

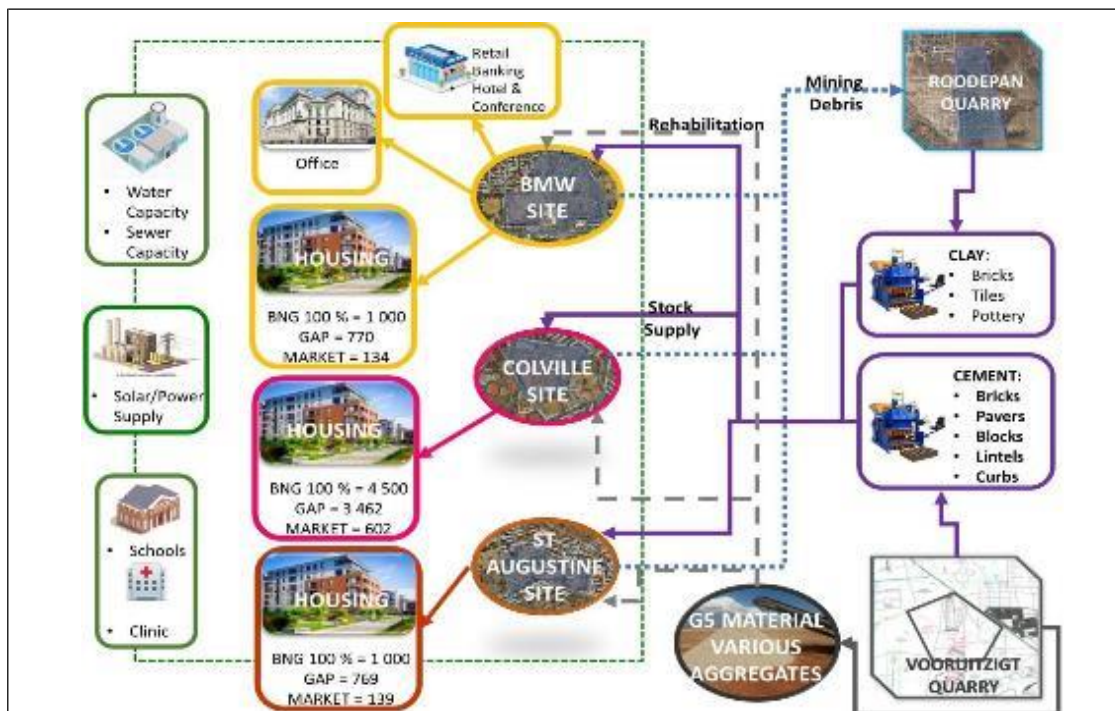
# Draft Scoping Report for the Proposed Clay Brick Making Facility at the Roodepan Quarry located in the Sol Plaatje Local Municipality

Report Prepared for

AN INITIATIVE BY



**KIMBERLEY  
REHABILITATION AND  
DEVELOPMENT**



Report Prepared by



**GEOLOGICAL CONSULTING SERVICES  
PTY (LTD)**

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# Executive Summary

## Introduction

### Who is conducting the EIA/EMPr?

Ndi Geological Consulting has been appointed by Kimberley Rehabilitation and Development (KRD) as the independent Environmental Assessment Practitioner (EAP) to conduct the Environmental Authorisation (EA) and associated Air Emission Licence (AEL) application processes for the proposed clay brick making facility to be located at the Roodepan Quarry.

The reports and documentation for the EA and AEL application processes will be compiled and finalised for submission to the Northern Cape Department of Environment and Nature Conservation (DENC) and the Francis Baard District Municipality, respectively for consideration and decision making. The DENC will consult with other government authorities as required in terms of Section 24(K) of the NEMA.

### Who will evaluate the EIA/EMPr?

Before the proposed development can proceed, approval on the scoping phase has to be obtained from the DENC which will then advise the project team as to how the project should proceed for the impact assessment phase of the project. The impact assessment phase will entail detailed specialist investigations (biodiversity, heritage resources, noise and air quality), reporting and further stakeholder involvement. Only once a Final Environmental Impact Assessment Report (EIAR) and Environmental Programme (EMPr) have been submitted to DENC, can a decision be taken by the Department as to whether the project may proceed or not.

## Description of the Proposed Development

The proposed project will include construction and operation of a clay brick making facility at the Roodepan Quarry. The project will include:

- Excavation and removal of aggregate from the site;
- Ground works at the site;
- Foundations for the proposed facility;
- Building activities;
- Provision of infrastructure such as sewage systems, electrical, water reticulation systems, roads, stormwater systems;
- Shop fitting of the buildings and offices; and
- Transportation of debris from the BMW, St Augustine and Colville sites to the Roodepan Quarry to be reworked.
- The unused material will be used to fill the quarry in accordance with an approved EMPr.

The clay brick making process will include:

- Delivery of Clay from Sites;
- Delivery of Coal from Supplier (-D grade - carbon content important/moisture content, -Body fuel/Duff/Filter cake/Spiral waste, CV 21% and ash 30+%);
- Screening clay;
- Stockpile screened clay;
- Feed box feeders - 1 x clay and 1 x coal, 3150 kg per 1000 clay and 350 kg per 1000 D grade coal;

- Feed auger mixer from box feeders;
- Introduce water in auger feeder (330 litres per 1000 (10% of dry brick weight));
- Mixture into feed hopper;
- Feed brick press with offset conveyor;
- Press bricks - 10 000 per press per shift, -Brick weight 3.5 kg;
- Stack bricks on drying pallet (500 bricks in two rows, -Drying shed vs hackline);
- Stack pallet in hackline and dry for 2 weeks (Forklift - 4 ton lifting capacity, Plastic covers and pallets);
- Stack dried bricks in zig zag kiln (Brick weight 3.3 kg);
- Introduce coal in first two rows (Skintel/rooster) for firing in stacked bricks (C grade (Small nuts), Carbon, Content important, CV 231% and ash below 25%, required amount - half of body fuel amount);
- Fire box ignite zig zag kiln with ignitor coal in - C Grade;
- Fire bricks for 4 weeks (Sulfur content and dust fall out important);
- Sort and stack bricks on pallets (Brick weight 3 kg, 500 per pallet);
- Pallets to sales stock yard;
- Wastage crushed; and
- Test strength of bricks.

## Motivation for the Proposed Project

The proposed manufacturing facility forms part of the larger “Changing the face of a City” project that KRD is proposing. The main aim of the project is to provide low cost housing to the residents in Sol Plaatje Local Municipality. Sol Plaatje Municipality, particularly Kimberley has valuable land such as at the BMW, Colville and St Augustine sites, locked under old mine dumps. Not only these dumps are a hindrance to land use, but they cause an unpleasant authenticity to the city, that it is forgotten mining town. Under the proposed project, KRD proposes to recycle and implement beneficiation projects from the dumps.

KRD has conducted extensive calculations, investigations and consultations in the compilation of the project plan and its various components and its integration into a single integrated business model. The information and calculations all indicate the feasibility of the project if implemented as an integrated model. This project cannot succeed if the various individual activities do not contribute to the execution of the project plan.

According to the Sol Plaatje Local Municipality IDP, 30% of the Northern Cape housing backlog exists in Sol Plaatje, with the municipality advocating for focus to be on ramping up the planning and delivery of houses, with clear economic spin offs to boost the local economy. Under the proposed project, a total of 12 369 houses will be constructed, outside of the commercial development that will also be part of the proposed project.

The anticipated investment from the project is approximately R 6 billion. In addition, the project will provide permanent employment (1 500 direct and indirect) to local people within a local municipality with a high rate of unemployment, potentially providing job security (and the benefits thereof) not only for employed individuals but for households. The proposed project will also provide an economic stimulus to the local economy through the establishment of other small businesses (transporters, builders, providers of other material required).

Additionally, the project provides the municipality with an opportunity to rehabilitate old mine dumps that are not currently in use and collect revenue from rates and taxes which can be used to improve services in the area.

The project will thus in the long run have an overall positive economic impact for the receiving area and will have a cumulative impact that can be considered to be of high significance.

## Alternatives Considered

According to GNR 326 promulgated in terms of the NEMA, feasible alternatives need to be considered and assessed during the scoping phase of the project, or where no alternatives have been considered, motivation for not considering alternatives must be included in the Scoping Report.

Two manufacturing processes alternatives were considered for the proposed project and will be assessed in the impact assessment phase of the process. The alternatives considered are as follows:

- Using a zig-zag kiln and an extruder (preferred alternative); and
- Using a clamp kiln and presses.

In addition to these alternatives, the “no-go” alternative will also be assessed. All alternatives, including the no-go option will be subject to the impact assessment.

## Environmental Assessment Process

### Approach to the Environmental Impact Assessment

An EIA seeks to identify the environmental consequences of a proposed project from the beginning, and helps to ensure that the project, over its life cycle, will be environmentally acceptable, and integrated into the surrounding environment in a sustainable way. The project triggers activities listed in GNR 327 (Listing Notice 1), GNR325 (Listing Notice 2) and GNR324 (Listing Notice 3) of the NEMA and requires that a full EIA (scoping and impact assessment phases) be conducted.

Two parallel processes are followed during the scoping phase being the environmental technical process and stakeholder engagement process. This report is the draft Scoping Report and forms one of the first steps in the scoping process after which the EIA phase will be initiated. A summary of this process is shown in Figure ES-1.

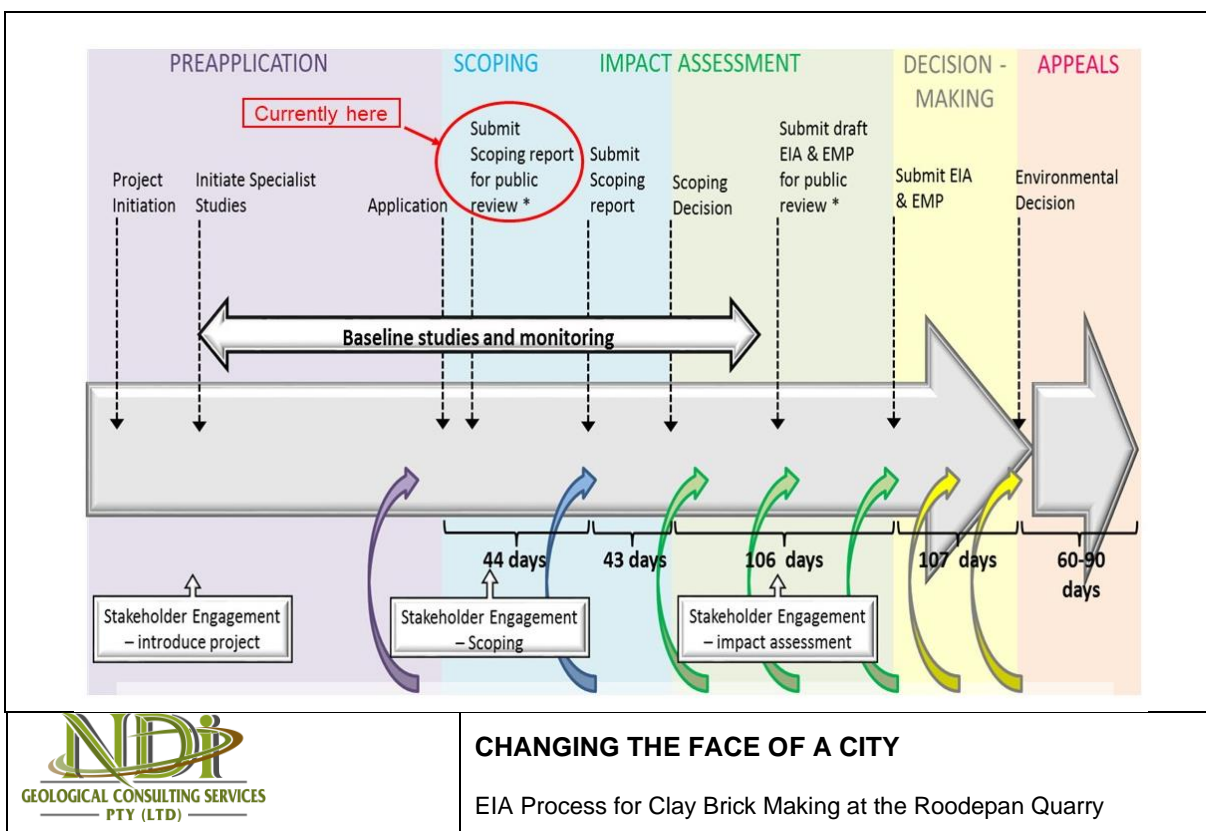


Figure ES-1: Illustration of the EIA process to be followed

## Stakeholder Engagement Process

The stakeholder engagement process will be conducted in such a way that it will meet the requirements of Chapter 6 of the NEMA and will take cognisance of the requirements of Annexure 3 of the Department of Environment, Forestry and Fisheries (DEFF) Disaster Management Directions of 5 June 2020.

Stakeholder engagement commenced with the applicant holding several meetings with different departments that will be involved in the proposed project. The following meetings were held with the different parties:

- Joint meeting with Sol Plaatje Local Municipality and Northern Cape Province representatives;
- The Municipal council on 22 July 2020; and
- The Development Bank of South Africa (DBSA).

The opportunity to participate in the EIA and to register as an Interested and Affected Party (I&AP) was announced in August 2020 through the following means:

- Letters of invitations to register and background information documents were sent to stakeholders on 27 August 2020;
- Media advertisements were placed in the Noordkaap on 26 August 2020 and the Diamond Fields Advertiser on 28 August 2020;
- Site notices were erected at several places in and around the proposed study area on 27 August 2020;
- Radio announcements were made in on Radio Taemaneng and Revival FM (Slots 1 and 2);
- Development of a stakeholder database: The stakeholder database comprises a variety of stakeholders identified through the registering process of this project.
- Collation of comments received into a Comments and Responses Register (CRR) attached in Appendix C 5; and
- Obtaining and documenting registration and comment sheets.

The Draft Scoping Report will be made available for a 30-day commenting period. All issues, comments and suggestions received from stakeholders will be reviewed and collated into a CRR. Where necessary, comments from stakeholders will also be incorporated into the Final Scoping Report that will be submitted to the DENC for decision-making. Depending on the responses received during the registration period and should it be required, a public meeting may be held during the Scoping Phase of the project pending COVID-19 restrictions.

Once the DENC has accepted the Final Scoping Report, the EAP will compile the EIAR and EMP<sub>r</sub>, which will also be made available to the stakeholders for a 30-day review and comment period. Comments received will be incorporated into the Final EIAR and EMP<sub>r</sub> which will be submitted to the DENC for final decision making. The comments will also be collated into the CRR, which will form an Appendix to the EIAR.

The stakeholders will be notified of DENC's final decision on the project once it has been communicated to the EAP and applicant (KRD).

