance.



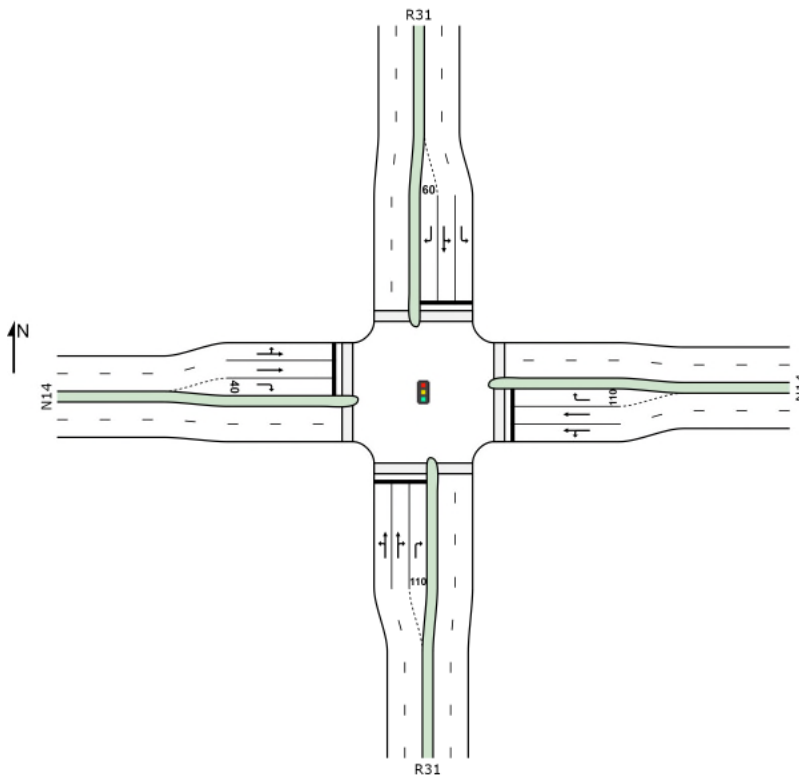
Impacts on traffic movement and existing roads and intersections

An increase in traffic within the area associated with the establishment of the Cluster has been considered to understand how the associated traffic can be accommodated at the N14/R31 intersection in the Kuruman CBD (refer to **Appendix G**). A traffic assessment has considered the N14/R31 intersection located within the town of Kuruman and the intersection located north of the project site, which is the intersection between the N14 and the secondary unnamed surface road which provides direct access to the project site.

Analysis of the critical N14/R31 intersection as well as the N14/Cluster access road intersection was undertaken using the Signalised and Unsignalised Intersection Design Research Aid (SIDRA) analysis software program, for the current scenario/status quo and for the future envisaged development scenarios.

**N14/R31 Intersection Analysis**

The N14/R31 intersection was analysed for development and traffic growth scenarios. The results of the analysis have indicated that for the planned Phase 1 of the Cluster, the intersection can accommodate traffic, but with geometric upgrading and appropriate signal phasing required to be implemented to accommodate expected development traffic as well as background traffic growth to year 2027. The proposed adjusted intersection design and analysis is shown in **Figure 6.4** below.



**Figure 6.4:** Illustration of the geometric upgrading required for the N14/R31 intersection for the implementation of Phase 1

Following the commencement of the Phase 2 development, the east approach right-turn manoeuvre as well as other intersection approaches deteriorates to an unacceptable level of service (refer to **Appendix G**, Annexure F - F9 and F10).

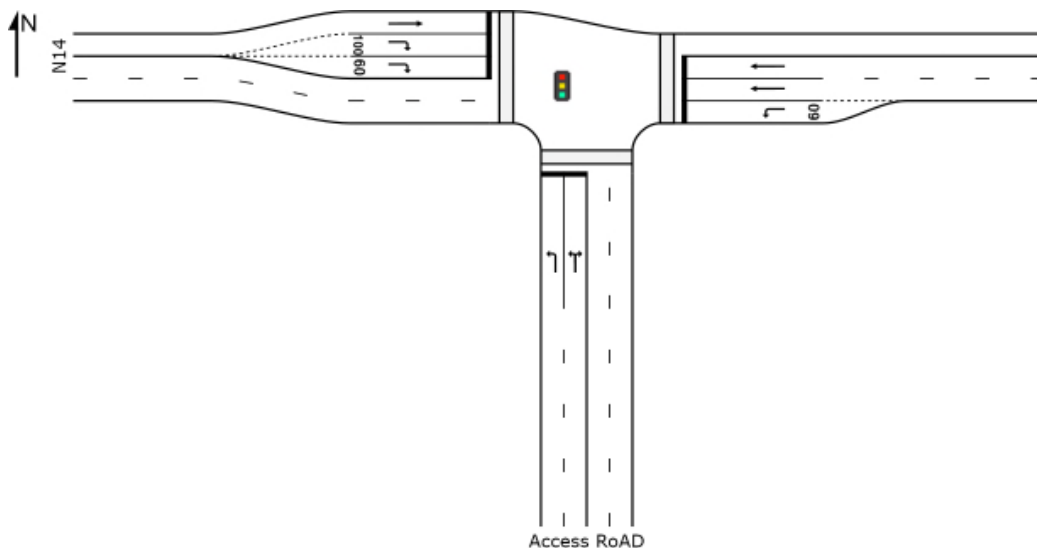
Based on the intersection analysis, an upgraded N14/R31 intersection could accommodate Year 2027 background traffic growth and development-related traffic generated by Phase 1.

### **N14/Cluster Access Road Intersection Analysis**

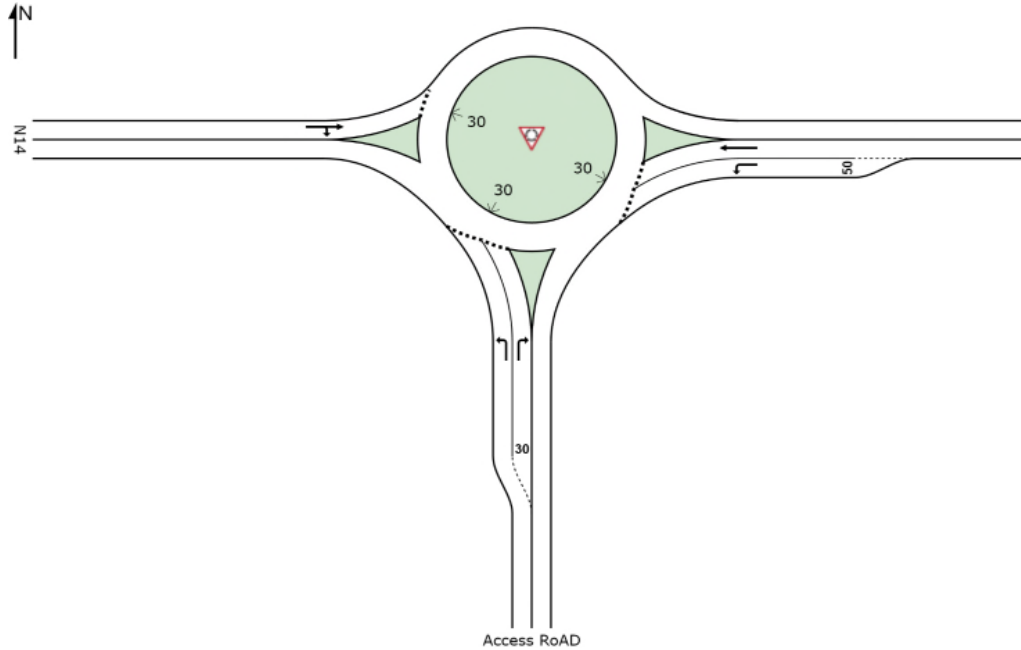
The traffic counts have indicated that there is currently virtually no traffic on the minor priority controlled approach. Analysis of the existing N14/Cluster Access Road intersection shows that extensive upgrading is required to accommodate expected Cluster development traffic. It will be necessary to upgrade the intersection to achieve an acceptable level of service (refer to **Appendix G**, Annexure G2).

For Phase 1 of the Cluster development, the N14/access road intersection requires the following improvements (refer to **Figure 6.5** and **Figure 6.6**):

- » Traffic signals (3 phase)
- » Dualling of the Cluster access road in each direction with a left-turn lane and a shared left-turn/right-turn lane on the approach to the N14
- » West approach - a through lane and a double right-turn lane
- » East approach - a through and a shared through/left-turn lane and two exit lanes;
- » Alternatively, a traffic roundabout could be considered.



**Figure 6.5:** Illustration of the geometric upgrading required for the N14/Cluster Access Road intersection for the implementation of Phase 1



**Figure 6.6:** Illustration of the geometric upgrading required for the N14/Cluster Access Road intersection making use of a traffic roundabout for the implementation of Phase 1

### **Recommendation**

The necessary road infrastructure upgrading at the intersections analysed should be considered for the Phase 1 of the Cluster development. Due to the size of the planned Cluster development, the time period over which the development will be established, and the undetermined number of expected trips, it is recommended that further study of the impact of traffic movement on the local and municipal roads by the Local Municipality as the Cluster expands and further an increase in traffic is noted. This would consider other intersections within Kuruman where traffic pressure is considered likely.

### Safety and security impacts

The perceived decline of security during the development phases of the proposed project due to the influx of workers and/ or outsiders to the area, may have indirect effects, such as increased safety and security risk for neighbouring properties and damage to property, increased risk of veld fire, theft, or crime. The perception exists that industrial and construction related activities (influx of jobseekers, and construction workers) is a contributor to increased criminal activities in an area. Safety and security impacts are a reality in South Africa, which need to be addressed through appropriate mitigation and management measures. There are sensitive social receptors in close proximity to the proposed site, this includes the El Dorado Hotel, and the nearby residential areas, and therefore there are safety and security risks on residential properties/assets. The El Dorado Hotel raised the issue of safety and security concerns with an industrial development taking place in close proximity to the Hotel. However, the information provided by the proponent states that shared infrastructure will include a common boundary fence, security checkpoint, intrusion control, access control and CCTV cluster

monitoring in order to ensure proper security for CMFs. In Phase 1, security will be increased to match growth with the second phase being effectively securitised. In Phase 2 and 3, the full cluster will be effectively securitised, through expansion, renewal and upgrading of security systems, as required.

<b>Construction and Operation Phase</b>										
<b>Nature:</b> Increase in safety and security concerns / risks associated with the influx of people in the immediate during the different phases										
<b>Relevant listed activities:</b>										
GN R983 Activity: 28(i)										
GNR 984 Activity: 15										
	<b>START-UP / ESTABLISHMENT</b>		<b>PHASE 1</b>		<b>PHASE 2</b>		<b>PHASE 3</b>		<b>PHASE 4</b>	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
<b>Extent</b>	Local (2)	Local (2)	Local (2)	Local (2)	Local (2)	Local (2)	Local (2)	Local (2)	Local (2)	Local (2)
<b>Duration</b>	Short term (2)	Short term (2)	Short term (2)	Short term (2)	Short term (2)	Short term (2)	Moderate term (3)	Moderate term (3)	Long term (4)	Long term (4)
<b>Magnitude</b>	Minor (2)	Small (0)	Low (4)	Minor (2)	Low (4)	Minor (2)	Moderate (6)	Low (4)	Moderate (6)	Low (4)
<b>Probability</b>	Improbable (2)	Improbable (2)	Improbable (2)	Improbable (2)	Improbable (2)	Improbable (2)	Improbable (2)	Improbable (2)	Improbable (2)	Improbable (2)
<b>Significance</b>	<b>Low (12)</b>	<b>Low (8)</b>	<b>Low (16)</b>	<b>Low (12)</b>	<b>Low (16)</b>	<b>Low (12)</b>	<b>Low (22)</b>	<b>Low (18)</b>	<b>Low (24)</b>	<b>Low (20)</b>
<b>Status (positive or negative)</b>	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative
<b>Reversibility</b>	Yes									
<b>Irreplaceable loss of resources</b>	No									
<b>Can impacts be mitigated</b>	Yes									
<b>Mitigation measures:</b>										
<ul style="list-style-type: none"> <li>» Working hours should be kept within daylight hours, and/or as any deviation that is approved by the surrounding landowners and local authorities</li> <li>» The perimeter of the Cluster site should be appropriately secured to prevent any unauthorised access to the site; the fencing of the site should be maintained throughout the construction and operations periods</li> <li>» Appoint a security company and appropriate security procedures and measures must be implemented</li> <li>» Access in and out of the site should be strictly controlled by a security company</li> <li>» Workers or students residing in the Cluster should be provided with identity tags and prohibit the access of unauthorised people to the site</li> <li>» Cluster Management Company (CMC) must ensure that open fires on the site for heating, smoking or cooking are not allowed except in designated areas</li> </ul>										

- » CMC must provide adequate firefighting equipment on site and provide firefighting training to selected staff
- » A comprehensive employee induction programme must be held, covering land access protocols, fire management and road safety. This must be addressed in the EMPr as the best practice
- » All vehicles must be road worthy and drivers must be qualified and made aware of the potential road safety issues and follow the speed limits
- » The CMC should have personnel trained in first aid on site to deal with smaller incidents that require medical attention
- » A Community Liaison Officer should be appointed from the local community as a grievance channel. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the process

**Residual impacts**

None anticipated

During each phase the negative impact of safety and security risks will differ as follows:

- » Start-up / Establishment Phase - the considered is assessed to be local in extent, short in duration, of small intensity, and improbable with mitigation measures implemented. The impact is assessed to be of low significance.
- » Phase 1 - the impact is considered to be local in extent, short in duration, of minor intensity, and improbable with mitigation measures implemented. The impact is assessed to be of low significance.
- » Phase 2 - the impact is considered to be local in extent, short in duration, of minor intensity, and improbable with mitigation measures implemented. The impact is assessed to be of low significance.
- » Phase 3 - the impact is assessed to be local in extent, moderate in duration, of low intensity, and improbable with mitigation measures implemented. The impact is assessed to be of low significance.
- » Phase 4 - the impact is considered to be local in extent, long in duration, of low intensity, and improbable with mitigation measures implemented. The impact is assessed to be of low significance.