## Profile of the receiving Environment

The scoping report provides a general description of the status quo of the receiving environment in the project area. It serves to set the scene and provide context to the area within which the scoping exercise was conducted. This section also includes the main issues/impacts associated with each aspect and how the proposed project will affect the biophysical and social environment. A summary of the main baseline aspects is included in Table ES-1, with more details included in Section 10 of the report.

### Table ES – 1: Summary of the Profile of the Receiving Environment

Aspect	Description
Climate	<p>The climate around Kimberley is essentially a continental one - the weather provides hot wet summers (December to February) and mild dry winters (June to August). It is not unusual for winter night-time temperatures to drop below freezing.</p> <p>Kimberley normally receives about 283mm of rain per year, with most rainfall occurring mainly during summer. The data available shows that Kimberley receives the lowest rainfall in October and the highest in March.</p> <p>The monthly distribution of average daily maximum temperatures shows that the average midday temperatures for Kimberley range from 18°C in June to 33°C in January. The region is the coldest during July when the mercury drops to 0.3°C on average during the night.</p>
Topography	<p>The project area forms part of the Southern Kalahari Eco-region. The topography of the area is generally slightly undulating to flat plains. The properties are defined as a Plain at a Medium Level (ENPAT 2000). The Roodepan Quarry is located in an area with an elevation of approximately 1 200 mamsl.</p>
Geology and Soils	<p>The geology area is underlain by rocks of the Karoo Supergroup. The Karoo sequence in the Kimberly area comprises sedimentary succession of the Dwyka, Ecca and Beaufort Groups. The Dwyka consists of Tillite, sandstone, mudstone and shale. The Dwyka Formation is found at the base of the Karoo Sequence. In the central of the Karoo it was deposited in a comparatively shallow basin with a rather even floor, so that the rocks in this area are practically horizontally bedded and not very thick.</p> <p>A Land type unit is a unique combination of soil pattern, terrain and macroclimate, the classification of which is used to determine the potential agricultural value of soils in an area. The land type units represented within the project areas include the Ae45 land type.</p>
Land use and land capability	<p>The major land use of the study area as classified by the Environmental Potential Atlas of South Africa (2000) is vacant land. There are informal houses and a soccer pitch on Portion32. There are mainly residential dwelling units to the west with quite a few non-residential land uses for including a police station, bottle store and supermarket. To the east and south is mainly farmland a quarry and to the north a shooting range and road.</p>
Air Quality	<p>As far as could be established, there is no ambient monitoring station in Kimberley (<a href="https://saaqis.environment.gov.za/">https://saaqis.environment.gov.za/</a> - accessed July 2020).</p> <p>Particulates represent the main pollutant of concern from the current activities in the region including from mining operations, vehicles and trucks on gravel roads, agricultural field tilling and windblown dust from exposed surfaces. The particle size fraction of concern for air quality assessments include Total Suspended Particles (TSP), assessed as dust fallout and Particulate Matter (PM) (PM<sub>10</sub> and PM<sub>2.5</sub>) which will be assessed for potential health impacts.</p> <p>Gaseous emissions derive from the haul trucks, mining equipment, public vehicles, biomass burning and domestic fuel burning. These gaseous emissions include primarily SO<sub>2</sub>, CO, CO<sub>2</sub>, NO<sub>x</sub> and hydrocarbons. Vehicles on the roads in Kimberley, and on the national roads (N8, R64 and R357) will also contribute to these gaseous emissions but it is expected that these are not busy roads and therefore the contribution is negligible. It is not known what the frequency and magnitude of veld fires are in the region, but these could be significant contributors to ambient gaseous pollutants. Similarly, domestic fuel burning can be significant contributors to specifically indoor air pollution.</p> <p>Clay brick production will result in the most significant emissions, with particulate emissions deriving from mixing and blending of the raw materials, grinding and firing. The firing will also give rise to SO<sub>2</sub>, NO<sub>2</sub>, SO<sub>3</sub>, Volatile Organic Compounds (VOCs) and some Hazardous Air Pollutants (HAP) and fluorides.</p>
Surface Water	<p>No natural watercourses traverse the Roodepan infrastructure site, although stormwater collected in the old quarries and formed artificial wetlands.</p> <p>The project area is drained mainly by surface run-off (i.e.: sheetwash) with surface water flowing into the pans and drainage channels that bisect the larger Kimberley area. The storm water collects along roads and footpaths cutting through the area, to drain into the regional man-made canals and channels. It must be noted that surface flow generally only occurs in the period directly after precipitation events or a wet rainy season, and that these channels / canals may exhibit a large base-flow component with groundwater flow occurring within the sandy sediments lining its channel.</p>
Groundwater	<p>The local hydrogeology within the study area is hosted by the Karoo dolerite rock and basement rocks. The surrounding lithological units are classified as intergranular and fractured with the estimated yield of 0.5 – 2 l/s.</p> <p>Groundwater aquifers within the study area are potentially recharged through regional and local recharge system due to the limited rainfall in the area. Groundwater harvest potential as</p>

Aspect	Description
	<p>indicated by Baron et al, (1998) is approximately 6 000 to 10 000 m<sup>3</sup>/km<sup>2</sup>/annum, which is the maximum groundwater which can be sustainably abstracted per square kilometre.</p> <p>The quaternary catchment is within the Vegter Region 30 referred to as North-eastern Pan Belt. Two basic types of aquifer storage are assumed to exist in this region, namely the "Weathered /Jointed" Zone (WZ) and Fractured" Zone (FZ).</p> <p>In fractured rock (FZ) aquifers the number of water-bearing fractures generally decreases with depth (Vegter, 1995) and this often results in a similar decline in aquifer storativity with depth. While the saturated zone (WZ) is normally a relatively thin zone (i.e. 5 to 40m thick) with its upper surface formed by the water table, therefore making this portion of the aquifer semi-unconfined to unconfined. This zone is characterised by a large number of relatively low-yielding water-strikes.</p> <p>Groundwater use within the quaternary catchment is very limited. The proposed project will also not abstract any groundwater for use.</p>
Wetlands	<p>The depressions in the project area represent man-made quarries or artificial depressions created where stormwater or water from surrounding leaking pipelines collect. The artificial wetland identified on the eastern section of the Roodepan site primarily exists due to the leaking of a water supply pipeline that leads to the wetness regime in soils needed for wetland formation. This artificial hydraulic regime caused by the leaking pipe will remain until the infrastructure is repaired to allow the areas to rehabilitate. Due to the rich abundance of natural water sources in the primary catchment (in the form of natural pans, wetlands, rivers and streams) contributing largely to ecosystem functioning, the ecological significance of these artificial systems is minimal.</p>
Heritage Resources	<p>In this landscape, Industrial Archaeological traces often occur in association with former mining activity associated with the diamond retrieval process up to 1914, particularly with respect to the Kimberley Mine and smaller De Beers Mines. Also associated are mine dumps, some of which were used for redoubts (forts) in the Defence of Kimberley during the Siege, 1899-1900. Some discarded mining areas subsequently became dumping areas for industrial and domestic waste which is also the case with the Kamfersdam Mine area. Similarly, single fragments of dated bottles and bottle necks, porcelain, glass and metal were noted in a midden along the southern periphery of the project area. These artefacts were found in low densities in association with mining debris from the Historical Period – particularly relating to the nearby Kamfersdam Mine. The local site context of the artefacts has unfortunately been lost due to the state of preservation of the site and the alteration of surface deposits. This aspect combined with the low artefact density and general absence of diagnostic material implies a low heritage significance of the material found at the Roodepan Site. However, the site is situated within the larger historical Kimberley Mine Complex and on a regional scale associated material within intact site contexts might be of some importance.</p> <p>The Roodepan Municipal Cemetery occurs along the western boundary of the project area on Midlands Road. The graveyard, which is currently in use, is partially fenced off and maintained by local authorities. The burial site is of high heritage significance and, even though it is situated outside of the project area, every measure should be taken to avoid direct and indirect impacts on the site.</p>
Biodiversity	<p><i>Flora</i></p> <ul style="list-style-type: none"> <li>• Vegetation Units: 5 major vegetation units were identified on the proposed development site as follows: <ul style="list-style-type: none"> <li>○ Degraded Vachellia tortilis – Prosopis woodland;</li> <li>○ Prosopis glandulosa woodland (Thickets / degraded areas (old quarry) and Open woodland);</li> <li>○ Degraded grassland / bare ground;</li> <li>○ Senegalia mellifera thickets; and</li> <li>○ Drainage features (Old quarries and leaking pipelines - Artificial wetlands</li> </ul> </li> <li>• Species of Conservation Concern: There are no red list plants located on the site;</li> <li>• Protected trees (NFA): no listed protected tree species were documented on site</li> <li>• NC DENC Protected Species: no protected tree species were documented on site</li> <li>• Invasive alien species and exotic weeds: A number of species were identified on the site</li> </ul> <p><i>Fauna</i></p> <ul style="list-style-type: none"> <li>• Habitats: The area represents mixed woodland vegetation components with a diverse vegetation structure and height class. There are three main faunal habitat types</li> </ul>



Aspect	Description
	<p>present on the site that might be impacted on by the proposed project namely open water habitat (wetlands), degraded grassland and mixed woodland (alien invasive and indigenous).</p> <ul style="list-style-type: none"> <li>• Mammals: Large mammals that occurred historically at the site, are absent from the area, owing to anthropogenic impacts in recent centuries. This loss of large species means that the mammal diversity at the site is far from its original natural state not only in terms of species richness but also with regards to functional roles in the ecosystem.</li> <li>• Birds (Avifauna): The conservation status of many of the bird species that are dependent on wetlands reflects the critical status of wetland nationally, with many having already been destroyed. In the study area, only pans (artificial wetlands in old quarries) were observed. Species such as greater flamingos will utilize the salt pans in the area for foraging, although the artificial wetlands are not considered a habitat of significance compared to the Kamfers Dam to the east of the Roodepan site. Microphyllous woodland usually supports much higher bird numbers compared to the broadleaved woodlands. The area represents microphyllous woodland and supports many smaller bird species such as Ashy Tit, Pied Babbler, Kalahari Robin, Burntnecked Eremomela, Desert Barred Warbler, Marico Flycatcher, PiritBatis, Crimsonbreasted Shrike, Longtailed Shrike, Threestreaked Tchagra, Great Sparrow, Whitebrowed Sparrowweaver, Scalyfeathered Finch, Violeteared Waxbill and Blackcheeked Waxbill. Degraded grasslands sometimes cover extensive areas and have become an artificial habitat that attracts a wide range of generalist species. These grasslands represents a significant feeding area for many bird species in any landscape for the following reasons: through opening up the soil surface, land preparation makes many insects, seeds, bulbs and other food sources suddenly accessible to birds and other predators; the grasses are often eaten themselves by birds, or attract insects which are in turn eaten by birds.</li> <li>• Herpetofauna (Reptiles and Amphibians): Typical species associated with arid and semi-arid habitat types occur in the study area. Venomous species such as the puff adder and cape cobra are expected to occur in the larger study area, although the location within Kimberley City makes the probability of these snakes occurring on site virtually zero. The general habitat type for reptiles consists of open woodland and grassland with limited available habitat for diurnally active and sit-and-wait predators, such as terrestrial skinks and other reptiles. The amphibians appear to be poorly represented on site and the artificial wetlands represent the most suitable habitat for the few amphibian species that could occur in the area. No threatened species occur in the area.</li> <li>• Red data fauna: Some red data fauna does potentially occur in the vicinity of the proposed developments, although it has a very low to almost zero probability of occurring on the site.</li> </ul>
Areas of Conservation Concern	<p>According to the Northern Cape Conservation Plan, the project area is located in an area classified as Critical Biodiversity Area 2 (CBA2). However, the biodiversity assessment conducted for the site found that the development site is in a highly degraded state and should not be classified as a CBA2 area.</p>
Visual	<p>Roodepan is the closest residential areas, located across the road from the Roodepan Quarry. It is expected that the proposed project will result in visual impacts on the residents of Roodepan. The impact assessment section of the report includes an assessment of the visual impacts and the EMPr provides for practical mitigation measures that may be implemented to avoid and/or minimise the impacts.</p>
Socio-Economy	<p>The proposed project will be located within the Sol Plaatje Local Municipality which is situated in the Francis Baard District Municipality.</p> <ul style="list-style-type: none"> <li>• Population: The municipality has experienced negative growth (-0.3%) in the population from 1996 to 2001 and an upswing to 2% from 2001 to 2011. Between 2005 and 2015 the population growth averaged 2.22% per annum which is slightly higher than the growth rate of South Africa as a whole (1.51%). The population projection of Sol Plaatje Local Municipality shows an estimated average annual growth rate of 1.9% between 2015 and 2020.</li> <li>• Economic profile of local municipality: The Sol Plaatje Local Municipality is a Category B municipality located in the Frances Baard District in the Northern Cape Province. It is bordered by Dikgatlong in the north, the Pixley ka Seme District in the south and west, and the Free State Province in the east. The size of Sol Plaatje local economy is approximately R46.0 billion. The municipality contributes 78.0% and 25.5% to the Frances Baard District Economy and the Northern Cape Province</li> </ul>

Aspect	Description
	<p>Economy respectively. The main economic sectors: include agriculture, business services, game farming, tourism and hospitality, manufacturing, transport, community services, social and personal services. The fastest growing sectors in the Municipality are agriculture, electricity and water, and mining sectors. The IDP notes that the current growth occurring in these sectors should be exploited to ensure the creation of new job opportunities for local people.</p> <ul style="list-style-type: none"> <li>Level of education: Of the population over 20 years, 30% of the population has obtained matric and higher education, while 10% indicate no schooling. The remaining 60% have some primary schooling and some secondary schooling. This will pose a serious problem for the future economic trajectory as skills will have to be built to suit the economic path and in the short-term skills will have to be brought in from skilled areas.</li> </ul>

## Anticipated Impacts

The scoping phase aims to identify the potential positive and negative biophysical, socio-economic and cultural impacts that the proposed project will have. Anticipated impacts that have been identified by the project team are summarised in Table ES-2.

**Table ES – 2: Anticipated Impacts**

Element of Environment	Potential Impact Descriptions
Socio-Economic	Possible limited and temporary job opportunities during the construction phase of the clay brick manufacturing plant
Hydrogeology	Possible groundwater contamination from hydrocarbons leaking from vehicles and machinery.
Surface water	Possible surface water contamination.
Air Quality	Possible impact on air quality in the area.
Noise	Possible generation of noise during the construction and operational phases of the proposed project
Heritage Resources	Possible, but highly unlikely impact on heritage resources due to chance finds
Visual	Possible visual impacts will be associated with the proposed facility
Soils/Land Use/Land Capability	Localised loss of soil resource and change in land capability and land use due to the clearance of vegetation is expected.
Traffic	Possible impacts on traffic due to transportation of materials
Biodiversity	Loss of biodiversity due to vegetation clearance for construction.
Wetland	Possible impacts on the artificial wetlands that are located on the proposed manufacturing site.

All impacts in terms of construction, operation and decommissioning together with the recommended mitigation measures will be addressed in the EIA/EMPr phase of the project.

## Specialist Studies

The following specialist studies will be conducted as part of the EA and AEL application processes:

- Biodiversity including flora, fauna and wetlands;
- Noise;
- Air Quality; and
- Heritage Resources.

## Quantification of Impacts

The anticipated impacts associated with the proposed project will be assessed according to the standardised impact assessment methodology presented Section 11.3

This methodology has been utilised for the assessment of environmental impacts where the consequence (severity of impact, spatial scope of impact and duration of impact) and likelihood (frequency of activity and frequency of impact) have been considered in parallel to provide an impact rating and hence an interpretation in terms of the level of environmental management required for each impact.

## Plan of Study for the EIA

The Scoping Report is concluded with a Plan of Study (PoS) for the EIA which explains how the EIA will be conducted for the project in accordance with the following:

- Key environmental issues identified during the scoping phase to be investigated further in the EIA phase;
- Feasible alternatives to be assessed further in the EIA phase;
- Development of an EMPr;
- Specialist investigations which need to be finalised;
- The public participation process to be followed;
- Contents of the EIA/EMPr Report; and
- Consultation with the authorities.

## Conclusion and Recommendation

The aim of this Scoping Report is to provide an indication of the identified, positive and negative environmental and socio-economic impacts associated with the proposed project activities. Extensive consideration has been given to the proposed design and location of the project. No fatal flaws have been identified during the scoping phase of this project. The heritage, air quality and noise biodiversity (including wetland delineation) specialists have conducted field assessments and found no resources of significant importance that will be affected by the project.

The stakeholder engagement in the scoping phase will play an important role in determining possible impacts and allowing the concerns by the stakeholders to be adequately addressed in the Impact Assessment Phase of the EIA process.

The Draft Scoping Report has presented:

- The environmental process undertaken so far;
- A brief description of the proposed project;
- A baseline description of the current environment;
- The potential environmental and social impacts identified to date; and
- The recommended environmental process to be followed to develop the EIA/EMPr Report.

Once the Scoping Report comment period is concluded, the report will be updated with the additional issues, and submitted to DENC for decision making. Once the scoping report has been accepted by the DENC, an EIAR, including a Draft EMPr, will be compiled and subjected to a round of public comment. The EIAR and EMPr will then be submitted to the authorities for decision-making. On submission of the EIA and EMPr to the DENC, notification will be sent to registered I&APs to inform them of the submission of the documents; and the opportunity to request copies of the Final Reports.

Findings from specialist studies impact assessment will be incorporated into the EIAR and EMPr during the EIA phase. The proposed comprehensive stakeholder engagement process in the PoS will ensure that the stakeholders are involved throughout the process, from the conception of the EA application process to the end. It is anticipated that implementation of the PoS presented in this report will result in an adequate EIA process which will result in the formulation of a sound EMPr with mitigation measures that will be implemented during the construction and operational phases of the proposed project.

## YOUR COMMENT ON THE SCOPING REPORT

This Draft Scoping Report will be available for comment for a period of 30 days from 16 September 2020 to 18 October 2020. Copies of the Scoping Report have been made available at the following public places for review:

Public Place	Locality	Telephone
Kimberley Public Library	34 Sidney St, Kimberley, 8300	053 830 6242
Ndi Geological Services	OneDrive	A link will be created and shared with the stakeholders
Ndi Geological Services	Dropbox	A link will be created and shared with the stakeholders
Ndi Geological Services Website	<a href="http://www.ndigeoservices.co.za/">http://www.ndigeoservices.co.za/</a>	053 842 0687

An electronic copy will also be available on CD on request from the stakeholder engagement officers. I&APs are requested to provide comments and information on the following aspects of the proposed project:

1. Information on how I&APs consider that the proposed activities will impact on them or their socio-economic conditions;
2. Written responses stating their suggestions to mitigate the anticipated impacts of each activity;
3. Information on current land uses and their location within the area under consideration;
4. Information on the location of environmental features on site to make proposals as to how and to what standard the impacts on site can be remedied; and
5. How to mitigate the potential impacts on their socio-economic conditions and to make proposals as to how the potential impacts on their infrastructure can be managed avoided or remedied.

### DUE DATE FOR COMMENT

**18 October 2020**

**Please submit comments to the stakeholder engagement officers:**

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# Table of Contents

Executive Summary .....	ii
<b>1 Introduction .....</b>	<b>1</b>
<b>2 Aim of the Stakeholder Engagement Plan .....</b>	<b>3</b>
2.1 Objectives of this Report .....	3
2.2 Environmental Authorisation Application Process .....	3
2.3 Report Index in Relation to the NEMA Regulations .....	4
<b>3 Contact Person and Correspondence .....</b>	<b>7</b>
3.1 Applicant .....	7
3.2 Environmental Assessment Practitioner .....	7
3.3 Competent Authority Details .....	7
3.4 Local Authority Details .....	8
<b>4 Project Location .....</b>	<b>10</b>
<b>5 Project Description.....</b>	<b>12</b>
5.1 Construction .....	12
5.2 Operation .....	12
5.3 Employment .....	16
<b>6 Alternatives Considered .....</b>	<b>17</b>
6.1 Manufacturing Processes .....	17
6.2 No-Go Alternative.....	17
<b>7 Legal and Policy Framework.....</b>	<b>18</b>
7.1 Provincial and Municipal Bylaws .....	25
7.2 Guidelines .....	25
7.3 Listed Activities Triggered .....	25
<b>8 Stakeholder Engagement Process.....</b>	<b>28</b>
8.1 Stakeholder Identification Interested and Affected Parties .....	28
8.2 Project Announcement.....	31
8.2.1 Distribution of Notification Letters .....	31
8.2.2 Site Notice Placements .....	31
8.2.3 Newspaper Advertisements .....	32
8.2.4 Radio Announcements .....	32
8.3 Public Review of the Draft Scoping Report.....	32
8.4 Key Comments Received .....	33
8.5 Comments and Response Report.....	33
<b>9 Need and Desirability of the Proposed Project.....</b>	<b>34</b>
<b>10 Description of the Baseline Environment .....</b>	<b>35</b>
10.1 Climate .....	35
10.2 Topography .....	36
10.3 Geology and Soils .....	38

10.4 Land-Use and Land capability .....38

10.5 Air Quality.....38

10.6 Water Resources .....39

10.7 Geohydrology .....42

10.8 Artificial wetlands .....44

    10.8.1 Man-made Depressions .....44

    10.8.2 Artificial Wetlands.....44

10.9 Areas of Conservation Concern.....45

10.10 Visual .....47

10.11 Biodiversity .....47

    10.11.1 Vegetation .....47

    10.11.2 Fauna .....52

10.12 Heritage Resources .....54

10.13 Socio – Economical Environment .....58

**11 Plan of Study for the Environmental Impact Assessment .....60**

    11.1 Purpose of this Plan of Study.....60

    11.2 Purpose of the EIA/EMPr Phase.....60

    11.3 Methodology.....60

    11.4 Environmental Impact Assessment Report.....61

    11.5 Environmental Management Programme .....61

    11.6 Stakeholder Engagement Going Forward .....61

        11.6.1 Submission of EIA Report and EMPr for Review .....61

        11.6.2 Authority Consultation .....62

    11.7 Alternatives .....62

    11.8 Specialist Studies.....62

    11.9 Impact Assessment Methodology .....63

**12 Anticipated Environmental, Social and Cultural Impacts .....66**

    12.1 Socio Economic .....66

    12.2 Hydrogeology .....67

    12.3 Surface water .....67

    12.4 Air Quality.....68

        12.4.1 Screening and Blending .....69

        12.4.2 Sun Drying.....69

        12.4.3 Firing.....69

        12.4.4 Zig-Zag Kilns .....70

        12.4.5 Vehicle entrainment.....70

    12.5 Noise .....71

    12.6 Visual .....71

    12.7 Soils, Land Use and Land Capability.....71

    12.8 Biodiversity .....72

    12.9 Wetland .....72

12.10Heritage.....72

12.11Traffic .....72

12.12Cumulative impacts.....72

**13 Undertaking of Oath by the EAP .....74**

**14 Conclusions and Recommendations.....75**

**15 References .....76**

**Appendices .....78**

**Appendix A: Curriculum Vitae of the EAP .....79**

**Appendix B: Project Experience .....80**

**Appendix C: Stakeholder Engagement.....81**

**Appendix C 1: Pre-application Authority Consultation Documents.....82**

**Appendix C 2: Stakeholder Engagement Plan and DENC Response.....83**

**Appendix C 3: Stakeholder Database .....84**

**Appendix C 4: Announcement Phase Notifications.....85**

**Appendix C 5: Site Notices .....86**

**Appendix C 6: Newspaper Advertisements .....87**

**Appendix C 7: Comments and Responses Report .....88**

**Appendix C 8: Stakeholder Communications .....89**

**Appendix C 9: Commenting Authority Correspondence.....90**

## List of Tables

Table 1-1: Summary of proposed development .....2

Table 2-1: Requirements of Regulation 2 of GNR 326 .....4

Table 3-1: Applicant Contact Details .....7

Table 3-2: Details of the Project Team.....7

Table 3-3: Competent Authority Details .....8

Table 3-4: Local and District Municipality Details.....8

Table 4-1: List of Affected Farms and Farm Portions Illustrating the Relevant Activities .....10

Table 7-1: Policy and Legislative Context of Proposed Project .....19

Table 7-2: NEMA Listed Activities Triggered by the proposed project.....26

Table 8-1: NEMA Stakeholder Guidelines .....28

Table 8-2: List of Affected Farm and Farm Portions .....29

Table 8-3: Site Notice Location and Coordinates.....31

Table 8-4: Newspaper Advertisements .....32

Table 8-5: List of places the Draft Scoping Report will be placed for public review .....32

Table 8-6: Key Comments Received.....33

Table 10-1: Land types, geology and dominant soil types of the proposed development site .....38

Table 10-2: Groundwater Quantification .....42



Table 10-3:	Red data species documented during the surveys.....	51
Table 10-4:	Declared weeds and invader plants of the study area .....	51
Table 10-5:	Red data fauna species potentially occurring in the study area .....	53
Table 10-6:	Educational Levels in the Sol Plaatje Local Municipality .....	59
Table 11-1:	Criteria for Assessing Significance of Impacts.....	64
Table 11-2:	Interpretation of Impact Rating.....	65
Table 12-1:	Summary of Potential Environmental Impacts Associated with the Proposed Development....	66
Table 12-2:	Sources of fugitive particulate emission associated with construction .....	68

## List of Figures

Figure 1-1:	Changing the face of the City Project Summary .....	1
Figure 2-1:	Overview the Environmental Impact Assessment Process .....	4
Figure 3-1:	Relevant District and Local Municipalities Relevant to the Proposed Project .....	9
Figure 4-1:	Affected Property .....	11
Figure 5-1:	Proposed Process.....	14
Figure 5-2:	Proposed Water Network .....	15
Figure 5-3:	Proposed Sewerage Network .....	15
Figure 5-4:	Electrical Demand Proposed Area Plan.....	16
Figure 8-1:	Affected and Adjacent Properties .....	30
Figure 10-1:	Climate graph for Kimberley area .....	36
Figure 10-2:	Topography .....	37
Figure 10-3:	Nearest schools and residential areas.....	39
Figure 10-4:	Water Resources .....	41
Figure 10-5:	Localised groundwater yield .....	43
Figure 10-6:	Areas of Conservation Concern.....	46
Figure 10-7:	Vegetation Units on the project site .....	50
Figure 10-8:	A historical aerial image of the project area.....	56
Figure 10-9:	Aerial image indication the locations of heritage features .....	57
Figure 10-10:	Education (Source – Stats SA, 2011) .....	58
Figure 12-1:	Assumed site layout of activities at Roodepan Quarry and Clay Brick facility.....	69
Figure 12-2:	Schematic view of a Habla Zig-Zag kiln (source: Pengoriya, 2016) .....	70

## List of Photographs

Photograph 10-1:	Artificial wetlands (quarries) in the project area.....	44
Photograph 10-2:	Artificial wetlands (quarries) in the project area.....	44
Photograph 10-3:	Artificial wetland that formed as a result of the leaking pipeline .....	45
Photograph 10-4:	Leaking pipeline in the north-eastern section of the Roodepan site.....	45
Photograph 10-5:	A single Middle Stone Age artefact found in the project area .....	55
Photograph 10-6:	A glass bottle top and other glass fragments from the refuse dump in the project area ..	55

Photograph 10-7: The degraded refuse dump where scattered glass and porcelain were noted .....	55
Photograph 10-8: View of the entrance to the Roodepan Cemetery in the project landscape .....	55

## List of Abbreviations

AEL:	Atmospheric Emissions License
AIS:	Alien and Invasive Species
AQSR:	Air quality Sensitive Receptors
CARA:	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
CBA2:	Critical Biodiversity Area 2
CRR:	Comments and Responses Register
DAFF:	Department of Agriculture, Forestry and Fisheries
DEA:	Department of Environmental Affairs
DEAT:	Department of Environmental Affairs and Tourism
DEFF:	Department of Environment, Forestry and Fisheries
DENC:	Northern Cape Department of Environment and Nature Conservation
DMR:	Department of Mineral Resources
DWS:	Department of Water and Sanitation
EA:	Environmental Authorisation
EAP:	Environmental Assessment Practitioner
EAPASA:	Environmental Assessment Practitioners Association of South Africa
ECO:	Environmental Control Officer
EIA:	Environmental Impact Assessment
EIAR:	Environmental Impact Assessment Report (
EMPr:	Environmental Programme
ENPAT:	Environmental Potential Atlases
FZ:	Fractured" Zone
GNR:	Government Notice Regulation
GPS:	Global Positioning System
HIA:	Heritage Impact Assessment
I&AP:	Interested and Affected Party
IDP:	Integrated Development Plan
KRD:	Kimberley Rehabilitation and Development
MES:	Minimum Emission Standards
MSA:	Middle Stone Age
NEM: AQA:	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)

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NEM: WA;	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NEM:BA:	National Environmental Management: Biodiversity Act (Act No. 10 of 2004)
NEMA:	National Environmental Management Act, 1998 (Act 107 of 1998)
NFA:	National Forestry Act, 1998 (Act No. 84 of 1998)
NHRA:	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NWA:	National Water Act, 1998 (Act 36 of 1998)
PAIA:	Promotion of Access to Information Act (Act No. 2 of 2000)
PM:	Particulate Matter
PoS:	Plan of Study
POSA:	Plants of Southern Africa
PPP:	Public Participation Plan
SCC:	Species of Conservation Concern
SDF:	Spatial Development Framework
ToR:	Terms of Reference
TSP:	Total Suspended Particles
VOC:	Volatile Organic Compounds
WMA:	Water Management Area
WML:	Waste Management Licence
WUA:	Water Use Authorisation
WZ:	Weathered /Jointed" Zone

# 1 Introduction

Kimberley Rehabilitation and Development (KRD) is proposing to develop various infrastructure, mining (mining permit application) and industrial developments to change the face of Kimberley City located in Sol Plaatje Local Municipality, Northern Cape Province.