*Impacts associated with the student accommodation, residences on site and services*

As part of the project development plan, on-site accommodation will be offered to students enrolled in the Skills Development Centre in the Cluster, as well as students from the Assmang Technical College that is planned to be developed adjacent to the Metals Industrial Cluster (to the north) (the proposed Assmang Technical Training College has received Environmental Authorisation). All necessities, such as; sanitation, water, electricity, accommodation, catering etc. for these students residing in the student accommodation will be provided. The students will be living on site during Phase 1-4 of the Cluster. Phase 1 will offer students close accommodation to training and incubator facilities. Phase 2-4 will upgrade and / or expand on the accommodation facilities of the initial phase.

The Cluster will require bulk services such as water, sewage and waste water. The bulk services will increase over the planned phases. Electricity for the Cluster would need to be sourced either from Eskom or an off-grid solution. Information provided by the proponent indicates that an electricity supply agreement should be drawn up between Eskom and GSLM and the Cluster. Estimations of the water needs of the Cluster could vary significantly depending on the final Cluster design and business characteristics. A bulk water supply agreement should be drawn up between the relevant Water Services Authorities, the bulk Water Services Provider and the Cluster. A solid waste disposal, sewage and waste water treatment agreement should be drawn up between the relevant Local Municipality and the Cluster. Roads in the Cluster will connect buildings and other facilities as well as provide the entrance/exit within the Cluster. A roads network agreement should be drawn up between the GSLM and the Cluster.

<b>Construction and Operation Phase</b>										
<b>Nature:</b> Negative impacts associated with on-site student accommodation during the different phases of the development										
<b>Relevant listed activities:</b>										
GN R983 Activity: 28(i)										
GNR 984 Activity: 15										
	<b>START-UP / ESTABLISHMENT</b>		<b>PHASE 1</b>		<b>PHASE 2</b>		<b>PHASE 3</b>		<b>PHASE 4</b>	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
<b>Extent</b>	N/A	N/A	Local (1)	Local (1)	Local (1)	Local (1)	Local (1)	Local (1)	Local (1)	Local (1)
<b>Duration</b>	N/A	N/A	Short term (2)	Short term (2)	Short term (2)	Short term (2)	Moderate term (3)	Moderate term (3)	Long term (4)	Long term (4)
<b>Magnitude</b>	N/A	N/A	Low (4)	Minor (2)	Low (4)	Minor (2)	Low (4)	Minor (2)	Low (4)	Minor (2)
<b>Probability</b>	N/A	N/A	Improbable (2)	Improbable (2)	Improbable (2)	Improbable (2)	Improbable (2)	Improbable (2)	Improbable (2)	Improbable (2)
<b>Significance</b>	N/A	N/A	<b>Low (16)</b>	<b>Low (12)</b>	<b>Low (16)</b>	<b>Low (12)</b>	<b>Low (16)</b>	<b>Low (12)</b>	<b>Low (16)</b>	<b>Low (12)</b>
<b>Status (positive or negative)</b>	N/A	N/A	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative
<b>Reversibility</b>	Yes									
<b>Irreplaceable loss of resources</b>	No									
<b>Can impacts be mitigated</b>	Yes									
<b>Mitigation measures:</b>										
<ul style="list-style-type: none"> <li>» The perimeter of the Cluster site and student accommodation should be appropriately secured to prevent any unauthorised access to the site; the fencing of the site should be maintained throughout the phases</li> <li>» Access in and out of the staff accommodation area should be strictly controlled by a security company and access cards</li> <li>» Security Company to be appointed and appropriate security procedures to be implemented</li> <li>» A comprehensive employee induction programme that covers land access protocols, fire management and access controls. This must be addressed in the construction EMPr as the best practice</li> <li>» Rubble and other solid waste should be disposed of appropriately on a regular basis</li> <li>» Appropriate sanitation and waste facilities to be provided to eliminate possible pollution problems. These facilities should be cleaned and maintained on a regular</li> </ul>										



basis
» A comprehensive induction programme should address issues such as HIV/ AIDS and sexually transmitted diseases as well as alcohol and substance abuse. The induction should also address a code of conduct for students that would align with community values
» Appoint a Health and Safety Officer. Contact details of this person should be made available to the students and local community and procedures to lodge complaints set out.
» A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process. The EPC contractor should appoint a designated staff member to implement grievance procedures and address issues and complaints. A Public Complaints register must be maintained, by the Contractor and monitored by the ECO, to record all complaints and queries relating to the project and the action taken to resolve the issue
<b>Residual impacts</b>
None anticipated

During each phase the negative impacts associated with the student accommodation and residences on site will differ as follows:

- » Start-up / Establishment Phase: During this phase this impact will not be applicable as the Student Accommodation will only be available in Phase 1.
- » Phase 1 - the impact is considered to be local in extent, short in duration, of minor intensity, and improbable with mitigation measures implemented. The impact is assessed to be of low significance.
- » Phase 2 - the impact is considered to be local in extent, short in duration, of minor intensity, and improbable with mitigation measures implemented. The impact is assessed to be of low significance.
- » Phase 3 - the impact is considered to be local in extent, moderate in duration, of minor intensity, and improbable with mitigation measures implemented. The impact is assessed to be of low significance.
- » Phase 4 - the impact is considered to be local in extent, long in duration, of minor intensity, and improbable with mitigation measures implemented. The impact is assessed to be of low significance.

*Impact on the areas sense of place, landscape and tourism*

The sense of place is developed over time as the community embraces the surrounding environment, becomes familiar with its physical properties, and creates its own history. The sense of place is created through the interaction of various characteristics of the environment, including atmosphere, visual resources, aesthetics, climate, lifestyle, culture and heritage. Importantly though, it is a subjective matter and is dependent on community perceptions. 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 social impacts associated with the impact on sense of place relate to the change in the landscape character from the proposed Cluster.

It is envisaged that local community members residing adjacent to the proposed site and commuters travelling on the N14 will predominantly be impacted in terms of the areas' sense of place by the proposed Cluster. The area is characterised by urban development. The proposed Cluster would not create a significant impact on the area's sense of place due to the following prominent features surrounding the proposed site which include:

- » the Kuruman industrial area that is located west from the proposed site.
- » the Kuruman town and CBD is located north west from the site.

The site and the greater Kuruman area have been identified by the Northern Cape Provincial Development and Resource Management Plan/Provincial Spatial Development Framework (PSDF) of 2012 as an area of focus for the development of industrial areas (i.e. Spatial Plan Category (SPC) E - industrial area). As the area is earmarked for the development of industrial industries, as identified above, it can be expected that various industrial developments will take place. The closest industrial development located near the site proposed for the Cluster is the Kuruman Industrial park, located to the west of the site.

There are a few sensitive social receptors that will be visually impacted by the Cluster. The Kuruman Country Club located south of the site are supportive of the proposed development and do not foresee the Cluster impacting the areas sense of place negatively or in such a way that it will negatively impact the Country Club. The Kuruman Country Club foresee more positive impacts deriving from the Cluster than negative impacts for the local economy.

Another sensitive social receptor is the El Dorado Hotel located 250m north west from the site boundary. Issues that were raised from the Hotel include the negative impacts that the Cluster will have on the areas sense of place which will ultimately have a negative impact the Hotel business. However, the issues raised by the El Dorado were resolved on 16 August 2016 (refer to **Appendix C7**).

The area where the site is located is in close proximity to the town where there are mainly residential areas including some tourism areas (i.e. El Dorado Hotel and Kuruman Country Club) and therefore the Cluster will alter the dynamic of the immediate area.

<b>Construction and Operation Phase</b>										
<b>Nature:</b> Impacts on the areas sense of place, landscape and tourism from the proposed Cluster										
<b>Relevant listed activities:</b>										
GN R983 Activity: 28(i)										
GNR 984 Activity: 15										
	<b>START-UP / ESTABLISHMENT</b>		<b>PHASE 1</b>		<b>PHASE 2</b>		<b>PHASE 3</b>		<b>PHASE 4</b>	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
<b>Extent</b>	Local (2)	N/A	Local (2)	N/A	Local (2)	N/A	Local (2)	N/A	Local (2)	N/A
<b>Duration</b>	Short term (2)	N/A	Short term (2)	N/A	Short term (2)	N/A	Moderate term (3)	N/A	Moderate term (3)	N/A
<b>Magnitude</b>	Minor (2)	N/A	Low (4)	N/A	Low (4)	N/A	Moderate (6)	N/A	Moderate (6)	N/A
<b>Probability</b>	Probable (3)	N/A	Probable (3)	N/A	Probable (3)	N/A	Probable (3)	N/A	Probable (3)	N/A
<b>Significance</b>	<b>Low (18)</b>	N/A	<b>Low (24)</b>	N/A	<b>Low (24)</b>	N/A	<b>Medium (33)</b>	N/A	<b>Medium (33)</b>	N/A
<b>Status (positive or negative)</b>	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative
<b>Reversibility</b>	Yes									
<b>Irreplaceable loss of resources</b>	No									
<b>Can impacts be mitigated</b>	Not applicable									
<b>Mitigation</b>	None anticipated.									
<b>Residual impacts</b>	None anticipated if the Cluster facility will be removed after decommissioning, provided the site is rehabilitated to its original (current) status									

During each phase the negative impacts associated with the areas sense of place are as follows:

- » Start-up / Establishment Phase: the impact is considered to be local in extent, short in duration, of minor intensity, and probable. The impact is assessed to be of low significance.

- » Phase 1: the impact is considered to be local in extent, short in duration, of low intensity, and probable. The impact is assessed to be of low significance.
- » Phase 2: the impact is considered to be local in extent, short in duration, of low intensity, and improbable. The impact is assessed to be of low significance.
- » Phase 3: the impact is considered to be local in extent, moderate in duration, of moderate intensity, and probable. The impact is assessed to be of low significance.
- » Phase 4: the impact is considered to be local in extent, long in duration, of moderate intensity, and probable. The impact is assessed to be of low significance.

Social impacts associated with decommissioning

Typically, the major social impacts associated with the decommissioning phase are linked to the loss of jobs and associated income. This has implications for the households who are directly affected, the communities within which they live, and the relevant local authorities. However, in the case of the proposed Cluster the decommissioning phase is likely to involve the disassembly and replacement of the existing components with more modern technology / upgrades. This is likely to take place 40 years post commissioning. The decommissioning phase is therefore likely to create additional, construction type jobs, as opposed to the job losses typically associated with decommissioning however for a limited period of time. In addition, potential impacts associated with the decommissioning phase can be effectively managed with the implementation of a retrenchment and downscaling programme.

<b>Nature:</b> Social impacts associated with retrenchment including loss of jobs and source of income		
<b>Relevant listed activities:</b> GN R983 Activity: 28(i) GNR 984 Activity: 15		
	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Extent</b>	Local (2)	Local (2)
<b>Duration</b>	Short term (1)	Short Term (1)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Probability</b>	Highly Probable (4)	Highly Probable (4)
<b>Significance</b>	<b>Medium (36)</b>	<b>Low (28)</b>
<b>Status</b>	Negative	Negative
<b>Reversibility</b>	No	
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impact be mitigated?</b>	Yes	
<b>Mitigation</b> » Implementation of a retrenchment and downscaling programme » All structures and infrastructure associated with the proposed Cluster should be dismantled, removed and transported off-site on decommissioning, and the landscape rehabilitated/ re-vegetated.		
<b>Residual impacts</b> Loss of jobs and associated loss of income, can impact on local economy and other businesses.		

**6.4.4 Implications for Project Implementation**

With the implementation of mitigation measures and enhancement measures by the developer, contractors, and operational staff, the severity of negative impacts can be mitigated and can be reduced to low, or avoided, and the benefits of the development

enhanced. The Metals Industrial Cluster can be developed and impacts on the social environment managed by taking the following into consideration:

- » A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process.
- » A Community Liaison Officer should be appointed from the local community as a grievance channel. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the process.
- » Arrangement of appropriate services to be provided to the Cluster by the Ga-Segonyana Local Municipality.
- » Upgrade and improvements to the access road of the project site (i.e. unnamed secondary surfaced road)
- » Upgrade to the relevant intersections located within the town of Kuruman and the intersection to the project site.

#### **6.5 Assessment of the Do Nothing Alternative**

The 'Do-Nothing' alternative is the option of not constructing the proposed Metals Industrial Cluster. Should this alternative be selected, there would be no environmental impacts on the site due to the construction and operation activities of an industrial cluster.

##### **a) Land use and agriculture**

The current land-use is restricted to uncontrolled grazing of livestock. Should the current land use activities continue, grazing of livestock would continue as the land use practise indefinitely. The potential to utilise the site more effectively, efficiently and economically will therefore not be realised. As the project site is located within the urban edge of Kuruman, the change in the land use for the property is not considered significant due to the fact that the property would have been developed in the future for an urban or industrial use. The development footprint of 47ha will include the entire property and as such the uncontrolled grazing activities will not be able to proceed. However, there are sufficient open spaces in the areas surrounding the project site which is considered sufficient for the informal grazing activities to continue.

##### **b) Socio-economic impact**

**Social:** The impacts of pursuing the No-go Alternative are both positive and negative as follows:

- » The benefits would be that there is no disruption from an influx of jobseekers and in-migrants into the Kuruman area, nuisance impacts (noise and dust during

construction), and safety and security impacts. The negative impact is therefore neutral.

- » There would be a lost opportunity in terms of job creation, skills development and associated economic business opportunities and growth for the local economy, as well as a loss of the opportunity to enhance the industrial sector of Kuruman. This impact on the social environment is considered significant, considering the current rate of unemployment in the Local and District Municipalities.

Foregoing the proposed development would not necessarily compromise the development of the industrial sector in South Africa. However, the socio-economic benefits for local communities would be forfeited.

**New Business:** New business sales and opportunities that will be stimulated as a result of the establishment of the Cluster will be lost. Some of the positive spin off effects that are to ensue from the project expenditure will be localised in the communities located near the site, such as the town of Kuruman and Wrenchville. The local services sector and specifically the trade, transportation, catering and accommodation, renting services, personal services and business services are expected to benefit the most because of project activities during the construction phase and the operation phase.

**Employment:** The Ga-Segonyana Local Municipality's employment rate stands at 33.7%. The development of the Metals Industrial Cluster within the Ga-Segonyana Local Municipality will aid in a reduction of the unemployment rate, however if the Cluster is not developed then the unemployment rate will stay fixed at 33.7% or could possibly be increased.

**Skills development:** The establishment of the Metals Industrial Cluster will offer numerous opportunities for skills transfer and development. This is relevant for both the construction and operation phases. A transfer of skills in the industrial sector will provide the opportunity for additional industrial development within the Kuruman area due to the availability of people with skills to undertake employment.

**Municipal goals:** The development and growth goals of the John Taolo Gaetsewe District Municipality (in terms of industrial development and economic growth) will not be met to the extent possible should the Metals Industrial Cluster not be constructed or operated.

The no-go alternative will therefore result in the above economic benefits **not being realised** and a subsequent loss of income and opportunities to local people. From this perspective the no-go alternative is not preferred.

### **c) Lost opportunity within the Industrial Sector and Corridors**



Northern Cape Provincial Spatial Development Framework (PSDF) identified specific corridors within the Province that are considered as suitable and appropriate for the development of certain industries, specifically referring to that of the mining and industrial sector. The proposed project site is located within the Spatial Plan Category (SPC) E of the SPDF and is classified as an industrial area.

If the Metals Industrial Cluster is not developed the Spatial Plan Category (SPC) E of the SPDF and the opportunity for growth within the corridor will not be realised as well as the economic opportunities within the corridor. The development will also provide an incentive for more industrial developments to be located within the corridor.

## ASSESSMENT OF CUMULATIVE IMPACTS

## CHAPTER 7

The Metals Industrial Cluster may have effects (positive and negative) on natural resources, the social environment and on the people living in the broader study area (i.e. the town of Kuruman and the surrounding communities).

The project site proposed for the establishment of the Metals Industrial Cluster is located within a specific corridor within the Northern Cape Province which is considered as highly suitable and appropriate for the development of certain industries, specifically relating to the mining and industrial sector. The corridors have been identified by the Northern Cape Provincial Spatial Development Framework (PSDF) and the project site is identified as being located within the Spatial Plan Category (SPC) E which is classified as an industrial area. It can therefore be considered that industrial development will intensify and become more within the corridor as well as the town of Kuruman. A concentration of industrial development within an area will ultimately concentrate the impacts (both positive and negative) in one area where the development of the industrial sector is deemed suitable as well as beneficial for the surrounding communities.

The project site is also located within the urban edge of the town of Kuruman. As development within the urban edge is on-going, cumulative impacts should also be considered as part of the overall development within the town.

It is important to follow a precautionary approach in accordance with NEMA to ensure that the potential for cumulative impacts<sup>7</sup> are considered. This chapter provides an assessment of the cumulative impacts expected to be associated with the proposed Cluster when considered in the proposed project site and the broader study area (i.e. the town of Kuruman).

### 7.1 Legal Requirements as per the EIA Regulations for the undertaking of an Environmental Impact Assessment Report, 2014

This chapter of the final EIA report includes the following information required in terms of Appendix 3: Content of Environmental Impact Assessment Reports:

Requirement	Relevant Section
3(j) an assessment of each identified potentially significant impact and risk , including (i) cumulative impacts, (ii) the nature, extent, and consequences	This chapter focuses on the assessment of the cumulative impacts associated with the Metals Industrial Cluster as a whole. It

<sup>7</sup> Cumulative impacts in relation to an activity are defined in the Environmental Impact Assessment Regulations (GN R953) as meaning “the impact of an activity that in itself may not be significant, but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area”.

of the impact and risk, (iii) the extent and duration of the impact and risk, (iv) the probability of the impact and risk occurring, (v) the degree to which the impact and risk can be reversed, (vi) the degree to which the impact and risk may cause irreplaceable loss of resources and (vii) the degree to which the impact and risk can be mitigated.

should be noted that Chapter 6 also considers cumulative impacts within the impact tables.

## 7.2 Approach Taken to Assess Potential Cumulative Impacts

A cumulative impact, in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities.

The cumulative impacts that have the potential to be compounded through the establishment of Metals Industrial Cluster are listed below. The role of the cumulative assessment is to test if such impacts are relevant to the establishment of the Cluster in the proposed location/project site (that is, within the Portion 6253 of Erf 1 situated approximately 2km south east of the town of Kuruman in the Northern Cape Province) when considered together with other developments:

- » Positive contribution from a socio-economic perspective
- » Unacceptable loss of threatened or protected vegetation types or species through clearing, resulting in an impact on the conservation status of such flora or ecological functioning;
- » Unacceptable risk to fauna through loss of habitat;
- » Complete or whole-scale change in the sense of place and character of an area;
- » Unacceptable loss of heritage resources; and
- » Compounded negative impacts on the social environment.

The scale at which the cumulative impacts are assessed is important. For example, the significance of the cumulative impact on the regional or national economy will be influenced by industrial development throughout South Africa, while the significance of the cumulative impact on the town of Kuruman may only be influenced by industrial developments and other development contributing to the economy of the town that are in close proximity to each other.

The potential for cumulative impacts are summarised in the sections which follow and have been considered within the detailed specialist studies, where applicable (refer to **Appendices D – H**).

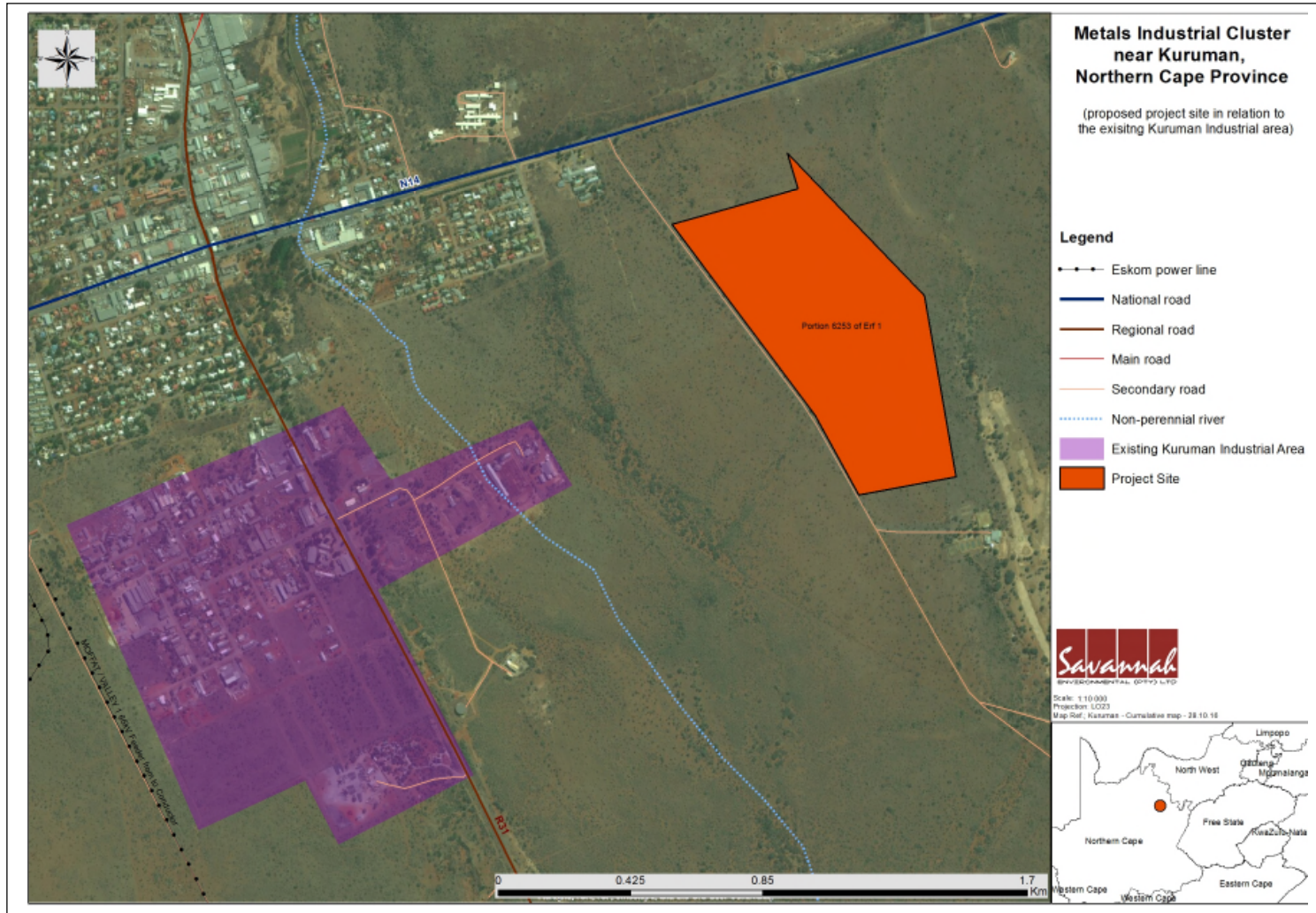
The cumulative effects or impacts consider:

- » Cumulative impacts associated with the location and nature of the development considering the existing Kuruman industrial area located approximately 2km west of Portion 6253 of Erf 1 (refer to **Figure 7.1**).
- » Cumulative impacts associated with other existing or proposed developments within the urban edge or the area surrounding the proposed project site (refer to **Figure 7.2**).