The project will contribute to the city and the province in terms of infrastructure and socio-economic development, especially due to the estimated 1 500 direct and indirect job opportunities. KRD has conducted extensive calculations, investigations and consultations in the compilation of the project plan and its various components and its integration into a single integrated business model. The information and calculations all indicate the feasibility of the project if implemented as an integrated model. This project cannot succeed if the various individual activities do not contribute to the execution of the project plan.

The proposed project will entail removal of mining debris from three sites (BMW, St. Augustine and Colville) to the Roodepan Quarry, which is current vacant and has been left unattended for the last ± 80 years.

The debris will be reworked to extract the clay content, which will be used for the manufacturing of clay bricks at the Roodepan Quarry. These clay bricks together with the cement bricks manufactured at the Vooruitzigt Quarry will be used for the development of the three development sites (BMW, St. Augustine and Colville). The unused material will be used to fill the quarry in accordance with an approved Environmental Management Programme (EMPr).

Figure 1-1 summarizes the scope of the project entitled “Changing the Face of a City” which KRD is packaging for implementation:

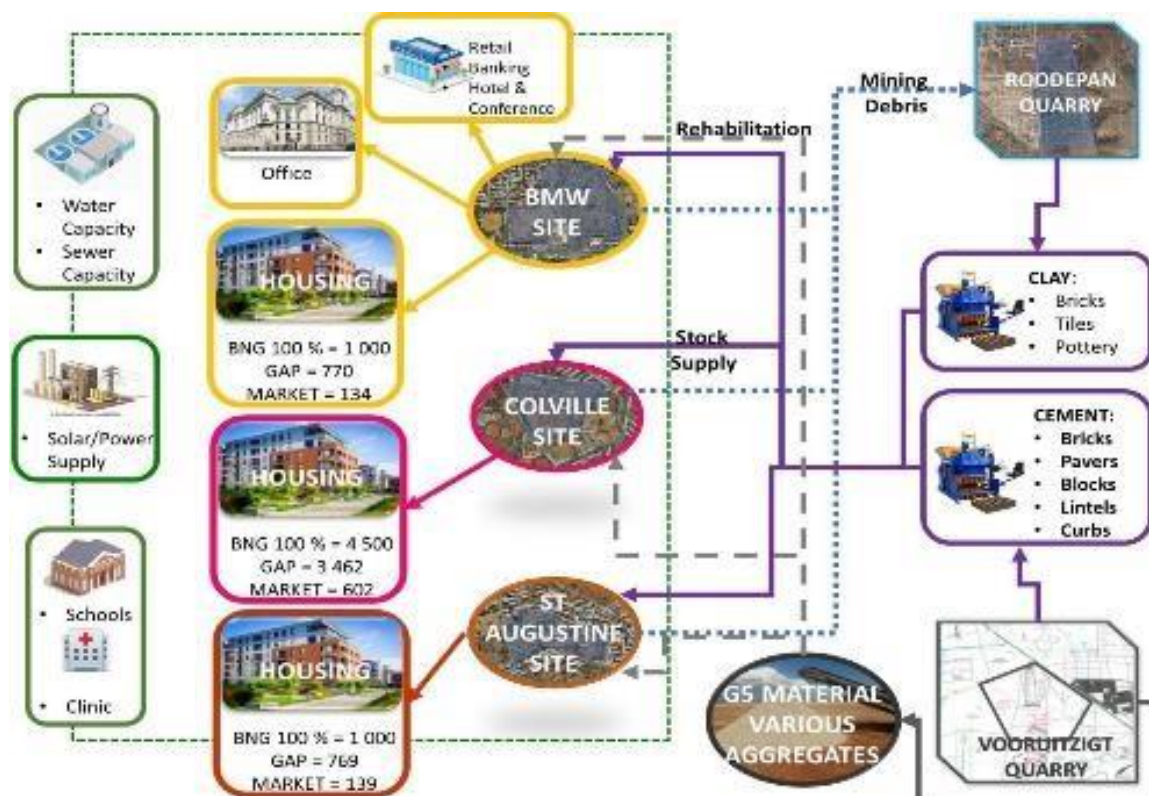


Figure 1-1: Changing the face of the City Project Summary

Table 1-1 provides an indicative development rationale amounting to approximately 12 369 housing opportunities.

**Table 1-1: Summary of proposed development**

Development Rationale							Land Use Application							
Site	Area (ha)	Site Name	Building Footprint (%)	Coverage (000m <sup>2</sup> )	Height (Storeys)	Bulk (000m <sup>2</sup> )	Commercial (000m <sup>2</sup> )	Housing Configuration						
								Type	BNG1 00%	GAP Housing		Market		Total
								Size (m <sup>2</sup> )	60	60	65	85	95	
								Basket (%)	50	20	20	5	5	100%
1	20	BMW (A)	20	40	3	120								
1	20	BMW (B)	20	40	2	80	80							
2	45	Colville	40	180	3	540								
3	10	St Augustine	40	40	3	120								
<b>TOTAL</b>							<b>80</b>		<b>6500</b>	<b>500</b>	<b>2400</b>	<b>459</b>	<b>411</b>	<b>12369</b>

The construction of the proposed clay brick manufacturing facility at the Roodepan Quarry triggers activities listed in terms of Listing Notices 1 (26 and 27), Listing Notice 2 (6 and 28) and Listing Notice 3 (12) of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) (as amended) and will require an Environmental Authorisation (EA) from the Northern Cape Department of Environment and Nature Conservation (DENC). Since the project triggers activities in Listing Notice 2 of the NEMA, a full Environmental Impact Assessment (EIA) including Scoping and Impact Assessment will be followed as stipulated in Government Notice Regulation (GNR) 326 of the NEMA.

Ndi Geological Consulting Services (Pty) Ltd was appointed by KRD as the Independent Environmental Assessment Practitioner (EAP) to undertake the applications for any required environmental licences, permits and authorisations that will be required by the project.

The reports and documentation for the EA application process will be compiled and finalised for submission to the DENC in terms of the NEMA for consideration and decision making. The DENC will consult with other government authorities as required in terms of Section 24(K) of the NEMA.

## 2 Aim of the Stakeholder Engagement Plan

### 2.1 Objectives of this Report

This document serves as the draft Scoping Report for the first phase of the overall EIA process and includes the following objectives as a minimum:

- Providing an overview of the legal requirements with regard to the proposed project, the proposed project description and anticipated environmental and social issues and impacts that will be further investigated in the EIA;
- To identify and engage with Interested and Affected Parties (I&APs) and allow for adequate participation in the process;
- To assess the receiving environment in terms of current state and determine potential positive or negative impacts which may result due to the proposed development;
- To consider alternatives for achieving the project's objectives;
- To identify significant issues to be investigated further during the execution of the EIA phase; and
- Setting out the scope of the EIA process and the Terms of Reference (ToR) for specialist studies and outlining the approach and methodologies to be used in the EIA process, e.g. the proposed impact rating methodology.

This report will be submitted to the DENC for review and decision making.

### 2.2 Environmental Authorisation Application Process

The first Phase of the EA application process is the scoping phase, which will inform the Impact Assessment Phase. This phase provides I&APs an opportunity to provide the EAP with issues and concerns with respect to the proposed project in order to inform the technical studies so that they can evaluate these concerns during the Impact Assessment Phase of the project.

This Draft Scoping Report provides a description of the proposed project and sets out the proposed scope of the EIA and EMPr that will be undertaken for the construction and operation of the proposed clay brick manufacturing facility and associated infrastructure. This includes alternatives that will be evaluated for various aspects of the project, the anticipated potential environmental impacts, issues raised by stakeholders, the specialist studies that will be undertaken including the terms of reference of the specialist studies, and the qualifications and experience of the study team.

Stakeholder engagement is a key element of the environmental decision-making process, and forms part of the scoping phase as well as the impact assessment phase.

The Draft Scoping Report will be made available for public review prior to submission to DENC for authorisation. All the comments received will be captured and addressed where feasible in the Scoping Report as well as the Environmental Impact Assessment Report (EIAR).

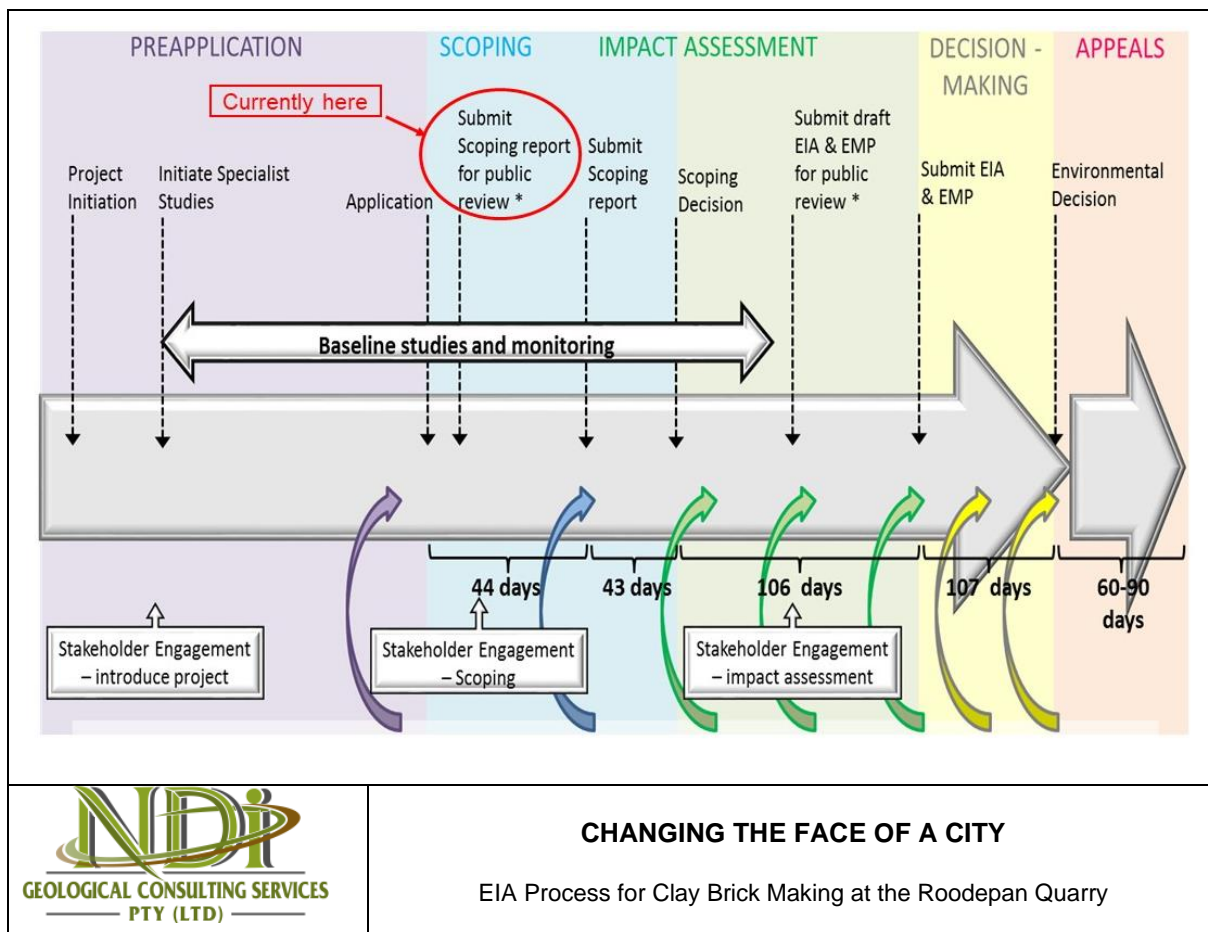


Figure 2-1: Overview the Environmental Impact Assessment Process

### 2.3 Report Index in Relation to the NEMA Regulations

Regulation 2, Appendix 2 of GNR 326 published in terms of NEMA stipulates the minimal requirements and issues that need to be addressed in the Scoping Report. This report strives to address all these requirements as per regulations. Table 2-1 indicates the regulations that have been addressed and the section of the Scoping Report where these requirements can be found.

Table 2-1: Requirements of Regulation 2 of GNR 326

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for Scoping Reports	Section
Appendix 2 (a)	Details of – the EAP who prepared the report; and the expertise of the EAP, including a curriculum vitae	Section 3.2 Appendix A
Appendix 2 (b)	The location of the activity, including – The 21-digit Surveyor General code of each cadastral land parcel; Where available, the physical address and farm name; Where the required information in items (i) and (ii) is not available, coordinates of the boundary of the property or properties.	Section 4
Appendix 2 (c)	A plan which locates the proposed activity or activities applied for 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; or	Figure 4-1

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for Scoping Reports	Section
	On land where the property has not been defined, the coordinates within which the activity is to be undertaken; or.	
Appendix 2 (d)	A description of the scope of the proposed activity, including – All listed and specified activities triggered; A description of the activities to be undertaken, including associated structures and infrastructure.	Section 5 Table 7-2
Appendix 2 (e)	A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process.	Section 7
Appendix 2 (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.	Section 9
Appendix 2 (g)	A full description of the process followed to reach the proposed preferred activity, site and location within the site, including- Details of all alternatives considered; Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; 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 environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration, and probability of the impacts, including the degree to which the impacts- (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed, or mitigated. The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives; 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 geographic, physical, biological, social, economic, heritage and cultural aspects; The possible mitigation measures that could be applied and level of residual risk; The outcome of the site selection matrix; If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and; A concluding statement indicating the preferred alternatives, including preferred location of the activity.	
		Section 6
		Section 8
		Section 8.4
		Section 10
		Section 12
		Section 11.9
		Section 12
		Section 12
		Section 6
Not Applicable		
Section 6		



Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for Scoping Reports	Section
Appendix 2 (h)	<p>A plan of study for undertaking the environmental impact assessment process to be undertaken including-</p> <p>A description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;</p> <p>A description of the aspects to be assessed as part of the environmental impact assessment process;</p> <p>Aspects to be assessed by specialists;</p> <p>A description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;</p> <p>A description of the proposed method of assessing duration and significance;</p> <p>An indication of the stages at which the competent authority will be consulted;</p> <p>Particulars of the public participation process that will be conducted during the environmental impact assessment process;</p> <p>A description of the tasks that will be undertaken as part of the environmental impact assessment process;</p> <p>Identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.</p>	Section 11
Appendix 2 (i)	<p>An undertaking under oath or affirmation by the EAP in relation to-</p> <p>The correctness of the information provided in the report;</p> <p>The inclusion of the comments and inputs from stakeholders and interested and affected parties; and</p> <p>Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.</p>	Section 13
Appendix 2 (j)	<p>An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment.</p>	Section 13
Appendix 2 (k)	<p>Where applicable, any specific information required by the competent authority.</p>	Not Applicable
Appendix 2(l)	<p>Any other matter in terms of Section 24(4)(a) and (b) of the NEMA</p>	Not Applicable

### 3 Contact Person and Correspondence

Ndi Geological Consulting Services (Pty) Ltd was appointed by KRD as the Independent Environmental Assessment Practitioner (EAP) to undertake the necessary environmental authorisation process and associated stakeholder engagement process to meet the requirements of the NEMA.

#### 3.1 Applicant

Table 3-1 presents the details of the applicant and facility owner's representative.

**Table 3-1: Applicant Contact Details**

Contact details of the Applicant:
Kimberley Rehabilitation and Development (KRD) Deon Kotze 30 Jan van Zyl St, Monument Heights, Kimberley, 8301 Cell: 0793559065 E mail: deon@kimrd.com

#### 3.2 Environmental Assessment Practitioner

The project team members as stipulated in Table 3-2 can be contacted for the purposes of this project.

**Table 3-2: Details of the Project Team**

Contact details of the EAP:
<b>Ndivhudzannyi Mofokeng</b> Ndi Geological Consulting Services (Pty) Ltd 38 Ophelia Street, Kimberley, 8301 Cell: 082 760 8420 Tel: 053 842 0687 Fax: 086 538 1069 E mail: <a href="mailto:atshidzaho@gmail.com">atshidzaho@gmail.com</a> /ndi@ndigeoservices.co.za

The EAP, Mrs Ndivhudzannyi is a registered EAP (EAPASA Reg Number 2020/1554) with a BSc (Hons) Earth Sciences in Mining and Environmental Geology. She has close to 10 years' experience in the exploration and open cast work in the mining industry. She has proven leadership skills from supervising exploration rigs (Reverse Circulation and percussion drilling). She has proven working experience in field exploration and mapping, borehole logging, borehole sampling, sample preparation for laboratory analysis, handling of GPS, supervisory duties within the field, geological report and progress report writing, including Prospecting Work Programmes and Environmental Management Plans, handling the Department of Mineral Resources (DMR) documents in general.

The Curriculum Vitae of the EAP is provided in Appendix A.

#### 3.3 Competent Authority Details

The details of the competent authorities are provided in Table 3-3.

**Table 3-3: Competent Authority Details**

Department	Contact Person	Contact Details	
DENC	Ms Gail Letimela	Tel	054 338 4800
		Email	<a href="mailto:GLetimela@ncpg.gov.za">GLetimela@ncpg.gov.za</a>

### 3.4 Local Authority Details

The project area is located within the jurisdiction of the Sol Plaatje Local Municipality, Francis Baard District Municipality in the Northern Cape Province. Kimberley is the closest town, approximately 4 km south of the project site.

Details of the relevant municipality are provided in Table 3-4.

**Table 3-4: Local and District Municipality Details**

Department	Contact Person	Contact Details	
Francis Baard District Municipality	Ms Mamikie Bogatsu	Tel	053 838 0911
		Email	<a href="mailto:natasha.april@fbdm.co.za">natasha.april@fbdm.co.za</a>
Sol Plaatje Local Municipality	Mlungisi Mabija	Tel	053 830 6100
		Email	<a href="mailto:mmabija@solplaatje.org.za">mmabija@solplaatje.org.za</a>

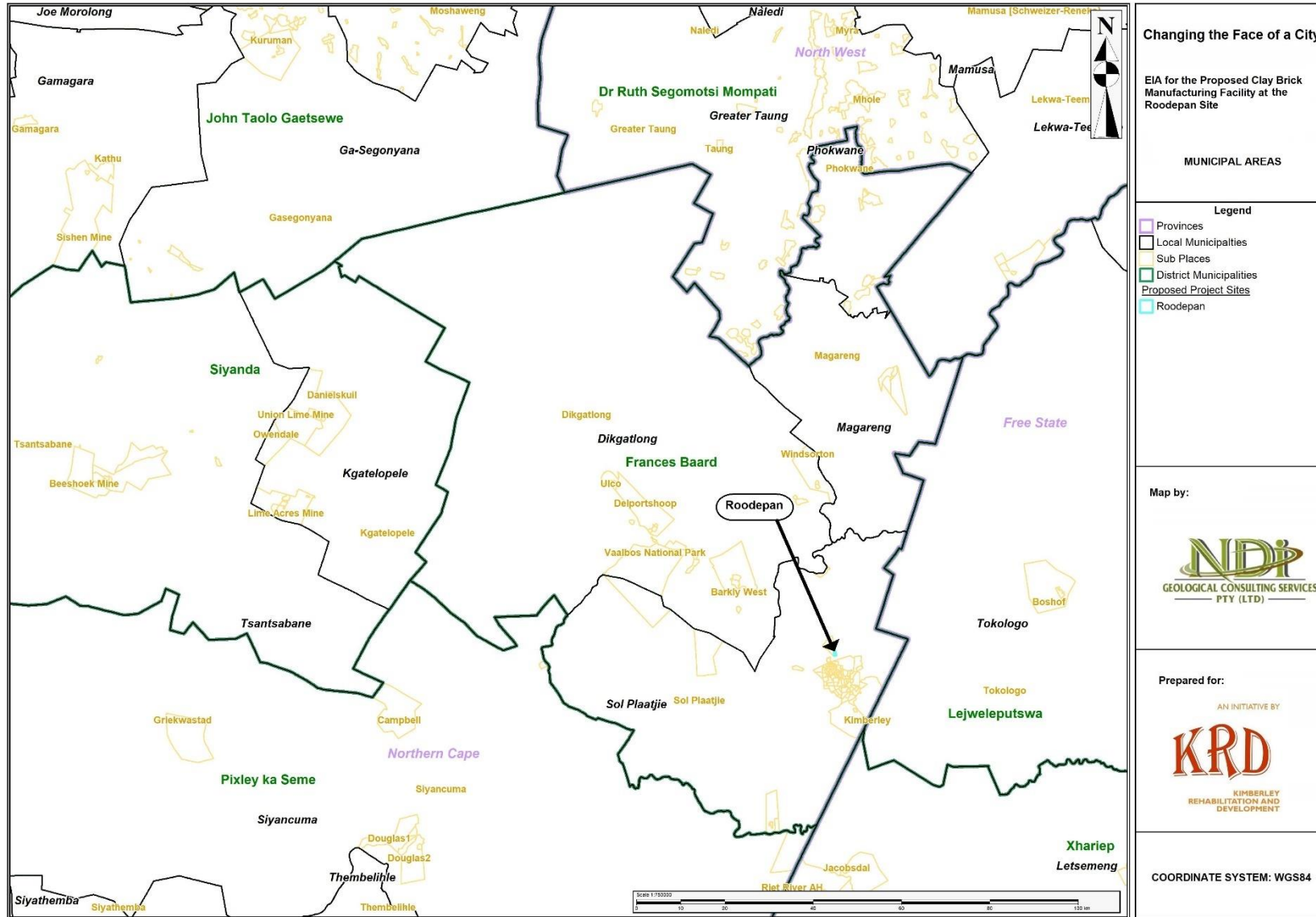


Figure 3-1: Relevant District and Local Municipalities Relevant to the Proposed Project



# 4 Project Location

The proposed project is located on the farm portion as illustrated in



Figure 4-1. Table 4-1 provides a description of the proposed activities located on the property.

**Table 4-1: List of Affected Farms and Farm Portions Illustrating the Relevant Activities**

Farm	Portions	21 SG Code	Owner	Proposed Activities
Roodepan 70	32	C0370000000007000032	Sol Plaatje Local Municipality	Construction and operation of the proposed clay brick and materials making facility at the Roodepan Quarry
	33	C0370000000007000033		

The affected property is owned by the Sol Plaatje Local Municipality and is currently zoned for Agricultural purposes.

KRD held several engagement meetings with the Sol Plaatje Municipality and Provincial economic cluster to discuss the proposed project. A meeting to obtain approval of the proposed project from the

Council was held in June 2020. The council approved the implementation of the proposed project and made the land where the Roodepan Quarry site will be located Portions 32 and 33 of Farm Roodepan 70) available to KRD, subject to the conclusion of a Public-Private Partnership Agreement (PPPA) with the Municipality. A copy of the resolution by the council is attached as **Appendix J 1**.





Figure 4-1: Affected Property

## 5 Project Description

The proposed project will include the construction and operation of a clay brick making facility where the mining debris from the BMW, St Augustine and Colville sites will be reworked and clay extracted for clay brick making and other material. The remaining material will be used for backfilling and rehabilitation of the Roodepan Quarry.

### 5.1 Construction

KRD will appoint contractor (s) for the construction process, which will be carried out under the instruction of the KRD site manager, engineers and specialists.

The generic construction process will entail:

- Excavation and removal of aggregate from the site;
- Ground works at the site;
- Foundations for the proposed facility;
- Building activities;
- Provision of infrastructure such as sewage systems, electrical, water reticulation systems, roads, stormwater systems;
- Shop fitting of the buildings and offices; and
- Transportation of debris from the BMW, St Augustine and Colville sites to the Roodepan Quarry to be reworked.
- The unused material will be used to fill the quarry in accordance with an approved EMPr.

### 5.2 Operation

The clay brick making process will include:

- Delivery of Clay from Sites;
- Delivery of Coal from Supplier (-D grade - carbon content important/moisture content, -Body fuel/Duff/Filter cake/Spiral waste, CV 21% and ash 30+%);
- Screening clay;
- Stockpile screened clay;
- Feed box feeders - 1 x clay and 1 x coal, 3150 kg per 1000 clay and 350 kg per 1000 D grade coal;
- Feed auger mixer from box feeders;
- Introduce water in auger feeder (330 litres per 1000 (10% of dry brick weight));
- Mixture into feed hopper;
- Feed brick press with offset conveyor;
- Press bricks - 10 000 per press per shift, -Brick weight 3.5 kg;
- Stack bricks on drying pallet (500 bricks in two rows, -Drying shed vs hackline);
- Stack pallet in hackline and dry for 2 weeks (Forklift - 4 ton lifting capacity, Plastic covers and pallets);



- Stack dried bricks in zig zag kiln (Brick weight 3.3 kg);
- Introduce coal in first two rows (Skintel/rooster) for firing in stacked bricks (C grade (Small nuts), Carbon, Content important, CV 231% and ash below 25%, required amount - half of body fuel amount);
- Fire box ignite zig zag kiln with ignitor coal in - C Grade;
- Fire bricks for 4 weeks (Sulfur content and dust fall out important);
- Sort and stack bricks on pallets (Brick weight 3 kg, 500 per pallet);
- Pallets to sales stock yard;
- Wastage crushed; and
- Test strength of bricks.

Figure 5-1 provides a flow chart for the brick making process.