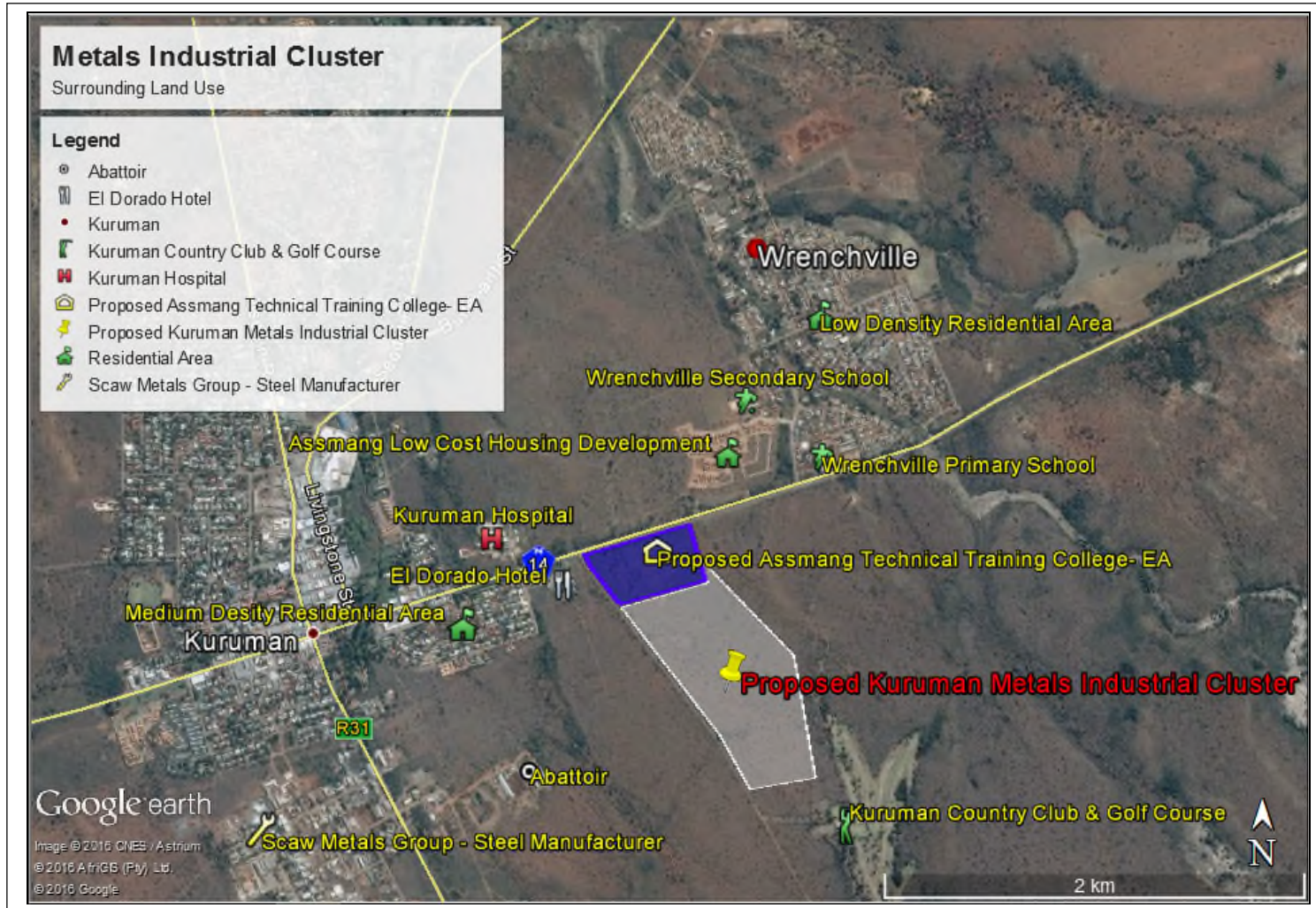
The cumulative impacts of other known developments in the broader area and the Metals Industrial cluster are therefore qualitatively assessed in this Chapter. As these cumulative impacts are explored in more detail, the trade-offs between promoting growth within the industrial sector versus the local and regional environmental and social impacts and benefits can be considered.

The potential for cumulative impacts that could occur due to the development of the Cluster in proximity to other existing and proposed developments include impacts such as:

- » Socio-economic impacts
- » Loss of vegetation and impacts on ecology, including fauna and avifauna or sensitive ecosystems
- » Impacts on heritage resources which includes archaeological and palaeontological resources



**Figure 7.1:** The location of the existing Kuruman Industrial Area in relation to the project site proposed for the development of the Metals Industrial Cluster



**Figure 7.2:** Other relevant approved or existing and proposed developments within the surrounding area of the Metals Industrial Cluster project site

### 7.3 Cumulative Impacts Associated with the Development of the Metals Industrial Cluster

In the sections below the potential cumulative impacts of the Metals Industrial Cluster and other present and future developments are explored.

#### 7.3.1 Socio-Economic Impacts

Possible cumulative impacts as a result of other similar projects and associated infrastructure in the area could have cumulative negative and positive impacts for the local community. From a cumulative perspective there are no unacceptable risks or loss associated with the development of the Metals Industrial Cluster in the proposed location. This is supported by the fact that the site is situated within the urban edge of the town of Kuruman and can therefore be considered as a site which would have been developed for some type of industry or entity. It is also considered unlikely that the site would have been used for commercial or intensive agricultural purposes as it is located within the urban edge. The Northern Cape Spatial Development Framework (PSDF) also includes and supports the undertaking of the Cluster within the proposed site and, as such, considers that a development of this nature would not lead to unacceptable loss or risk.

#### Cumulative impacts from employment, skills and business opportunities

The proposed Cluster has the potential to result in significant positive cumulative impacts, specifically with the creation of a number of socio-economic opportunities for the local municipality, which in turn, will result in a positive social benefit to district and provincial levels. The positive cumulative impacts include creation of employment, skills development and training opportunities, and downstream business opportunities. Benefits to the local, regional and national economy through employment and procurement of services could be substantial should the Cluster proceed. This benefit will increase significantly should critical mass be reached that allows local companies to develop the necessary skills to support construction and maintenance activities and that allows for components of the Cluster to be manufactured in the local area. Furthermore, at municipal level, the cumulative impact could be positive and could incentivise operation and maintenance companies to centralise and expand their activities. Cumulative impacts on local entrepreneurs will be positive and assist in business development.

<b>Nature:</b> An increase in employment opportunities, skills development and business opportunities with the establishment of the Cluster		
	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Local- Regional (3)	Local- Regional (3)

<b>Duration</b>	Long term (4)	Long-term (4)
<b>Magnitude</b>	Low (4)	Moderate (6)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Low (27)</b>	<b>Medium (33)</b>	<b>Medium (39)</b>
<b>Status</b>	Positive	Positive
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	N/A	N/A
<b>Can impacts be enhanced?</b>	Yes	Yes
<b>Confidence in findings</b>	High	High
<b>Mitigation:</b> The establishment of the Cluster has the potential to have a positive cumulative impact on the area in the form of skills development as well as business and employment opportunities. The positive benefits will be enhanced if local employment policies are adopted and local services providers are utilised by the Cluster to maximise the project opportunities available to the local community.		

Cumulative impacts with large scale in-migration of people

The development of large-scale industrial projects will likely draw a large number of labour, businesses and jobseekers to the area. If the labour force cannot be sourced locally or the local labour pool is inadequate for the development, outside labour will likely move to the area to fill the gap. The area may experience an influx of new residents who may move to the area in search of job and business opportunities; which will have effects on the existing population during the construction period that could entail problems of housing, sanitation, water usage and solid waste disposal. The impact of this on services and resources is likely to impact the current communities and increase the pressure on the local municipality to meet the basic needs of these potential new communities. The poor communities are likely to be the most vulnerable to loss of service provision and suffer the negative impact of large scale in-migration. There is potential for the influx of migrants to significantly change the local receiving environment and this is likely to have a permanent impact in the region. It is very difficult to control an influx of people into an area (particularly jobseekers), especially in a country where unemployment rates are high.

<b>Nature:</b> Negative impacts and change to the local economy with an in-migration of labourers, businesses and jobseekers to the area		
	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Local (3)	Local (3)



<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Minor (2)	Low (4)
<b>Probability</b>	Improbable (2)	Probable (3)
<b>Low (27)</b>	<b>Low (18)</b>	<b>Medium (33)</b>
<b>Status</b>	Negative	Negative
<b>Reversibility</b>	Yes	Yes
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes	Yes
<b>Confidence in findings</b>	High	High
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>» Develop a recruitment policy/process (to be implemented by contractors), which will source labour locally, where feasible</li> <li>» Working together with government agencies to ensure service provision is in line with the development needs of the local community</li> <li>» Forming joint ventures with community organisations, through Trusts, which can provide local communities with benefits, such as employment opportunities and services.</li> </ul>		

### 7.3.2 Ecological Processes

The entire project site is underlain with the Kuruman Thronveld vegetation type which is classified as a Least Threatened Ecosystem. The vegetation type is also located within the surrounding area of the project site and only 2% of this vegetation has been transformed. Within the project site sensitive protected species occur, which will have to be removed or relocated, including *Acacia erioloba* and *Aloe heroensis*. With the development of the Metals Industrial Cluster 47ha of the Kuruman Thornveld will be removed and will no longer form part of the ecosystem, however due to the Least Threatened status of the ecosystem and the remaining intact extent, the removal will not significantly impact on the vegetation type as a whole. Therefore, from a project-specific perspective the removal of the vegetation will not result in unacceptable risk or loss or whole-scale change of the vegetation type and is not considered to be an impact of concern. This is also true for other developments within the Kuruman area located within the Kuruman Thornveld vegetation.

Protected species within the project site, surrounding areas and the urban edge will be affected by the development of the Metals Industrial Cluster and current and future developments, however subject to the strict implementation of the EMPr and mitigation measures for each development regarding protected species the cumulative impact can be considered as low.

Rocky outcrops are located throughout the project site and is considered as being of a medium ecological sensitivity. This ecological feature is not considered as sensitive and the loss thereof can be considered as acceptable due to its distribution throughout the area.

The cumulative impact on ecological resources is therefore considered of low significance and acceptable without any detrimental impacts to ecological functioning or unacceptable loss.

The cumulative loss of habitat resulting from the current and as well as the other developments in the area are not likely to impact the country's ability to meet conservation targets and objectives as the affected vegetation type has been little impacted by transformation to date and is not considered to be sensitive. Cumulative ecological impacts include:

- » Excessive clearing of slow growing trees, especially *Acacia erioloba*, could significantly impact local and regional population dynamics, as well as microhabitats and resources associated with these species available to other fauna and flora species.
- » Excessive clearing of vegetation and landscaping will influence runoff and stormwater flow patterns and dynamics, which could cause accelerated erosion.

Cumulative ecological impacts associated with the development of the Metals Industrial Cluster in relation to current and future developments is considered acceptable in terms of loss and risk, without an unacceptable increase in impact.

**Nature:** Reduced ability to meet conservation targets of the Northern Cape Province. The loss of unprotected vegetation types on a cumulative basis from the broad area may impact the countries' ability to meet its conservation targets. The area is not included within a National Protected Areas Expansion Strategy focus area, and falls outside any threatened and or endangered ecosystem type / vegetation type. Although the vegetation type in the project site is classified as Least Threatened, it is poorly protected and certain habitats or communities may be subsequently affected.

	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Local (1)	Local (3)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Small (0)	Low (4)
<b>Probability</b>	Very Improbable (1)	Probable (3)
<b>Significance</b>	<b>Low (5)</b>	<b>Low (33)</b>
<b>Status</b>	Negative	Negative
<b>Reversibility</b>	Partially reversible	Low Reversibility

<b>Irreplaceable loss of resources?</b>	Not Likely	Probable
<b>Confidence in finding</b>	High	
<b>Mitigation:</b> <ul style="list-style-type: none"> <li>» Implementation of the required mitigation measures for all developments within the area.</li> <li>» Preconstruction walk-through to ensure that sensitive habitats are avoided.</li> <li>» Minimise the development footprint as far as possible.</li> </ul>		

### **7.3.3 Heritage Resources**

In general, cumulative impacts on heritage resources (including archaeology and palaeontology) are relatively insignificant in this area because, aside from the landscape itself, heritage resources are sparsely distributed or when present weathered.

From an archaeological perspective the impact of the development on the heritage landscape and sites is considered as being of a low significance. No archaeological sites or significant cultural landscapes or viewsapes were identified to be associated with the development of the Metals Industrial Cluster. Due to the lack of significant heritage features in the project site and broader area the development of the Cluster does not present a risk to unacceptable loss of heritage resources. Therefore, the contribution of the proposed cluster to the cumulative impact is expected to be limited. However, it must be considered that as developments take place within the area the impact on the heritage landscape and site of low heritage significance is increased as the sites are destroyed by the associated construction activities. It still remains important for development within the area to observe mitigation measures and to protect any sensitive heritage features where possible. Through the implementation of appropriate mitigation measures for the Metals Industrial Cluster and other developments the cumulative impacts on archaeological resources within the area can be considered as acceptable, without any unacceptable loss or risks.

From a palaeontological perspective the cumulative impacts are considered to be medium, due to the presence of stromatolites within the area. However, no unacceptable loss or risks is considered to occur with the development of the Metals Industrial Cluster. Mitigation measures, including excavation of the fossil heritage (stromatolite) needs to be implemented for preservation of the heritage resources.

Cumulative heritage impacts associated with the development of the Metals Industrial Cluster and other developments is considered acceptable in terms of loss and risk, without an unacceptable increase in impact. However, care and proper mitigation will have to be taken with the development of future projects to ensure that there will be no unacceptable increase in the impact.

<b>Nature:</b> Heritage cumulative impacts associated with the development on the archaeology of the area		
	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Local (2)	Local (2)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Magnitude</b>	Low (4)	Low (4)
<b>Probability</b>	Not probable (2)	Not probable (2)
<b>Significance</b>	<b>Low (22)</b>	<b>Low (22)</b>
<b>Status</b>	Negative	Negative
<b>Reversibility</b>	Not reversible	Not reversible
<b>Irreplaceable loss of resources?</b>	Yes	Yes (unless sites can be preserved)
<b>Can impacts be mitigated?</b>	Yes	Yes, through preservation or excavation of sites.
<b>Mitigation:</b> Implementation of Chance Find Procedures.		

<b>Nature:</b> Cumulative impacts on fossil remains preserved at or beneath the ground surface		
	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Long-term (4)	Long-term (5)
<b>Magnitude</b>	Minor (2)	Low (4)
<b>Probability</b>	Improbable (2)	Probable (3)
<b>Significance</b>	<b>Low (14)</b>	<b>Medium (30)</b>
<b>Status</b>	Positive	Positive
<b>Reversibility</b>	Irreversible	Irreversible
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes	Unknown
<b>Confidence in findings</b>	High	High

**Mitigation:**

Stromatolites concentrations were identified on the north eastern and central portion of the proposed development site. Most of the stromatolites are found in situ although several specimens were found loose. Exposed stromatolites are badly weathered, but specimens still covered could be better preserved. The likelihood of significant fossil heritage is considered to be medium within the Kuruman area, therefore the cumulative impacts would be medium with the establishment of various developments.