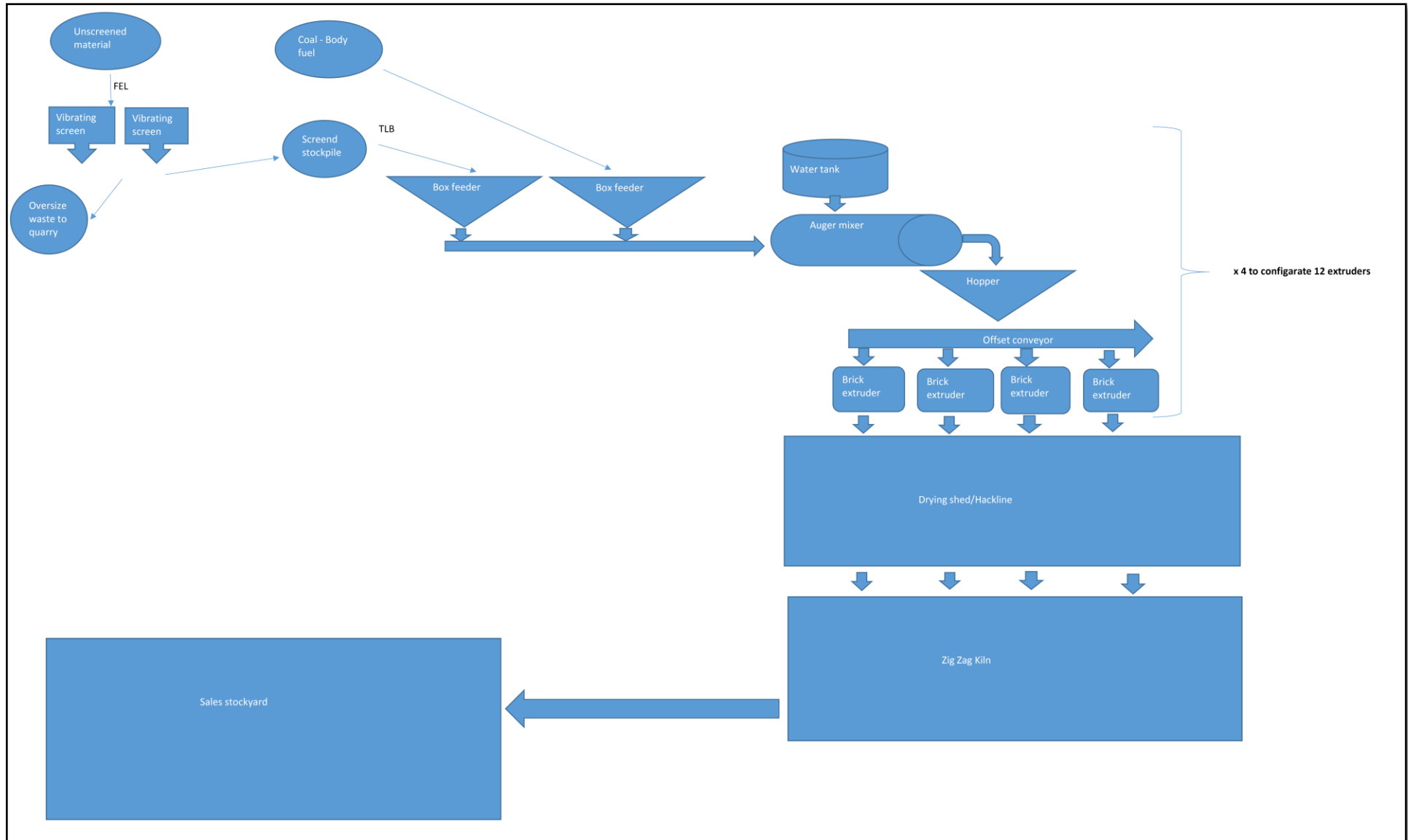


Figure 5-1: Proposed Process

The required services are provided in

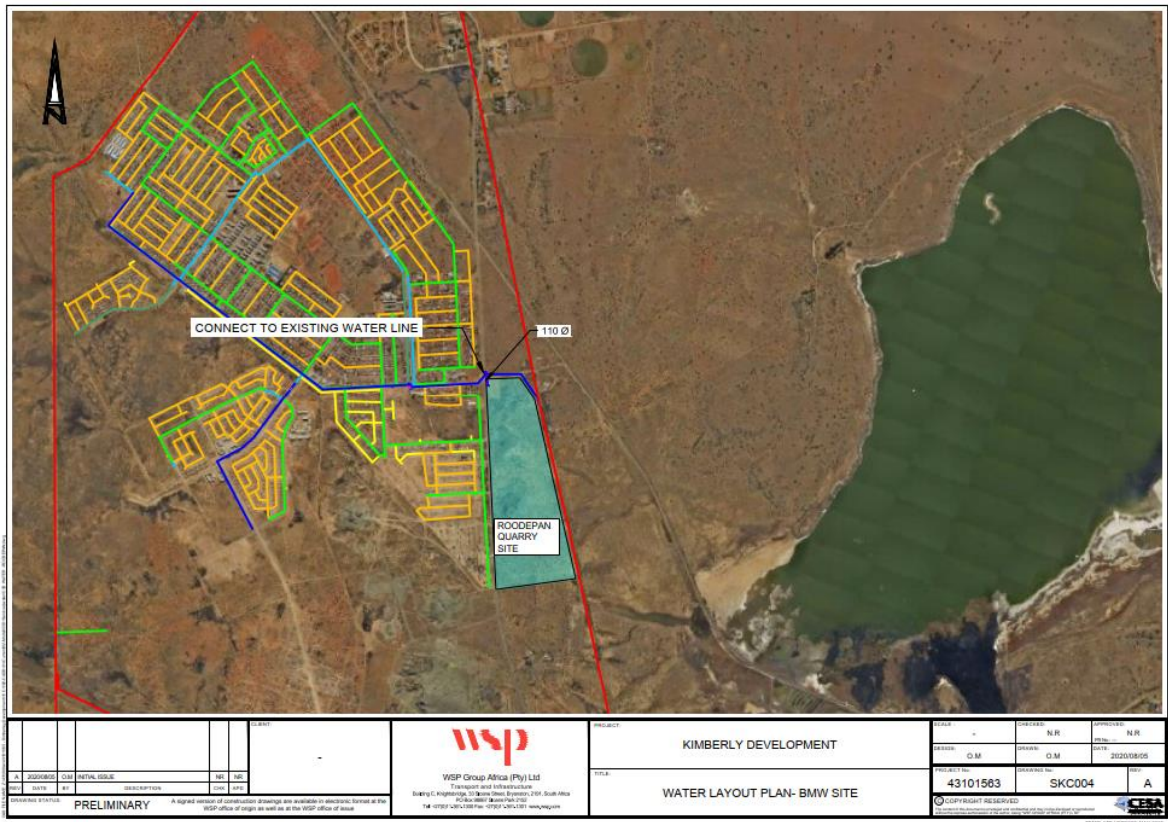


Figure 5-2: Proposed Water Network

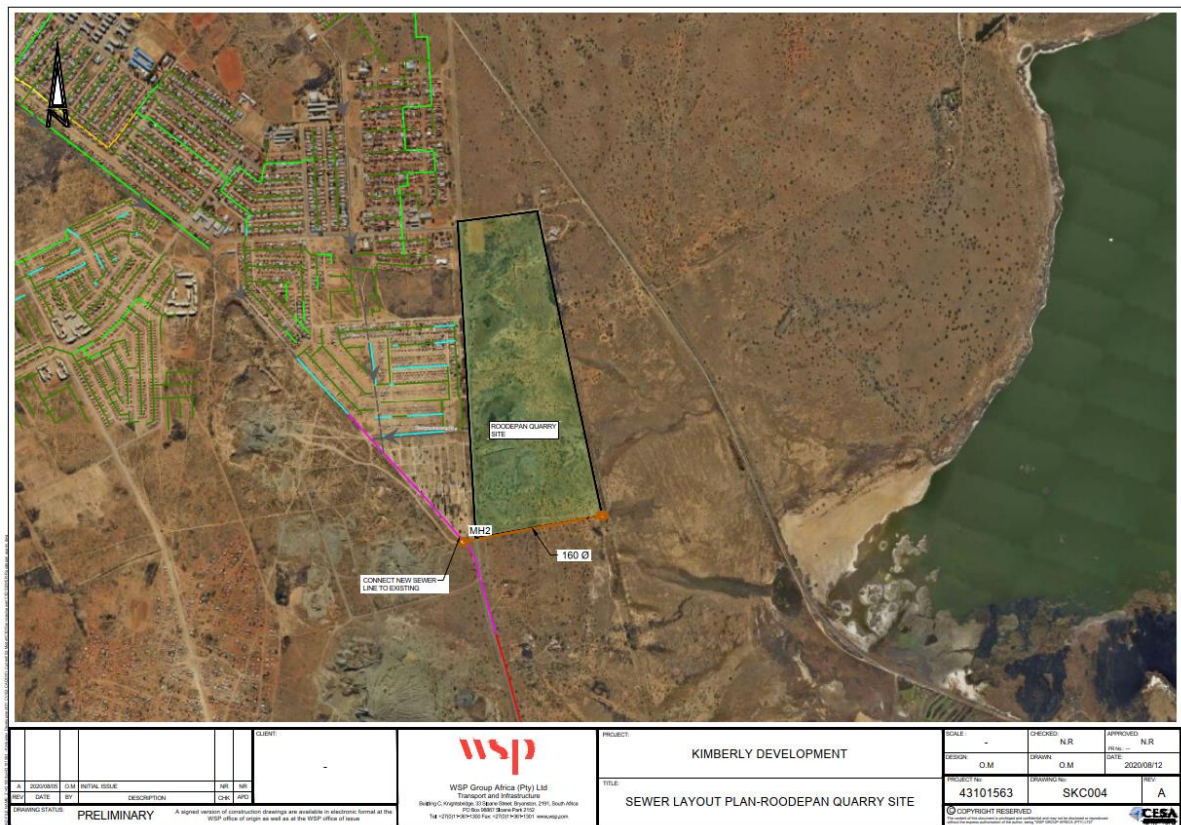


Figure 5-3: Proposed Sewerage Network



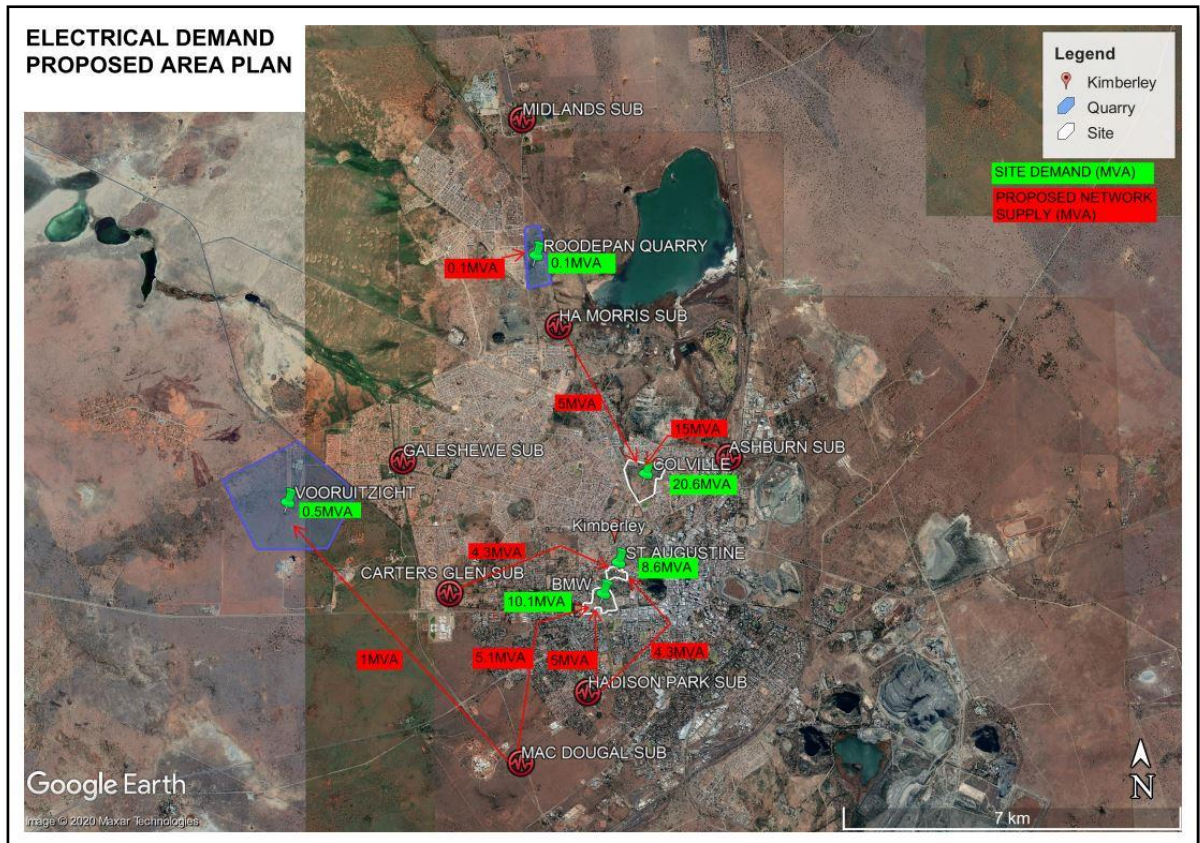


Figure 5-4: Electrical Demand Proposed Area Plan

### 5.3 Employment

KRD will appoint contractors for the construction phase of the project. The contractors will be responsible for the construction of the facility will appoint a team manager and a supervisor who will ensure that:

- All work to be conducted have been assessed in terms of risk;
- Risk assessments are developed according to operating procedures;
- All personnel are trained on procedures;
- Employees competence are tested and insured; and
- Rules and procedures are enforced.

## 6 Alternatives Considered

### 6.1 Manufacturing Processes

According to GNR 326 promulgated in term of the NEMA, feasible alternatives need to be considered and assessed during the EIA, or where no alternatives have been considered, motivation for not considering alternatives must be included in the Scoping Report.

Two manufacturing processes alternatives were considered for the proposed project as follows:

- Using a zig-zag kiln and an extruder (preferred alternative); and
- Using a clamp kiln and presses.

In addition to these alternatives, the “no-go” alternative will also be assessed. All alternatives, including the no-go option will be subject to the impact assessment.

### 6.2 No-Go Alternative

The assessment will include a no-go option as required by the EIA regulations. The EIA includes an assessment of the no-go option. This option will result in no additional biophysical environmental impacts occurring as it maintains the current status quo. The clay brick manufacturing facility forms part of a bigger “Changing the Face of a City” Project, which cannot succeed if the various individual activities, including the clay brick manufacturing facility, do not contribute to the execution of the project plan. The no-go alternative would represent a lost opportunity for the applicant, the Sol Plaatje Local Municipality and its residents. The opportunities that will be lost should the project not be authorised include:

- Loss of the potential investment of R 6 billion that would result from the project;
- Loss of the benefits to the local community and economy associated with the creation of employment opportunities (approximately 1500 direct and indirect opportunities) and the establishment of new or support to existing related businesses such as transporting, waste collection, security services and recycling companies;
- Lost opportunity in provision of low-cost housing and services to the residents of Sol Plaatje Local Municipality;
- Lost opportunity to the Sol Plaatje Local Municipality in terms of additional revenue to be collected through rates and taxes to be paid; and
- A lost opportunity for the rehabilitation of mine dumps located at the BMW, Colville and St Augustine sites and the rehabilitation of the quarry.

## **7 Legal and Policy Framework**

Table 7-1 provides a summary of the applicable legislation, policies and guidelines identified as relevant to the proposed project. In addition, a description of how the proposed activity complies with and responds to the legislation and policy context, is provided. This list is not exhaustive but rather represents an indication of the most applicable pieces of environmental legislation relevant to the project.

**Table 7-1: Policy and Legislative Context of Proposed Project**

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
Constitution of the Republic of South Africa, (No. 108 of 1996)	<p>Chapter 2 – bill of rights</p> <p>Section 24 – Environmental Rights</p> <p><i>The proposed activities shall be conducted in such a manner that significant environmental impacts are avoided, where significant impacts cannot all together avoided be minimised and mitigated in order to protect the environmental rights of South Africans</i></p>	N/A	1996
Promotion of Access to Information Act, 2000 (Act No. 2 of 2000) (PAIA)	<p>The Promotion of Access to Information Act (Act No. 2 of 2000) (PAIA) recognises that everyone has a right of access to any information held by the state and by another person when that information is required to exercise or protect any right. The purpose of the Act is to promote transparency and accountability in public and private bodies and to promote a society in which people have access to information that enables them to exercise and protect their right.</p> <p><i>The EIA process will be undertaken in terms of the NEMA, where the associated stakeholder consultation process will be aligned with the PAIA in the sense that all I&amp;APs will be given an opportunity to register as an I&amp;AP prior to the initiation of the project and all registered stakeholders will in turn be provided a fair opportunity to review and comment on any reports submitted to the competent authorities for decision making.</i></p>	N/A	2000
National Environmental Management Act, 1998 (No. 107 of 1998) (NEMA)	<p>Section 24 – Environmental Authorisation (control of activities which may have a detrimental effect on the environment)</p> <p>Section 28 – Duty of care and remediation of environmental damage</p> <p><i>Environmental management principles will be incorporated into the EIA and EMP, which the applicant will be required to comply with to ensure that negative impacts on the environment are avoided or kept to a minimum and that positive impacts are enhanced.</i></p>	DENC	1998
NEMA and the EIA Regulations 2014, as amended	<p>The EIA Regulations (GNR 982) were promulgated in terms of Sections 24 of the NEMA, to manage the process, methodologies and requirements for the undertaking of an EIA. The GNR 982 stipulates that the applicant for activities listed under GNR 983, 984 or 985 must appoint an independent EAP to manage</p>	DENC	2014 and amended in 2017