**7.4 Conclusion regarding Cumulative Impacts**

Cumulative impacts and benefits on various environmental and social receptors will occur to varying degrees with the development of the industrial sector and other development within South Africa. The degree of significance of these cumulative impacts is difficult to predict without detailed studies based on more comprehensive data/information on each of the receptors and the site specific developments. The current study assesses the cumulative impacts associated with the Metals Industrial Cluster together with other development within the area on the basis of current and best available information, with precautionary assumptions taken into account.

The development of the Metals Industrial Cluster is undoubtedly positive from an economical perspective and is considered as acceptable and without any unacceptable loss or risk to the environmental and social aspects of the project site and the broader area.

As the greater Kuruman area is located within a corridor identified for the development of the industrial and mining sector, as per the PSDF, it can be expected that various developments within these sector will be taking place in future as the area was identified as being suitable for these types of developments.

Considering the findings of the specialist assessments undertaken for the Cluster, the cumulative impacts for the proposed Metals Industrial Cluster will be acceptable, without any unacceptable loss or risks and the majority are rated as being of **moderate-low** significance with mitigation.

**Table 7.1** provides a summary of the expected cumulative impacts associated with the proposed Cluster on the identified project site.

**Table 7.1:** Summary of the cumulative impact significance for the Metals Industrial Cluster

<b>Specialist assessment</b>	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
Socio-Economic	Low - Medium	Medium
Ecology	Low	Low
Archaeology	Low	Low
Palaeontology	Low	Medium

The role of the cumulative assessment is to test if such impacts are relevant to the Metals Industrial Cluster in the proposed project site. In regards to the above cumulative assessments undertaken for ecology, archaeology, palaeontology and social it can be concluded that the development of the Metals Industrial cluster and other proposed developments in the region are acceptable and will not result in an unacceptable loss or risk or an increase of the impacts. The following can be concluded considering the Cluster:

- » The development will not significantly increase the negative impact on the social environment. However, an increase in positive impacts, specifically as a result of job creation and socio-economic benefits, can be expected.
- » The construction of the Cluster will not result in the unacceptable loss of threatened or protected habitats or species. The proposed development is acceptable from an ecological perspective.

Based on a detailed evaluation, the cumulative impacts associated with the construction and operation of the Metals Industrial Cluster and other proposed developments in the region are considered to be acceptable. The low potential for cumulative impacts and risks makes the location of this project within the identified project site a desirable location provided that environmental impacts are mitigated to suitable standards by strict control and implementation of the EMPr for each development, as recommended within this final EIA Report.

**CONCLUSIONS AND RECOMMENDATIONS**

**CHAPTER 8**

The Northern Cape Department of Economic Development and Tourism propose the establishment of a Metals Industrial Cluster on Portion 6253 of Erf 1 located ~2km south east of the town of Kuruman and ~1km south west of Wrenchville. The conclusions and recommendations of this EIA are the result of the assessment of identified impacts by specialists, and the parallel process of public participation. The public consultation process has been extensive and every effort has been made to include representatives of all stakeholders in the broader study area. A summary of the recommendations and conclusions for the Cluster is provided in this Chapter.

**8.1 Legal Requirements as per the EIA Regulations for the undertaking of an Environmental Impact Assessment Report, 2014**

This chapter of the final EIA report includes the following information required in terms of Appendix 3: Content of Environmental Impact Assessment Reports:

<b>Requirement</b>	<b>Relevant Section</b>
3(c) a plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken	The basic layout for the development of the Metals Industrial Cluster is included as Figure 8.3.
3(k) where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report.	A summary of the findings of the specialist reports are included within section 8.4. The recommendations made by the specialists are included in chapter 6 and Appendix I. A summary of the recommendations for the Metals Industrial Cluster is included in section 8.8.
13(l) an environmental impact statement which contains (i) a summary of the key findings of the environmental impact assessment, (ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives.	An environmental impact statement (overall conclusion) is included in section 8.7. A summary of the key findings of the environmental impact assessment is included in sections 8.4.1 – 8.4.4. A map the environmental sensitivities of the project site is included as Figure 8.2. A summary of the costs (negative) and benefits (positive) impacts and risks of the proposed Metals Industrial Cluster is included in section 8.6.
3(n) the final proposed alternatives which respond to the impact management measures, avoidance	The selection of the preferred project site is included within section 8.7.

and mitigation measures identified through the assessment.	
3(o) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation.	Conditions to be included in the authorisation of the Metals Industrial Cluster are included in section 8.8.
3(q) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation.	A reasoned opinion as to whether the Metals Industrial Cluster should receive authorisation and the conditions that should form part of the authorisation is included in section 8.8.

## 8.2 Assessment process

An EIA process, as defined in the NEMA EIA Regulations, is a systematic process of identifying, assessing, and reporting environmental impacts associated with an activity. The EIA process forms part of the planning of a project and informs the final design of a development. In terms of the EIA Regulations published in terms of Section 24(5) of the National Environmental Management Act (NEMA, Act No. 107 of 1998), the Northern Cape Department of Economic Development and Tourism requires authorisation from the Northern Cape Department of Environment and Nature Conservation (DENC) for the establishment of the Metals Industrial Cluster proposed to be located approximately 2km south east of the town of Kuruman in the Northern Cape Province. In terms of sections 24 and 24D of NEMA, as read with the EIA Regulations of R982, R983, R984 and R985, a Scoping and an EIA Phase have been undertaken for the proposed Cluster. As part of this EIA process comprehensive, independent environmental studies have been undertaken in accordance with the EIA Regulations. The following key phases have been undertaken in the EIA Process.

- » *Notification Phase* - organs of state, stakeholders, and interested and affected parties (I&APs) were notified of the proposed Metals Industrial Cluster using adverts, site notices, and stakeholder letters. Details of registered parties have been included within an I&AP database of the project.
- » *Scoping Phase* – identification of potential issues, from a desktop level, associated with the proposed Metals Industrial Cluster and environmental sensitivities within the project site (Portion 6253 of Erf 1), as well as the extent of studies required within the EIA Phase were defined.
- » *EIA Phase* – potentially significant biophysical and social impacts<sup>8</sup> have been comprehensively assessed through independent specialist investigations. Appropriate mitigation measures have been recommended as part of an Environmental Management Programme (EMPr) (refer to **Appendix I**).

<sup>8</sup> Direct, indirect, cumulative that may be either positive or negative.



The conclusions and recommendations of this EIA are the result of the assessment of identified impacts by specialists, and the parallel process of public participation. The public consultation process has been extensive and every effort has been made to include representatives of all stakeholders in the broader study area. A summary of the recommendations and conclusions for the Cluster is provided in this Chapter.

### **8.3 Summary of key considerations for the Metals Industrial Cluster**

The Metals Industrial Cluster is planned as a semi-industrial and industrial park that will include a variety of businesses and enterprises relating predominantly to the industrial sector (but also including entities from other supporting sectors such as IT and retail), with varying functions and nature of production (i.e. ranging from light to heavy industry<sup>9</sup>). The proposed project site<sup>10</sup> falls under the jurisdiction of the Ga-Segonyana Local Municipality and within the greater John Taolo Gaetsewe District Municipality in the Northern Cape Province. The full extent of the project site (~47 ha in extent) is planned to be developed and utilised for the Metals Industrial Cluster.

The proposed project plan includes the development of the cluster in multiple phases spaced over a 20-year time horizon after the initial establishment / set up. The time scale (4 Phases) will be as follows:

- i) Phase 1 which is considered to be developed in the short term (Year 0 to 2);
- ii) Phase 2 which is considered to be developed in the medium term (Year 3 to 6);
- iii) Phase 3 which is considered to be developed in the long term (Year 7 to 20); and
- iv) Phase 4 which is intended to cater to the expansion of the Cluster beyond the 20-year timeframe planned for Phases 1 to 3.

The Cluster will consist predominantly of Small, Medium and Micro-sized Enterprises (SMME) and Small and Medium Enterprises (SME) companies with an increasing number of larger firms over time. These enterprises could possibly be of a light, medium or heavy industrial nature.

The Cluster will be driven by a Cluster Management Company (CMC). Incentives will be offered to Cluster Member Firms (CMFs) and will include shared infrastructure, facilities and services, as well as access to funding. Shared infrastructure will include a common boundary fence, a security checkpoint, and utility connection points and roads infrastructure within the Cluster.

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<sup>9</sup> According to the Ga-Segonyana Local Municipality's scheme, light to medium industries are defined as developments and enterprises where no on-site manufacturing of goods, material or equipment takes place, for example bulk retailers. Medium industries are defined as businesses that usually include minor labour works, like repair works and mechanics, but does not include manufacturing. Heavy industries are defined as entities or businesses that require intensive capital investment in weighty machinery and plant, and are considered to be less labour intensive. Heavy industries usually involve automobile, mining, petroleum, and steel industries.

<sup>10</sup> The project site is defined as Portion 6253 of Erf 1.

The Cluster will include basic infrastructure that will be required for the operation of the development. The basic infrastructure to be constructed includes:

- » Buildings (warehousing, administrative buildings, skills development centre, student accommodation etc.);
- » Access roads including main access to the Cluster and internal access roads;
- » Landscaping;
- » Parking;
- » Fencing;
- » Infrastructure relating to bulk services including electricity, water, sewage and waste water; and
- » Security.

The basic infrastructure will form part of the Phase 1 development, within which the shell of the Cluster will be constructed to make provision for the development of the subsequent project phases, and enable the development within the Cluster with the necessary essential infrastructure to do so (i.e. access roads, services etc.).

Phase specific infrastructure will also be constructed within Phases 2-4, however the specific infrastructure required for these phases are not defined as yet, due to specific tenants not being able to be defined at this stage of the planned development. It can, however, be confirmed that these phases will expand on Phase 1 which includes an increase in the CMFs located within the Cluster that will lead to a higher demand for existing or additional infrastructure or facilities. The shared infrastructure will be upgraded or expanded in order to ensure to the functioning of the expanded Cluster into the subsequent phases. The following provides a summary of the planned phases of the development:

<b>Phase</b>	<b>Timeframe</b>	<b>Detail</b>	<b>Potential job opportunities</b>
Cluster start-up/ establishment	approximately 12- 18 months	Incentives to be offered to Cluster Member Firms (CMFs) that will be implemented include shared infrastructure, facilities, and services, as well as access to funding. Shared infrastructure will include a common boundary fence, security checkpoint, utility connection points, and road infrastructure within the Cluster. CMFs will have access to shared manufacturing and warehousing facilities (e.g. machining and design facilities, shared warehouse) as well as to supporting facilities (e.g. on-site canteen, banking agencies,	~500

		recreational centre). CMFs will also have access to shared services (including wireless network, marketing and linkages).	
Phase 1	short term – 0 to 2 years	10 metal businesses in the Cluster - approximately 4 micro, 3 small, 2 medium and 1 large business	~1032
Phase 2	medium term- 3 to 6 years	45 metal businesses in the Cluster - approximately 20 micro, 18 small, 5 medium and 2 large businesses	~2200
Phase 3	long term – 7 to 20 years	105 metal businesses in the Cluster - approximately 47 micro, 41 small, 12 medium and 5 large businesses	~5306
Phase 4 -	planned to cater for expansion beyond the 20-year timeframe planned for the 3 phases, with the option to extend for another 40 years	Type of entities that will be locating within the Cluster during this phase unknown at this time	Unknown at this stage

Any entity or company (CMF) planning to be located within the Metals Industrial Cluster will be required to make provision for the specific infrastructure that would be required for the operation of that specific entity, and the undertaking of its own permits and authorisations in terms of the legal requirements.

The overarching objective of the Metals Industrial Cluster is to diversify economic activities and encourage development in the Northern Cape Province while maximising metals-related production through the development of a cluster with competitive but complimentary industries.