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	<p>the EIA process. Listed Activities are activities identified in terms of Section 24 of the NEMA which are likely to have a detrimental impact on the environment, and which may not commence without an EA from the Competent Authority (CA). EA required for Listed Activities is subject to the completion of either a Basic Assessment (BA) process or full Scoping and Environmental Impact Assessment (S&amp;EIA) with applicable timeframes associated with each process. The EA must be obtained prior to the commencement of those listed activities.</p> <p><i>The project triggers activities listed in GNR324, GNR325 and GNR 327 and will require an EA from the DENC. According to GNR 326 of the NEMA, activities listed in GNR 324 require that a full EIA (scoping and impact assessment phases) be undertaken.</i></p>		
<p>Department of Environmental Affairs (DEA) Integrated Environmental Management Guideline Series, Guideline 5: Assessment of the EIA Regulations, 2012 (Government Gazette 805)</p>	<p><i>Environmental impacts will be generated primarily in the construction and associated post-construction phases of the project. These will be assessed during the impact assessment phase of the process and mitigation measures that the applicant will be required to implement to minimise and/avoid the identified negative impacts will be included in the EMPr.</i></p>	<p>DENC</p>	<p>2012</p>
<p>Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004</p>	<p><i>A full EIA is required for the proposed project as activities are triggered under GN R324.</i></p>	<p>DENC</p>	<p>2004</p>
<p>DEA Integrated Environmental Management Guideline Series, Guideline 7: Public Participation in the Environmental Impact Assessment Process, 2012 (Government Gazette 807)</p>	<p><i>Public participation is a requirement of the EIA Process and will be conducted for the proposed project as stipulated in Chapter 6 of the NEMA, and will take cognisance of the requirements of Annexure 3 of the Department of Environment, Forestry and Fisheries (DEFF) Disaster Management Directions of 5 June 2020</i></p>	<p>DENC/DEFF</p>	<p>2012</p>
<p>National Water Act, 1998 (Act 36 of 1998) (NWA)</p>	<p>Section 21: Specifies water uses that require Water Use Authorisation (WUA) in terms of Section 22(1) of the Act. A WUA process must be conducted to obtain authorisation for any of these activities, unless the specific use is listed in Schedule 1 of the NWA or is an existing lawful use. Listed activities that require authorisation - a Water Use Licence (WUL) or General Authorisation (GA) (issued in terms of Section 39 of the NWA) through a registration and application process include: taking water from a water resource, impeding or diverting the flow of water</p>	<p>DWS</p>	<p>1998</p>



	<p>in a watercourse and altering the beds, banks, course or characteristics of a watercourse. The competent authority for WUAs is the Department of Water and Sanitation (DWS).</p> <p>For a WUL, DWS require an application, registration as a water user and the completion of a Technical Report, which addresses all water uses in accordance with the requirements of Section 28 and Section 29 of the NWA, including a Section 27 motivation for the water uses. For GA, DWS require an application, registration as a water user and may require the completion of a Technical Report depending on the nature of the water use.</p> <p>In March 2017, DWS gazetted regulations stipulating the WULA process and timeframes. A pre-application enquiry meeting with DWS is required, and DWS must take a decision within 300 days of application. Similar to the EIA process, a considerable quantum of work will be required before formal submission of an application.</p> <p><i>The NFEPA, the Department of Water and Sanitation (DWS) data and findings from the wetland assessment indicates that there are artificial wetlands located within 500m of the proposed project site. The artificial wetland identified on the eastern section of the Roodepan site primarily exist due to the leaking of a water supply pipeline that leads to the wetness regime in soils needed for wetland formation. This artificial hydraulic regime caused by the leaking pipe will remain until the infrastructure is repaired to allow the areas to rehabilitate. Due to the rich abundance of natural water sources in the primary catchment (in the form of natural pans, wetlands, rivers and streams) contributing largely to ecosystem functioning, the ecological significance of these artificial systems is minimal. The specialist recommended that the area should be drained, backfilled and levelled according to rehabilitation specifications. The need for a Section 21 (c) and (i) Water Use Authorisation (WUA) should be discussed and confirmed with the DWS.</i></p> <p><i>During the pre-application consultation with the DWS the department advised that a Section 21 (g) WUA may also be required for the use of leftover material for backfilling and rehabilitation of the quarry that could have impact on groundwater resources. This will require hydrogeological assessment, including geochemical assessment of the material to be used for backfilling. The Geochemical assessment will provide information on the chemical composition of the material</i></p>		
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Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	<i>and potential from chemicals to leach from the backfilling material into the groundwater.</i>		
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM: WA)	<i>The project does not trigger any activities listed in GNR 921 of the NEM: WA and will therefore not require a Waste Management Licence (WML) from the DENC and/or DEFF.</i>	DEFF/DENC	2008
The National Forestry Act, 1998 (Act No. 84 of 1998) (NFA)	<p>The NFA protects against the cutting, disturbance, damage, destruction or removal of protected trees.</p> <p><i>A biodiversity assessment was conducted as part of the EIA, which found that no NFA listed protected trees will be affected by the proposed project. No permit from the DAFF will be required. The EMPr will include measures to minimise unnecessary loss of biodiversity, including flora.</i></p>	Department of Agriculture, Forestry and Fisheries (DAFF)	1998
The National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEM:BA)	<p>The National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEMBA) provides for the management and conservation of South Africa's biodiversity within the framework of NEMA, as well as the protection of species and ecosystems that warrant national protection and the sustainable use of indigenous biological resources. The Act provides for listing of threatened or protected ecosystems, in one of four categories: critically endangered, endangered, vulnerable or protected.</p> <p><i>The management and control of alien invasive species on the impacted areas during all the phases of the project will be governed by the NEM: BA. The NEM: BA ensures that provision is made by the site developer to remove any alien species, which have been introduced to the site or are present on the site. Biodiversity hotspots and bioregions were investigated to determine the potential impacts that the project may have on the receiving environment. Applicable mitigation measures will be included in the EMPr.</i></p>	DEFF	2004
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) (CARA)	<p>Control measures for erosion</p> <p>Control measures for alien and invasive plant species</p> <p><i>The EMPr will include measures to control and manage alien invasive plant species and soil erosion.</i></p>	DAFF	1983

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA)	<p>Heritage Permit for structures 60 years or older.</p> <p><i>A Phase 1 Heritage Impact Assessment (HIA) was conducted for the proposed project to identify heritage and/or cultural sites affected by the proposed project, if any.</i></p> <p><i>According to the HIA, a previous heritage scan of the project property conducted by the Macgregor Museum noted the presence of low densities of Middle Stone Age (MSA) stone tools on decomposing dolerite and occasional calcrete patches of low heritage significance. No other sensitive heritage receptors were identified in the project area in the HIA. It is predicted that there would be a negligible impact on archaeological resources emanating from the project, but it remains possible that archaeological material may occur locally in higher densities at the base or within the red sands.</i></p> <p><i>According to the HIA, no permit is required for the proposed project. However, considering the localised nature of heritage remains, the general monitoring of the development progress by an Environmental Control Officer (ECO) or by the heritage specialist is recommended for all stages of the project. Should any subsurface palaeontological, archaeological or historical material, or burials be exposed during construction activities, all activities should be suspended, and the archaeological specialist should be notified immediately.</i></p> <p><i>Applicable mitigation measures will be included in the EMPr.</i></p>	Northern Cape Heritage Resource Authority	1999
National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (NEM: AQA)	<p><i>The proposed clay manufacturing facility triggers activities listed with the Minimum Emission Standards (MES) and will require an Air Emissions Licence (AEL). The project activities will also result in dust emissions as well as Particulate Matter (PM<sub>2.5</sub> and PM<sub>10</sub>). An Air Impact Assessment will be conducted as part of the EIA and AEL application and will include mitigation measures to ensure minimisation/avoidance of negative impacts.</i></p>		
Northern Cape Nature Conservation Act, Act 9 of 2009 (NCNCA)	<p>Protection of listed species in the Northern Cape Province.</p> <p><i>The Ecological Assessment conducted no species that are protected under the (NCNCA).</i></p>	DENC	2009

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Disaster Management Act, 2002 (Act No. 57 of 2002)	<p>Annexure 3 of the DEFF Disaster Management Directions of 5 June 2020. The Directions require that a person (proponent/ applicant, specialist, EAP) or other professional) who undertakes actions as part of an environmental authorisation process must:</p> <ul style="list-style-type: none"> <li>• Prepare a written Public Participation Plan (PPP) or Stakeholder Engagement Plan, containing proposals on how the identification of and consultation with all potential Interested and Affected Parties (I&amp;APs) will be ensured in accordance with regulation 41(2)(a) to (d) of the EIA Regulations (2014, as amended) or proposed alternative reasonable methods as provided for in regulation 41(2)(e) of the EIA Regulations, for the purposes of the application and submit such plan to the competent authority;</li> <li>• Request a meeting or pre-application discussion with the relevant competent authority to determine the reasonable measures to be followed to identify potential I&amp;APs and register IA&amp;Ps for purposes of conducting public participation on an application requiring adherence to Chapter 6 of the EIA Regulations as set out in the PPP and obtain agreement from the relevant competent authority on the Public Participation Plan; <ul style="list-style-type: none"> <li>○ For new applications, the PPP agreed with the competent authority, must be attached to the application form; and</li> <li>○ Unless part of a site visit, virtual or telephonic meetings to be arranged with the relevant competent authority as set out in Annexure 2.</li> </ul> </li> </ul> <p><i>A pre-application discussion will be held with the DENC where the proposed stakeholder engagement process will be discussed. This stakeholder engagement plan has been included in this Scoping Report in Section 8 and 11.6 and will be implemented throughout the EIA process.</i></p>	DENC/DEFF	2020

## 7.1 Provincial and Municipal Bylaws

The Francis Baard District Municipality, Sol Plaatje Local Municipality and the Northern Cape Province have developed local bylaws and various policies relating to waste disposal, water, economic development, air quality, etc. The proposed project must ensure that such policies and bylaws are adhered to as far as possible during the construction and operation of the clay brick making facility and associated infrastructure.

## 7.2 Guidelines

The following documents will be taken into account during the impact assessment process and compilation of the EMP of the proposed project:

- Northern Cape Provincial Biodiversity Management Plan;
- Sol Plaatje Local Municipality Integrated Development Plan (IDP) (2017-2022);
- Sol Plaatje Local Municipality Spatial Development Framework (SDF) (2008);
- DWS, 2010. Operational Guideline: Integrated Water and Waste Management Plan. Resource Protection and Waste;
- Department of Water Affairs and Forestry, 2006. Best Practice Guideline G1 Storm Water Management;
- Department of Water Affairs and Forestry, 2006. Best Practice Guideline G3. Water Monitoring Systems;
- Department of Water Affairs and Forestry, 2008. Best Practice Guideline G4: Impact Prediction;
- DEAT. 2002. Integrated Environmental Management, Information series 3: Stakeholder Engagement. Department of Environmental Affairs and Tourism (DEAT. 2002);
- DEAT. 2002. Integrated Environmental Management, Information series 12: Environmental Management Programmes. Department of Environmental Affairs and Tourism (DEAT. 2002);
- DEA. 2010. Companion to the EIA Regulations 2010 for Comment, Integrated Environmental Management Guideline Series 5, Department of Environmental Affairs;
- DEA. 2010. Companion to the EIA Regulations 2010 for Comment, Integrated Environmental Management Guideline Series 7, Department of Environmental Affairs;
- DEA. 2012. Companion to the EIA Regulations 2010, Integrated Environmental Management Guideline Series 5, Department of Environmental Affairs;
- DEA. 2012. Companion to the EIA Regulations 2010, Integrated Environmental Management Guideline Series 7, Department of Environmental Affairs; and
- Western Cape Department of Environmental Affairs and Tourism. 2010. EIA Guideline and Information Document Series: Guideline on Need and Desirability.

## 7.3 Listed Activities Triggered

The Clay Brick facility will produce five (5) million bricks per annum, resulting in 416 667 bricks per month. This falls under Subcategory 5.3: Clamp Kilns for Brick Production of the Listed Activities with the Minimum Emission Standards (MES) provided in Table 3. When operating a Listed Activity, an application must be submitted to the District Municipality for an Atmospheric Emissions License (AEL).

*Existing plant* requirements are applicable to already established facilities whereas *new plant* limits are applicable to new facilities. Should brick making be the preferred option, *new plant* limits will apply.

<b>Subcategory 5.3: Clamp Kilns and Brick Production</b>			
Description	The production of bricks using clamp kilns.		
Application	All installations producing more than 100 000 brick per month.		
Substance or mixture of substances	mg/Nm <sup>3</sup> under normal conditions of 273 Kelvin and 101.3 kPa		
Common Name	Chemical Symbol	New plant	Existing plant
Dust fall	N/A	(a)	(a)
Sulphur dioxide	SO <sub>2</sub>	(b)	(b)

- (a) Three months running average not to exceed limit value for adjacent land use according to dust control regulations promulgated in terms of Section 32 of NEM: AQA, 2004 (Act No. 39 of 2004), in eight principal wind directions.
- (b) Twelve months running average not to exceed limit value as per GN 1210 of 24 December 2009. Passive diffusive measurement approved by the licensing authority carried out monthly.

**Notes:** The following special arrangement shall apply –

Where co-feeding with waste material with calorific value allowed in terms of the Waste Disposal Standards published in terms of the Waste Act. 2008 (Act No. 59 of 2008) occurs, additional requirements under subcategory 1.6 shall apply.

Since the proposed project requires an AEL, it will trigger activities listed in Listing Notices 1, 2 and 3 of the NEMA and requires an EA from the DENC. A summary of the activities is provided in Table 7-2.

**Table 7-2: NEMA Listed Activities Triggered by the proposed project**

<b>Government Notice and Activity Number</b>	<b>Relevant Activity as per the relevant Listing Notice</b>	<b>Describe the portion of the development as per the project description that relates to the applicable listed activity</b>
Listing Notice 1 (GNR 327): Activity 27	<i>The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for—</i>	Construction of the proposed facility will require clearance of indigenous vegetation covering more than 1 ha and less than 20ha.
Listing Notice 2 (GNR 325): Activity 6	<i>The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent,</i>	The brickmaking facility at Roodepan requires an Air Emissions Licence.
Listing Notice 2 (GNR 325): Activity 28	<i>[Commencing of an activity, which requires an atmospheric emission license in terms of Section 21 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004),</i>	The brickmaking facility at Roodepan requires an Air Emissions Licence.
Listing Notice 3 (GNR 324) Activity 12	<i>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in</i>	According to the Northern Cape Provincial Biodiversity Conservation Plan, the Roodepan site is located in an area classified

<b>Government Notice and Activity Number</b>	<b>Relevant Activity as per the relevant Listing Notice</b>	<b>Describe the portion of the development as per the project description that relates to the applicable listed activity</b>
	<i>accordance with a maintenance management plan.</i>	as a Critical Biodiversity Area 2 (CBA2).