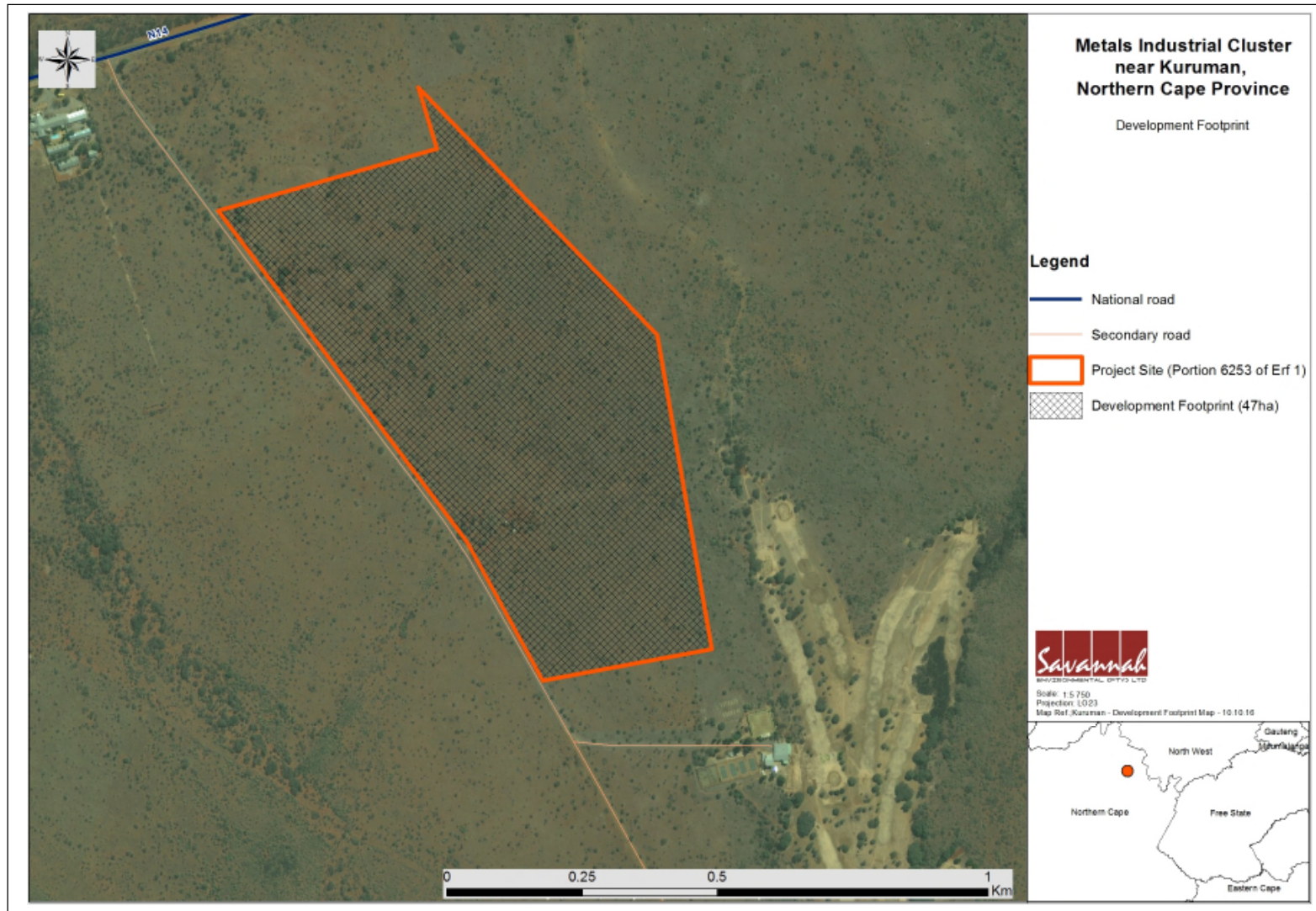
**Need and desirability:** The Northern Cape Province has historically experienced a high volume of mining activity without the corresponding rise in manufacturing and the associated long-term economic and social benefits. The location of the proposed Metals Industrial Cluster falls within the Ga-Segonyana Local Municipality which experiences significant social issues such as unemployment (rate of 33.7%) and poverty. In order to address these social concerns economic development and growth would be required in order to create employment and business opportunities beyond the economically viable life of the mines and agricultural sectors within the Province. The development of a Cluster within the Kuruman area will also provide the opportunity to introduce and intensify a larger industrial sector in the area which will aid in the economic advancement of the area. The Northern Cape Provincial Spatial Development Framework (PSDF) also identifies specific corridors within the Province that are considered as suitable and appropriate for the development of certain industries, specifically referring to that of the mining and industrial sector. The proposed project

site is located within the Spatial Plan Category (SPC) E of the SPDF and is classified as an industrial area. Therefore, the establishment of a Metals Industrial Cluster within the proposed project site is considered as a viable and desirable opportunity to see the realisation of the identified long-term economic and social benefits.

**Project site selection:** Due to the nature of the development (i.e. an industrial development), the location of the establishment is dependent on technical factors such as the accessibility to the site for the transportation of goods and services, availability of land, extent of the site and topography of the site. The broader study area (i.e. the greater Kuruman area) was identified as having the potential for the establishment of the Metals Industrial Cluster on the basis of key technical criteria being met, including the accessibility of the site and local site topography. The project site was identified by the project developer (i.e. the Northern Cape Department of Economic Development and Tourism), in consultation with the Ga-Segonyana Local Municipality, as being technically viable and given its attributes is also considered to be commercially feasible and competitive in terms of the need for the development of the Cluster in an area where poverty and unemployment are present.

As the project site is owned by the Local Municipality, the project site was identified and approved through consultation between the Ga-Segonyana Local Municipality and the Northern Cape Department of Economic Development and Tourism.

**Development footprint:** The planned extent of the Cluster is 47ha and as such it is considered that the whole extent of Portion 6253 of Erf 1 will be developed as the development footprint (refer to **Figure 8.1**). The development footprint will include the basic layout which illustrates the basic infrastructure required for the establishment as well as the different industrial zones (i.e. light, medium and heavy industrial) within which specific entities will be located (refer to **Figure 8.3** and **Appendix J**).



**Figure 8.1:** A map illustrating the project site and corresponding development footprint of the proposed Metals Industrial Cluster

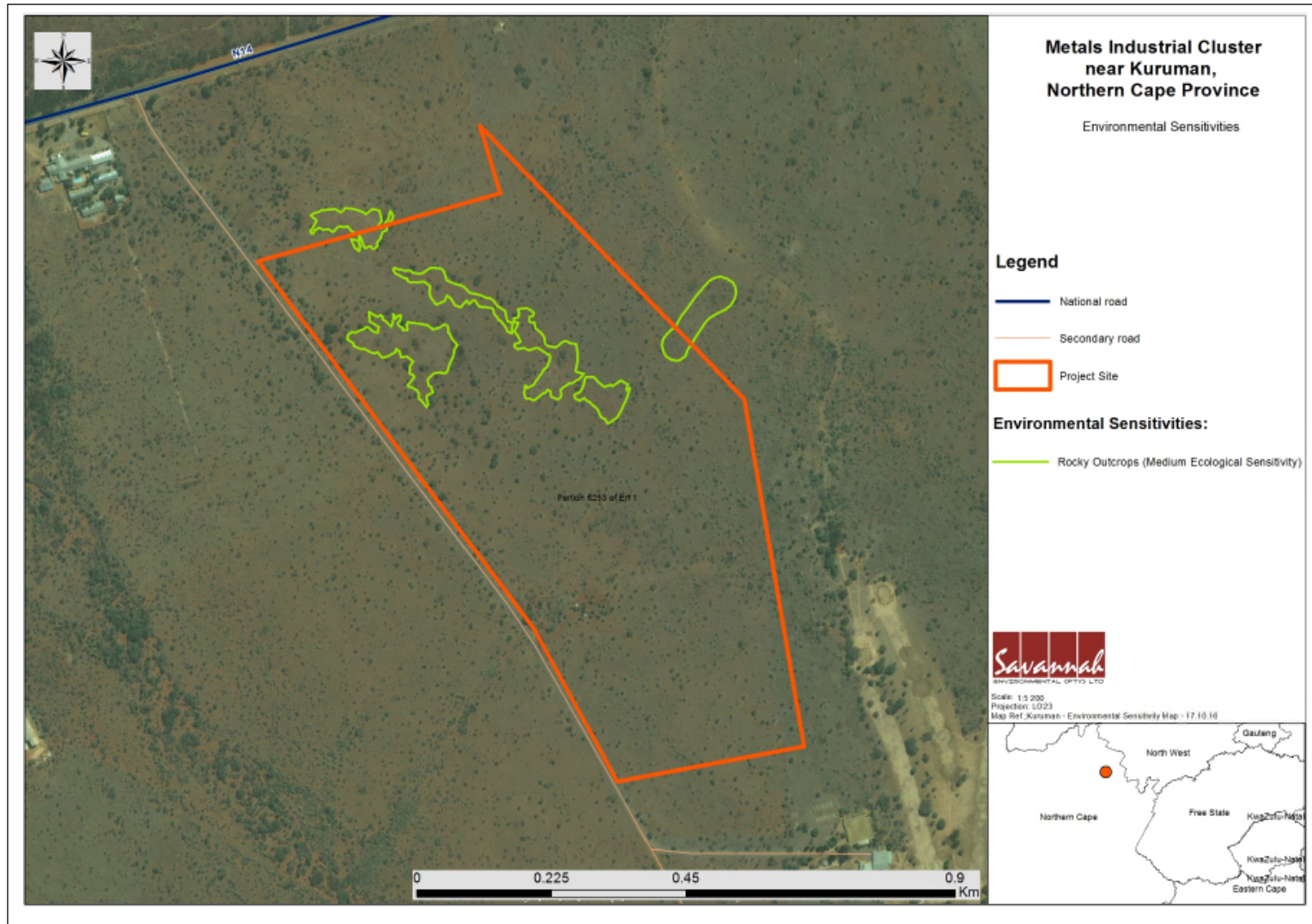
#### 8.4 Evaluation of the Proposed Metals Industrial Cluster

The preceding chapters of this report together with the specialist studies contained within **Appendices D-H** provide a detailed assessment of the potential impacts that may result from the establishment of the Cluster. This chapter concludes the environmental assessment of the Metals Industrial Cluster by providing a summary of the conclusions of the assessment of the proposed development. In so doing, it draws on the information gathered as part of the EIA process and the knowledge gained by the environmental specialist consultants and presents an informed opinion of the environmental impacts associated with the proposed project.

From the conclusions of the detailed specialist studies undertaken, no areas of high sensitivity were identified within the development footprint (refer to **Figure 8.2**). The features of medium ecological sensitivity identified are not considered to be significant in terms of the development of the Metals Industrial Cluster, and are considered as acceptable loss. Therefore, the entire project site has been assessed as being suitable and appropriate from an environmental perspective for the development and will not have a detrimental impact on any sensitive features present.

The potential environmental impacts associated with the proposed Cluster identified at scoping, and assessed through the EIA phase include:

- » Impacts on ecology, flora, fauna, water resources and ecosystems.
- » Impacts on heritage resources which includes archaeological and palaeontological resources.
- » Social and economic impacts, including increased pressure on the existing road network.



**Figure 8.2:** Environmental sensitive features located within the project site (refer to **Appendix J** for A3 map)



**Figure 8.3:** A schematic illustration of the basic layout proposed for the development of the Metals Industrial Cluster, illustrating the different zones of the Cluster in terms of the type of development and the basic infrastructure required (refer to **Appendix J** for A3 map)



#### **8.4.1 Impacts on Ecology**

The entire project site is located within the Kuruman Thornveld vegetation type, which is not considered as sensitive (low ecological sensitivity), however there are individuals of trees and aloes that are protected, including the Camel Thorn Tree (*Acacia erioloba*) and Aloes (*Aloe heroensis*). On a plant community level there are sensitive habitats present (medium ecological sensitivity) within the project site that mainly relate to dolomite and rocky outcrops. No seasonal drainage lines or wetlands occur within the project site that will be affected by the development. The significance of ecological impacts can be reduced to acceptable levels, and are rated as being medium-low.

#### **8.4.2 Impacts on Heritage and Palaeontological Resources**

The project site is completely underlain by sediments of the Early Precambrian, Transvaal Supergroup, Ghaap Group and Campbell Rand Subgroup. The Campbell Subgroup sediments were deposited on the shallow submerged Kaapvaal Craton, approximately 2.6 to 2.5 Ga (billion years ago). Stromatolites are concentrated on the north, eastern and central portion of the proposed site. Exposed stromatolites are badly weathered, but there is a possibility that specimens still covered by sediments could be better preserved. The overall impact of the development on the palaeontological resources is of a low significance subject to the implementation of the recommended mitigation measures.

The project site is not considered to be sensitive from an archaeological perspective. This is supported by the fact that no archaeological material was identified within the project site and that similar observations have been made in areas surrounding the project site. The project site is of a low archaeological significance, with and without the implementation of the recommended mitigation measures.

#### **8.4.3 Social and Economic Impacts**

Positive and negative social impacts have been identified. The assessment of the key issues indicated that there are no negative impacts that can be classified as fatal flaws and which are of such significance that they cannot be successfully mitigated.

The main social impacts associated with the development of the Metals Industrial Cluster is of a positive nature mainly relating to economic growth, employment, skills development, procurement and progress within the greater Kuruman area. The development will also aid in the relief of the main social issues associated with the Ga-Segonyana Local Municipality relating mainly to unemployment.

The negative impacts relate to the construction activities associated with the establishment of the Metals Industrial Cluster. These negative issues include nuisance

impacts, an impact on the daily movement patterns of the local people and an in-migration of jobseekers to the area.

The positive social impacts exceed the negative impacts and can be enhanced to intensify the effect. The positive impacts have a significance which ranges between low and high (with the implementation of enhancement measures), supporting the social and economic opportunities that will be associated with the development of the Metals Industrial Cluster. The negative social impacts range between a low and medium significance (with the implementation of the recommended mitigation measures), but are considered appropriate in terms of the development within the urban edge of Kuruman.

From a traffic perspective and the increase in traffic within the area associated with the establishment of the Cluster, the development will have an impact on the road infrastructure's capacity to carry the additional construction vehicles. The traffic impacts including increased pressure on the existing road network relate predominantly to the N14/R31 intersection located within the town of Kuruman and the intersection located north of the project site which is the connection between the N14 and the secondary unnamed surface road which provides direct access to the project site. Necessary road infrastructure upgrades at the intersections analysed should be considered for the Phase 1 of the Cluster development. Due to the size of the planned Cluster development, the time period over which the development will be established, and the undetermined number of expected trips, it is recommended that further study of the impact of traffic movement on the local and municipal roads by the Local Municipality as the Cluster expands and further an increase in traffic is noted. This would consider other intersections within Kuruman) where traffic pressure is considered likely.

#### **8.4.4 Assessment of Potential Cumulative Impacts**

Cumulative impacts and benefits on various environmental and social receptors will occur to varying degrees with the development of the industrial sector and other development within South Africa. The degree of significance of these cumulative impacts is difficult to predict without detailed studies based on more comprehensive data/information on each of the receptors and the site specific developments. The current study assesses the cumulative impacts associated with the Metals Industrial Cluster together with other development within the area on the basis of current and best available information, with precautionary assumptions taken into account.

The development of the Metals Industrial Cluster is undoubtedly positive from an economical perspective and is considered as acceptable and without any unacceptable loss or risk to the environmental and social aspects of the project site and the broader area.

As the greater Kuruman area is located within a corridor identified for the development of the industrial and mining sector, as per the PSDF, it can be expected that various developments within these sector will be taking place in future as the area was identified as being suitable for these types of developments.

Considering the findings of the specialist assessments undertaken for the Cluster, the cumulative impacts for the proposed Metals Industrial Cluster will be acceptable, without any unacceptable loss or risks and the majority are rated as being of moderate-low significance with mitigation.

### **8.5 Environmental Costs of the Project versus Benefits of the Project**

Environmental (natural environment, economic and social) costs can be expected at a local and site level and are considered acceptable so long as the mitigation measures as outlined in the EMP are adhered to. These could include:

- » Direct loss of biodiversity, flora and fauna due to the clearing of vegetation for the establishment of the Metals Industrial cluster (which will be 47ha in extent). The cost of loss of biodiversity is not considered as significant due to a lack of sensitive ecological features located within the project site.
- » Traffic impacts associated with the establishment of the Metals Industrial cluster which relate mainly to an increase in traffic. Specific improvement to the road network will be required for the development of the Cluster, specifically at the N14/R31 intersection located within the town of Kuruman and the intersection located north of the project site which is the connection between the N14 and the secondary unnamed surface road which provides direct access to the project site.
- » Change in land-use and loss of land available for informal grazing on the project site, however as the site is located within the urban edge and there is ample grazing space available in the areas located directly adjacent to the project site, this not considered as an impact of any significance.

The development of the Metals Industrial Cluster is undoubtedly positive from a social and an economic perspective and is considered as acceptable and without any unacceptable loss or risk to the environmental and social aspects of the project site and the broader area.

Benefits of the project include the following:

- » The Cluster is poised to bring about important economic benefit at the local and regional scale through job creation, procurement of materials and other associated downstream economic development. These will transpire during the lifecycle of the development.
- » The establishment of the Cluster will offer numerous opportunities for skills transfer and development. This is relevant for all four phases of the development. The

transfer of skills will take place providing people with the opportunity to enhance their standard of living.

- » The economic goals and relieve of the main social issues within the Ga-Segonyana Local Municipality will not be met at the level which is expected if the Metals Industrial Cluster is not established.

The benefits of the Metals Industrial Cluster are expected to occur at a regional and local level. These benefits offset the localised environmental costs of the project, which are considered to be of low significance.

### **8.6 Overall Conclusion (Impact Statement)**

Due to the limited number of vacant land parcels available for the development of a Cluster within Kuruman's urban edge, as well as the approval from the Ga-Segonyana Local Municipality (landowner) for the intended use of the land, no other feasible alternatives for project sites were identified or considered for the development. The project site selection is also supported by preferable characteristics within and surrounding the project site, including easy access to the site, proximity to the town of Kuruman and the flat topography of the area.

The technical viability of establishing an industrial development on a project site located within the urban edge of the town of Kuruman has been established by the Northern Cape Department of Economic Development and Tourism. The positive implications of establishing the Cluster on the identified project site include the following:

- » The potential to promote economic growth and development within the greater Kuruman area.
- » The establishment of the Cluster will assist in the relief of unemployment within the area and the Local and District Municipalities.
- » The Cluster will provide skills development opportunities for local people in order to ensure a higher standard of living within the area for the people.
- » Promotion of the industrial sector within an area where mining has been the predominant industry.

The findings of the specialist studies undertaken within this EIA to assess both the benefits and potential negative impacts anticipated as a result of the proposed Cluster conclude that there are no environmental fatal flaws that should prevent the proposed Metals Industrial Cluster from proceeding. The significance levels of the majority of identified negative impacts have been assessed as being low, and further reduced by implementing the mitigation measures recommended by the specialist team during the EIA process. Environmental specifications for the management of potential impacts are detailed within the draft Environmental Management Programme (EMPr) for the Cluster which is included within **Appendix J**.

The following issues have been raised and addressed within this EIA Report:

1. The representative of the El Dorado Hotel raised concerns related to socio-economic issues, specifically those that relate to disturbance and nuisance impacts.

*Action: This has been addressed through further consultation with the I&AP, where additional information pertaining to the planned development was shared. The I&AP has indicated that the El Dorado Hotel is in support of the development subject to the implementation of appropriate mitigation measures to ensure that the Cluster is managed correctly and sustainably. The issue has been fully assessed within the EIA phase reporting. No additional comments were submitted by the El Dorado Hotel during the 30-day review period of the EIA report. Therefore, the issues raised by the El Dorado Hotel are considered as resolved.*

2. SANRAL did not object to the development, however requested the inclusion of a Traffic Assessment in order to consider the impact of the development on the R31/N14 intersection located within the central part of Kuruman.

*Action: A Traffic Assessment was commissioned and the results included in this final EIA report. No additional comments were submitted by SANRAL during the 30-day review period of the EIA report (inclusive of the Traffic Assessment). It is therefore considered that the requirements of the Traffic Assessment requested by SANRAL have been met.*

3. SAHRA provided comment which confirmed the findings of the heritage report, and requested the inclusion of a Palaeontological Impact Assessment due location of the project site and the underlying geology.

*Action: A Palaeontological Impact Assessment was commissioned and the results included in the EIA report. No additional comments were submitted by SAHRA during the 30-day review period of the EIA report. It is therefore considered that the requirements of the Palaeontological Impact Assessment requested by SAHRA have been met.*

From a public consultation and participation perspective it is considered that all issues raised during the EIA process have been resolved, as per the above. No new issues were raised during the 30-day review period of the EIA report.

With reference to the information available at this planning approval stage in the project cycle, the **confidence** in the environmental assessment undertaken is regarded as **acceptable** provided all measures are taken to protect and preserve the surrounding environment.

## 8.7 Overall Recommendation

Based on the nature and extent of the proposed Metals Industrial Cluster, the local level of disturbance predicted as a result of the construction and operation of the development, the findings of the EIA, and the understanding of the significance level of potential environmental impacts, it is the opinion of the EIA project team that the negative impacts associated with the development of the Metals Industrial Cluster can be mitigated to an acceptable level, and that benefits arising from the project will undoubtedly have a significant positive effect on the social and economic environment. The development of the Cluster is considered as acceptable and without any unacceptable loss or risk to the environmental and social aspects of the project site and the broader area. In terms of this conclusion, the EIA project team support the decision for environmental authorisation.

The following key conditions would be required to be included within an authorisation issued for the project:

- » All mitigation measures detailed within this report as well as the specialist reports contained within **Appendices D to H** are to be implemented.
- » The draft Environmental Management Programme (EMPr) as contained within **Appendix J** of this report should form part of the contract with the Contractors appointed to construct and maintain the proposed Cluster, and will be used to ensure compliance with environmental specifications and management measures. The implementation of this EMPr for all life cycle phases of the proposed project is considered key in achieving the appropriate environmental management standards as detailed for this project.
- » Any entity or company (CMF) planning to be located within the Metals Industrial Cluster will be required and responsible to make provision for the specific infrastructure that would be required for the operation of that specific entity, and the undertaking of its own permits and authorisations in terms of the legal requirements.
- » A comprehensive stormwater management plan should be compiled for the development footprint prior to construction.
- » An ecological walk through survey of the development footprint/project site must be undertaken prior to construction commencing in order to locate individuals of Camel Thorn trees which would have to be removed. Plant species of conservation concern (e.g. Aloes) must also be located and relocated to a suitable and similar habitat where these plants can grow without any disturbance.
- » Permits must be obtained from DAFF to remove the Camel Thorn (*Acacia erioloba*) individuals. The applicant must apply for these permits in a phased manner, as required.
- » Weed control measures must be applied to eradicate the noxious weeds (category 1a & 1b species) on disturbed areas.

- » Applications for all other relevant and required permits required to be obtained by the Northern Cape Department of Economic Development and Tourism must be submitted to the relevant regulating authorities. This includes permits for the transporting of all components (abnormal loads) to site, disturbance to any heritage sites, disturbance of protected vegetation and protected trees, and water uses.
- » The Cluster development parameters, such as development model, permissible floor area, permissible bulk, Public Open Space (POS), parking requirements, loading bays, site access, security requirement, public transport facilities, development phasing, financial feasibility, etc. must be cognisant of the implications on traffic (i.e. limitations and future road network planning).
- » Necessary road infrastructure upgrading must be initiated with the commencement of the Phase 1 construction activities.

## REFERENCES

## CHAPTER 9

- Redflank Solutions, 2015. Foundation Phase for the Metals Industrial Cluster: Location-Specific Cluster Plan.
- Northern Cape Tourism Authority (NCTA), 2007, Kuruman. [http://www.northerncape.org.za/getting\\_around/towns/Kuruman/](http://www.northerncape.org.za/getting_around/towns/Kuruman/).
- SA Places, 2015, Kuruman. <http://www.places.co.za/html/kuruman.html>.

### **Ecological Impact Assessment**

- Apps, P. (ed.). 2012. Smither's Mammals of Southern Africa. A field guide. Random House Struik, Cape Town, RSA
- Alexander, G. & Marais, J. 2007. A Guide to the Reptiles of Southern Africa. Struik Nature, Cape Town.
- Anhaeusser, C.R., Johnson, M.R., Thomas, R.J. (2008). The Geology of South Africa. Council for Geosciences.
- Bates, M.F., Branch, W.R., Bauer, A.M., Burger, M., Marais, J., Alexander, G.J. & De Villiers, M. S. 2014. Atlas and Red List of the Reptiles of South Africa, Lesotho and Swaziland. Strelitzia 32. SANBI, Pretoria.
- Branch W.R. 1998. Field guide to snakes and other reptiles of southern Africa. Struik, Cape Town.
- Critical Biodiversity Areas Maps (PER MUNICIPALITY) and GIS Data available from: Biodiversity GIS (BGIS), South African National Biodiversity Institute, Tel. +27 21 799 8739 or CapeNature, Tel. +27 21 866 8000. Or on the web at: <http://bgis.sanbi.org/fsp/project.asp>
- Department OF environmental Affairs and Tourism, 2007. National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004): Publication of lists of Critically Endangered, Endangered, Vulnerable and Protected Species. Government Gazette, Republic of South Africa
- Du Preez, L. & Carruthers, V. 2009. A Complete Guide to the Frogs of Southern Africa. Struik Nature., Cape Town.
- Friedmann, Y. & Daly, B. 2004. Red data book of the mammals of South Africa, a conservation assessment. Johannesburg, Endangered Wildlife Trust.
- Hoare, D. 2012. David Hoare Consulting CC (2012). Impact Assessment Report: Specialist ecological study on the potential impacts of the proposed Hidden Valley Wind Energy Facility Project near Matjiesfontein, Northern Cape.
- Marais, J. 2004. Complete Guide to the Snakes of Southern Africa. Struik Nature, Cape Town.
- Macvicar, C. N., Scotney, D. M. Skinner, T. E. Niehaus, H. S. & Loubser, J. H., 1974. A classification of land (climate, terrain form, soil) primarily for rainfed agriculture. S. Afr. J. Agric. Extension, 3(3): 1-4.
- McDonald, D.J. 1997. Vegmap: a collaborative



- project for a new vegetation map of southern Africa. *South African Journal of Science* 93: 424–426.
- Minter LR, Burger M, Harrison JA, Braack HH, Bishop PJ & Kloepfer D (eds). 2004. Atlas and Red Data book of the frogs of South Africa, Lesotho and Swaziland. SI/MAB Series no. 9. Smithsonian Institution, Washington, D.C.
- Mucina, L, Bredenkamp, G.J., Hoare, D.B & McDonald, D.J. 2000. A National Vegetation Database for South Africa *South African Journal of Science* 96: 1–2.
- Mucina, L. AND Rutherford, M.C. (editors) 2006. Vegetation map of South Africa, Lesotho and Swaziland: an illustrated guide. *Strelitzia* 19, South African National Biodiversity Institute, Pretoria.
- Mucina, L., Hoare, D.B., Lötter, M.C., Du Preez, P.J., Rutherford, M.C., Scott-Shaw, C.R., Bredenkamp, G.J., Powrie, L.W., Scott, L., Camp, K.G.T., Cilliers, S.S., Bezuidenhout, H., Mostert, T.H., Siebert, S.J., Winter, P.J.D., Burrows, J.E., Dobson, L., Ward, R.A., Stalmans, M., Oliver, E.G.H., Siebert, F., Schmidt, E., Kobisi, K., Kose, L. 2006. Grassland Biome. In: Mucina, L. & Rutherford, M.C. (eds.) Vegetation map of South Africa, Lesotho and Swaziland: an illustrated guide. *Strelitzia* 19. South African National Biodiversity Institute, Pretoria.
- Mucina, L., Rutherford, M.C. & Powrie, L.W. (editors) 2005. Vegetation map of South Africa, Lesotho and Swaziland. South African National Biodiversity Institute, Pretoria. ISBN 1-919976-22-1.
- Mueller-Dombois, D. and Ellenberg, H. 1974. Aims and methods of vegetation ecology. Wiley, New York.
- Raimondo, D., Von Staden, L., Foden, W., Victor, J.E., Helme, N.A., Turner, R.C. Kamundi, D.A. & Manyama, P.A. (Eds.). 2009. Red list of South African plants 2009. *Strelitzia* 25:1-668.
- Skinner, J.D. & Chimimba, C.T. 2005. The mammals of the Southern African Subregion. Cambridge University Press, Cambridge.
- Tessema, A & Nzotta, U. 2014. Multi-Data Integration Approach in Groundwater Resource Potential Mapping: A Case Study from the North West Province, South Africa. WRC Report No. 2055/1/13. Water Research Commission.
- Westhoff, V. and Van Der Maarel, E. 1978. The Braun-Blanquet approach. In: Whittaker, R.H. (ed.) Classification of plant communities. W. Junk, The Hague.
- AGIS, 2007. Agricultural Geo-Referenced Information System, accessed from [www.agis.agric.za](http://www.agis.agric.za)
- ADU, 2012. Animal Demography Unit, Department of Zoology, University of Cape Town. <http://www.adu.org.za>
- BGIS: <http://bgis.sanbi.org/website.asp>
- SANBI databases: <http://posa.sanbi.org/searchspp.php> and <http://SIBIS.sanbi.org>
- <http://en.climate-data.org/location/10658/>

### **Archaeological Impact Assessment**

Archaeological Database Wits University 2009.

- Beaumont, P.B. & Morris, D. 1990. Guide to archaeological sites in the Northern Cape. Kimberley: McGregor Museum.
- Coetzee, T. & George, L. 2013. Archaeological Impact Assessment for Assmang Limited – Black Rock Mine Operations On Erf 5529, A Portion Of Erf 01 Kuruman
- De Jong, R.C. 2010. Heritage Impact Assessment report: Proposed Manganese and Iron Ore Mining Right Application in respect of the Remainder of the farm Paling 434, Hay Registration Division, Northern Cape Province. Unpublished Report Cultmatrix Heritage Consultants Project 2010/23 May 2010 for Kai Batla
- Kusel, U., M.van der Ryst and S.Kusel. 2009. Cultural Heritage Impact Assessment of Manganese Mining Areas on the farms Belgravia 264, Santoy 230, Gloria 226 and Nchwaning 267, at Black Rock, North of Kuruman, Kgalagadi District Municipality Northern Cape Province. Unpublished Report African Heritage Consultants September 2009. For Assmang Limited.
- Magoma, M. 2013. Phase 1 Archaeological Impact Assessment Specialist Study Report For The Proposed Prospecting For Mining Of Minerals On Portions 1, 2 Remainder Extent Of The Farm 219 And Lower Kuruman 219 In Kuruman Area Within Ga-Segonyana Local Municipality, John Gaetsewe District, Northern Cape Province. Unpublished report.
- Morris, D. 2005. Report on a Phase 1 Archaeological Impact Assessment of proposed mining areas the farms Ploegfontein, Klipbankfontein, Welgevonden, Leeuwfontein, Wolhaarkop and Kapstevel, west of Postmasburg, Northern Cape. Kimberley: McGregor Museum.
- Morris, D. 2010. Heritage Impact Assessment of an area of proposed housing development and associated infrastructure in Kuruman, Northern Cape.
- Morris, D. & Beaumont, P. 2004. Archaeology in the Northern Cape: some key sites. Kimberley: McGregor Museum.
- Mucina, L. & Rutherford, M.C. 2006. The Vegetation of South Africa, Lesotho and Swaziland.
- National Heritage Resources Act NHRA of 1999 (Act 25 of 1999)
- Pelser, A. 2012 (a). A Report On Archaeological Impact Assessments (AIA's) For Proposed Housing Developments On Erven 83 And 2467, Kuruman, In The Northern Cape. Unpublished report.
- Pelser, A. 2012 (b). Archaeological Impact Assessment for the proposed Housing Development on Erf 675, Kuruman, in the Northern Cape. Unpublished Report.
- Pelser, A.J. & A.C.van Vollenhoven. A Report on a Heritage Impact Assessment (HIA) for a proposed new rail crossing over the Gamagara River for the Gloria Mine Operations, Assmang Black Rock, on Gloria 266, north of Hotazel, Northern Cape. Unpublished Report Archaeos cc AE1151. May 2011. For EScience Associates (Pty) Ltd.
- SAHRA Report Mapping Project Version 1.0, 2009
- Strelitzia 19. South African National Biodiversity Institute. Pretoria.
- Van der Walt, J. 2012. Archaeological Impact Assessment Report for the Proposed extension of an abandoned Gravel Pit on the Farm Harvard 171, in the Kudumane Magisterial District 13km East of Kuruman. Unpublished report for Site Plan.
- SAHRIS (referenced 2016)

[www.northerncape.org.za](http://www.northerncape.org.za)

[www.upington.com](http://www.upington.com)

[www.wikipedia.com](http://www.wikipedia.com)

### **Palaeontological Impact Assessment**

- Altermann, W. 2001. The oldest fossils of Africa – a brief reappraisal of reports from the Archaean. *African Earth Sciences* 33, 427-436.
- Altermann, W. and Wotherspoon, J. McD. 1995. The carbonates of the Transvaal and Griqualand West sequences of the Kaapvaal craton, with special reference to the Lime Acres limestone deposit. *Mineralium Deposita* 30, 124-134.
- Beukes, N.J. 1983. Palaeoenvironmental setting of iron formations in the depositional basin of the Transvaal Supergroup, South Africa. In: Trendall, A.F. & Morris, R.C. (Eds.) *Iron-formation: facts and problems*, 131-210. Elsevier, Amsterdam.
- Beukes, N.J. 1986. The Transvaal Sequence in Griqualand West. In: Anhaeusser, C.R. & Maske, S. (Eds.) *Mineral deposits of Southern Africa, Volume 1*, pp. 819-828. Geological Society of South Africa.
- Beukes, N.J. & Klein, C. 1990. Geochemistry and sedimentology of facies transition from the microbanded to granular iron-formation in the Early Proterozoic Transvaal Supergroup, South Africa. *Precambrian Research* 47, 99-139.
- Buick, K. 2001. Life in the Archaean. In: Briggs, D.E.G. & Crowther, P.R. (eds.) *Palaeobiology II*, 13-21. Blackwell Science, London.
- Eriksson, P.G. and ALTERMANN, W. 1998. An overview of the geology of the Transvaal Supergroup dolomites (South Africa). *Environmental Geology* 36, 179-188.
- Eriksson, P.G., Altermann, W. & Hartzler, F.J. 2006. The Transvaal Supergroup and its precursors. In: Johnson, M.R., Anhaeusser, C.R. & Thomas, R.J. (Eds.) *The geology of South Africa*, pp. 237-260. Geological Society of South Africa, Marshalltown.
- Klein, C. & Beukes, N.J. 1989. Geochemistry and sedimentology of a facies transition from limestone to iron formation deposition in the early Proterozoic Transvaal Supergroup, South Africa. *Economic Geology* 84, 1733-1774.
- Macrae, C. 1999. Life etched in stone. *Fossils of South Africa*. 305 pp. The Geological Society of South Africa, Johannesburg.
- Moore, J.M., Tsikos, H. & Polteau, S. 2001. Deconstructing the Transvaal Supergroup, South Africa: implications for Palaeoproterozoic palaeoclimate models. *African Earth Sciences* 33, 437-444.
- Schopf, J.W. 2006. Fossil evidence of Archaean life. *Philosophical Transactions of the Royal Society B361*, 869-885.
- Smit, P.J., Beukes, N.J., Johnson, M.R., Malherbe, S.J. & Visser, J.N.J. 1991. Lithostratigraphy of the Vryburg Formation (including the Kalkput, Geelbeksdam, Rosendal, Waterloo and Oeola Members). *South African Committee for Stratigraphy Lithostratigraphic Series No. 14*, 1-10
- Tankard, A.J., Jackson, M.P.A., Eriksson, K.A., Hobday, D.K., Hunter, D.R. & Minter, W.E.L. 1982. *Crustal evolution of southern Africa – 3.8 billion years of earth history*, xv + 523pp. Springer Verlag, New York.

### **Traffic Assessment**

635Committee of Transport Officials TMH 16 Vol 1 and 2  
COTO TMH 17 South African Trip Generation Data  
Institute of Transport Engineers Trip Generation Manual 8th Edition  
Environmental Impact Assessment Process; Background Information Document:  
Construction of the Metals Industrial Cluster and Associated Infrastructure Near  
Kuruman Northern Cape Province, Dated March 2016: by Savannah Environmental

### **Social Impact Assessment**

Aucamp, I.C., Woodbourne, S., Perold, J.J., Bron, A. and Aucamp, S.-M. (2011). Looking beyond social impact assessment to social sustainability. In Vanclay, F. and Esteves, A.-M. New Directions for Social Impact Assessments, Cheltenham, UK: Edward Elgar.

Census 2011 Community Profiles Database. Statistics South Africa.

Franke, V. & Guidero, A. (2012). Engaging local stakeholder: A Conceptual Model for Effective Donor- Community Collaboration. Institute for Homeland Security Solutions.

Ga-Segonyana Local Municipality Integrated Development Plan (2015-2016)

IFC. (2007). Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets. International Finance Corporation: Washington.

Interorganizational Committee on Principles and Guidelines for Social Impact Assessment. US Principles and Guidelines – Principals and guidelines for social impact assessment in the USA. Impact Assessment and Project Appraisal, 21(3): 231-250.

Local Government Handbook. 2012. Municipalities of South Africa. Available from: <http://www.localgovernment.co.za/>

National Development Agency (NDA). (2014). Beyond 10 years of unlocking potential. Available from: [http://www.nda.org.za/?option=3&id=1&com\\_id=198&parent\\_id=186&com\\_task=1](http://www.nda.org.za/?option=3&id=1&com_id=198&parent_id=186&com_task=1)

National Environmental Management Act 107 of 1998 (NEMA)

National Development Plan (2030)

Northern Cape Provincial Development and Resource Management Plan / Provincial Spatial Development Framework (PSDF) (2012)

Northern Cape Provincial Growth and Development Strategy (NCPGDS) (2011)

Northern Cape Provincial Local Economic Development Strategy (LED) (2009)

John Taolo Gaetsewe District Municipality Integrated Development Plan (IDP) (2012-2019).

South Africa Info. (2012). Northern Cape Province, South Africa. Available from: <http://www.southafrica.info/about/geography/north-west.htm#.U3HBjChTOio>

South African Local Government Association (SALGA). (2011). Northern Cape. Available from: <http://www.salga.org.za/pages/About-SALGA/Provinces/NorthernCape-Overview>

State of the Environment Report (SOER). 2005. Northern Cape Province. Department of Tourism, Environment and Conservation. CSIR Environmental.

- Statistics South Africa. (2014). Education: A Roadmap out of poverty? Available from:  
<http://beta2.statssa.gov.za/?p=2566>
- The Constitution Act 108 of 1996
- UNEP, 2002. EIA Training Resource Manual. 2nd Ed. UNEP.
- United Nations Economic and Social Commission for Asia and the Pacific (UN). (2001).  
Guidelines for Stakeholders: Participation in Strategic Environmental Management.  
New York, NY: United Nations.
- Vanclay, F. 2003. Conceptual and methodological advances in Social Impact  
Assessment. In Vanclay, F. & Becker, H.A. 2003. The International Handbook for  
Social Impact Assessment. Cheltenham: Edward Elgar Publishing Limited.
- Vanclay, F. (2003). Conceptual and methodological advances in Social Impact  
Assessment. In Vanclay, F. & Becker, H.A. 2003. The International Handbook for  
Social Impact Assessment. Cheltenham: Edward Elgar Publishing Limited.
- White Paper on Energy Policy of the Republic of South Africa (1998)