## 8 Stakeholder Engagement Process

The stakeholder engagement process forms an important part of the scoping phase of the project. The stakeholder engagement process is primarily aimed at affording I&APs the opportunity to gain an understanding of the proposed project. In addition, the purpose of consultation with the landowners, key stakeholders, and I&APs is to provide them with the necessary information about the proposed project so that they can make informed decisions as to whether the project will affect them, and provide the EIA team with local knowledge of the area and raise concerns relating to the biophysical, socio-economic and cultural impacts that may arise.

The stakeholder engagement process will be conducted in terms of NEMA, which provides clear guidelines for stakeholder engagement during an EIA as summarised in Table 8-1.

**Table 8-1: NEMA Stakeholder Guidelines**

NEMA Section	Applicability to Stakeholder Engagement
Chapter 1	Outlines the principles of environmental management, several pertaining to public consultation (e.g. Chapter 1, subsections (2), (3), (4) (f), (g), (h), (k), (q) and (r).
Chapter 6	Regulations 39 – 44 of the amended EIA Regulations GNR 326, promulgated on 8 December 2014 and amended on 7 April 2017, specify the minimum requirements for stakeholder engagement in an EIA process conducted under the NEMA.
Section 24J of the NEMA	In 2017, the Minister of Environmental Affairs published, Section 24J of the NEMA in terms of, Public Participation Guidelines which guide the Public Participation Process in order to give effect to Section (2)(4)(f), (o) and 24 (1A)(C) of the NEMA.

The guidelines listed in Table 8-1 will be incorporated into the stakeholder engagement process. This application will be submitted to the DENC for authorisation as the competent authority. Identified commenting authorities on this application include:

- Department of Water and Sanitation (DWS) – Regional Office;
- SAHRA – Provincial;
- Sol Plaatje Local Municipality;
- Department of Agriculture, Land Reform and Rural Development; and
- Francis Baard District Municipality.

### 8.1 Stakeholder Identification Interested and Affected Parties

Interested and Affected Parties (I&APs) were identified using GIS and cadastral information. The affected and adjacent property owners were identified using the surveyor general website, [www.deedsweb.gov.za](http://www.deedsweb.gov.za). In addition, registered I&APs were also sourced from responses to the newspaper and radio advertisements, site notices and written notification to affected and adjacent landowners and land occupiers associated with the project.

The identification, registration, and comments from I&APs will be an on-going activity and the I&APs register will be maintained for the duration of the EIA process, where the details of stakeholders are



captured and automatically updated upon communication with the EAP. Please refer to Appendix C 4 for a copy of the I&AP register.

The affected properties are provided in Table 8-2.

**Table 8-2: List of Affected Farm and Farm Portions**

Farm	Portions	21 Digit Survey General Code
Roodepan 70	32	C03700000000007000032
	33	C03700000000007000033

A map of the affected and adjacent farm portions and farm portions of the site are illustrated in Figure 8-1.



Figure 8-1: Affected and Adjacent Properties

## 8.2 Project Announcement

Stakeholders were provided with the opportunity to participate and register as I&APs during the announcement phase of the project. Ndi Geological Consulting made use of various methods to inform stakeholder of KRD's intention to undertake the required environmental processes (EA and AEL applications).

### 8.2.1 Distribution of Notification Letters

Notification letters were sent to identified I&APs on 27 August 2020, informing them of the proposed project. A copy of the notification letter is attached as Appendix C 5.

### 8.2.2 Site Notice Placements

Sites notice boards (Size A2: 600 mm X 420 mm) notifying stakeholders and I&APs of the proposed clay brick making facility were placed at conspicuous places in and around the project area on 27 August 2020. Table 8-3 provides a list of these site locations.

**Table 8-3: Site Notice Location and Coordinates**

Coordinates	
Latitude	Longitude
28.6555354 <sup>0</sup>	24.730312 <sup>0</sup>
28.656959 <sup>0</sup>	24.730312 <sup>0</sup>
28.664095 <sup>0</sup>	24.730294 <sup>0</sup>
28.666400 <sup>0</sup>	24.729696 <sup>0</sup>
28.667083 <sup>0</sup>	24.730077 <sup>0</sup>
28.668100 <sup>0</sup>	24.730855 <sup>0</sup>
28.669229 <sup>0</sup>	24.730366 <sup>0</sup>
28.670182 <sup>0</sup>	24.730892 <sup>0</sup>
28.671915 <sup>0</sup>	24.730655 <sup>0</sup>
28.672451 <sup>0</sup>	24.730730 <sup>0</sup>
28.679746 <sup>0</sup>	24.730998 <sup>0</sup>
28.683088 <sup>0</sup>	24.731309 <sup>0</sup>
28.695812 <sup>0</sup>	24.34013 <sup>0</sup>
28.695953 <sup>0</sup>	24.733981 <sup>0</sup>
28.671987 <sup>0</sup>	24.728863 <sup>0</sup>
28.671728 <sup>0</sup>	24.719462 <sup>0</sup>
28.669271 <sup>0</sup>	24.711823 <sup>0</sup>
28.666419 <sup>0</sup>	24.711984 <sup>0</sup>
28.679739 <sup>0</sup>	24.730931 <sup>0</sup>
28.28292 <sup>0</sup>	24.731199 <sup>0</sup>
28.685487 <sup>0</sup>	24.732065 <sup>0</sup>
28.68744 <sup>0</sup>	24.732800 <sup>0</sup>
28.695860 <sup>0</sup>	24.733961 <sup>0</sup>

Coordinates	
28.690434 <sup>0</sup>	24.727470 <sup>0</sup>

A copy of the site notices and proof of their placement is provided in Appendix C 6.

### 8.2.3 Newspaper Advertisements

Newspaper advertisements notifying stakeholders about the proposed project and the opportunity to participate in the EIA process were placed in the newspapers listed in Table 8-4 on 26 August 2020 and 28 August 2020 and copies can be found in Appendix C 6.

**Table 8-4: Newspaper Advertisements**

Newspaper Advertisements		
Newspaper	Languages	Date
Noordkaap	English	26 August 2020
Diamond Fields Advertiser	Afrikaans	28 August 2020

### 8.2.4 Radio Announcements

Radio announcements informing the public of the proposed project and inviting I&APs to register on the stakeholder database were made as follows:

On Radio Taeemaneng :	Slot 1: 07:15-07:45 am
	Slot 2: 15:00-15:30 pm
On Revival FM:	Slot 1: 08:20-08:45 am
	Slot 2: 14:55-15:20 pm

## 8.3 Public Review of the Draft Scoping Report

The Draft Scoping was compiled in terms of the requirements of GNR 326. All comments received during the announcement phase of the stakeholder engagement process have been incorporated into draft Scoping Report and collated into a Comments and Responses Report (CRR) attached as Appendix C 6 C 7 to this draft Scoping Report. The draft Scoping Report will be made available for a 30-day commenting period from 16 September 2020 to 18 October 2020.

The availability of the draft Scoping Report was announced by means of SMSes, letters and emails to registered I&APs. Copies of the draft Scoping Report will be made available at the venues listed in Table 8-5.

**Table 8-5: List of places the Draft Scoping Report will be placed for public review**

Public Place	Locality	Telephone
Kimberley Public Library	34 Sidney St, Kimberley, 8300	053 830 6242
Ndi Geological Services	OneDrive	A link will be created and shared with the stakeholders
Ndi Geological Services	Dropbox	A link will be created and shared with the stakeholders
Ndi Geological Services Website	<a href="http://www.ndigeoservices.co.za/">http://www.ndigeoservices.co.za/</a>	053 842 0687

The draft Scoping Report will also made available to the competent and commenting authorities during the 30-day review and comment period.

Depending on the responses received during the registration period, and where requested by the stakeholders, a public meeting may be held during the Scoping Phase of the project, ensuring that the COVID-19 Regulation requirements are met. This would preferably be undertaken through, where possible, online meetings. In cases where stakeholders do not have internet access, the meetings will be held with no more than 50 stakeholders in attendance. Stakeholders will be informed of the COVID-19 Regulation requirements that will be enforced during the meeting.

Where necessary, comments and concerns received from I&APs, including commenting authorities, will be incorporated and addressed in the Final Scoping Report. All comments and concerns received from I&APs and responses to those concerns will also be collated into the CRR prior to submission of the Final Scoping Report to the competent authority, who will decide as to whether the impact assessment phase can be undertaken.

### 8.4 Key Comments Received

Table 8-6 provides a summary of the comments received and responses provided to the stakeholders to date following the newspaper advert, site notices, and written notification.

**Table 8-6: Key Comments Received**

Comment Date	Comment raised by	Comment	EAP's Response
Comments on the Initial Phase			

### 8.5 Comments and Response Report

All issues and concerns raised by I&APs during the Scoping and EIA process, will be recorded and responded to in the Comments and Responses Report (CRR) which will form part of the Final Scoping and EIA Reports. A copy of the current CRR is included as Appendix C 6 C 7.



## 9 Need and Desirability of the Proposed Project

The proposed manufacturing facility forms part of the larger “Changing the face of a City” project that KRD is proposing. The main aim of the project is to provide low cost housing to the residents in Sol Plaatje Local Municipality. Sol Plaatje Municipality, particularly Kimberley has valuable land such as at the BMW, Colville and St Augustine sites, locked under old mine dumps. Not only these dumps are a hindrance to land use, but they cause an unpleasant authenticity to the city, that it is forgotten mining town. Under the proposed project, KRD proposes to recycle and implement beneficiation projects from the dumps, including the dump located on the BMW, Colville and St Augustine sites for which KRD has submitted separate applications.

KRD has conducted extensive calculations, investigations and consultations in the compilation of the project plan and its various components and its integration into a single integrated business model. The information and calculations all indicate the feasibility of the project if implemented as an integrated model. This project cannot succeed if the various individual activities do not contribute to the execution of the project plan.

According to the Sol Plaatje Local Municipality IDP, 30% of the Northern Cape housing backlog exists in Sol Plaatje, with the municipality advocating for focus to be on ramping up the planning and delivery of houses, with clear economic spin offs to boost the local economy. Under the proposed project, a total of 12 369 houses will be constructed, outside of the commercial development that will also be part of the proposed project.

The anticipated investment from the project is approximately R 6 billion. In addition, the project will provide permanent employment (1 500 direct and indirect) to local people within a local municipality with a high rate of unemployment, potentially providing job security (and the benefits thereof) not only for employed individuals but for households. The proposed project will also provide an economic stimulus to the local economy through the establishment of other small businesses (transporters, builders, providers of other material required).

Additionally, the project provides the municipality with an opportunity to rehabilitate old mine dumps that are not currently in use and collect revenue from rates and taxes which can be used to improve services in the area.

The project will thus in the long run have an overall positive economic impact for the receiving area and will have a cumulative impact that can be considered to be of high significance.

## 10 Description of the Baseline Environment

The following section presents an overview of the biophysical and socio-economic environment in which the proposed project is located, so as to:

- Understand the general sensitivity of and pressures on the affected environment;
- Inform the identification of potential issues and impacts associated with the proposed project, which was assessed during the impact assessment phase;
- Identify gaps in available information to inform specialist study requirements; and
- Start conceptualising practical mitigation measures.

This section has been compiled, based on the following:

- Available information from the existing specialist studies and monitoring reports. The specialist reports are attached as Appendix D;
- Existing information on the environmental parameters of the area;
- Agricultural GIS;
- SANBI; and
- South African Weather Service.

### 10.1 Climate

The climate around Kimberley is essentially a continental one - the weather provides hot wet summers (December to February) and mild dry winters (June to August). It is not unusual for winter night-time temperatures to drop below freezing.

Kimberley normally receives about 283mm of rain per year, with most rainfall occurring mainly during summer. The chart in Figure 10-1 shows the average rainfall values for Kimberley per month. It receives the lowest rainfall in October and the highest (59mm) in March.

The monthly distribution of average daily maximum temperature figures for Kimberley in Figure 10-1 show that the average midday temperatures for Kimberley range from 18°C in June to 33°C in January. The region is the coldest during July when the mercury drops to 0.3°C on average during the night.

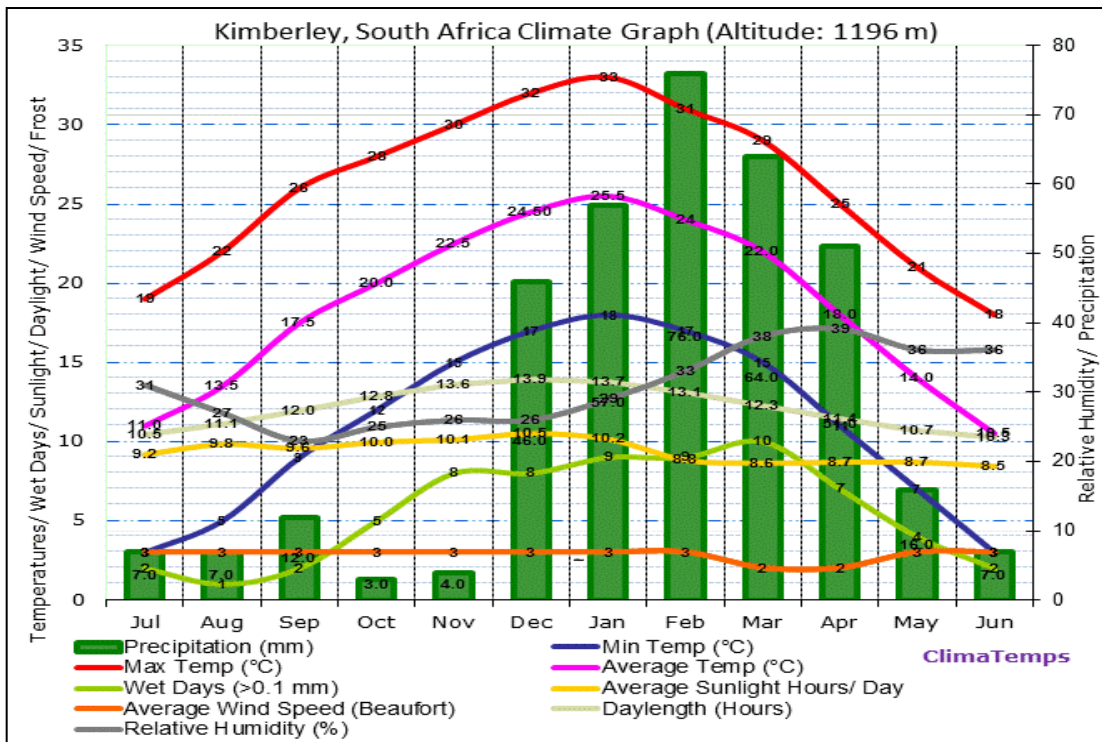


Figure 10-1: Climate graph for Kimberley area

## 10.2 Topography

The project area forms part of the Southern Kalahari Eco-region. The topography of the area is generally by slightly undulating to flat plains. The properties are defined as a Plain at a Medium Level.

The Roodepan Quarry is located in an area with an elevation of approximately 1 200 mamsl as shown in Figure 10-2.



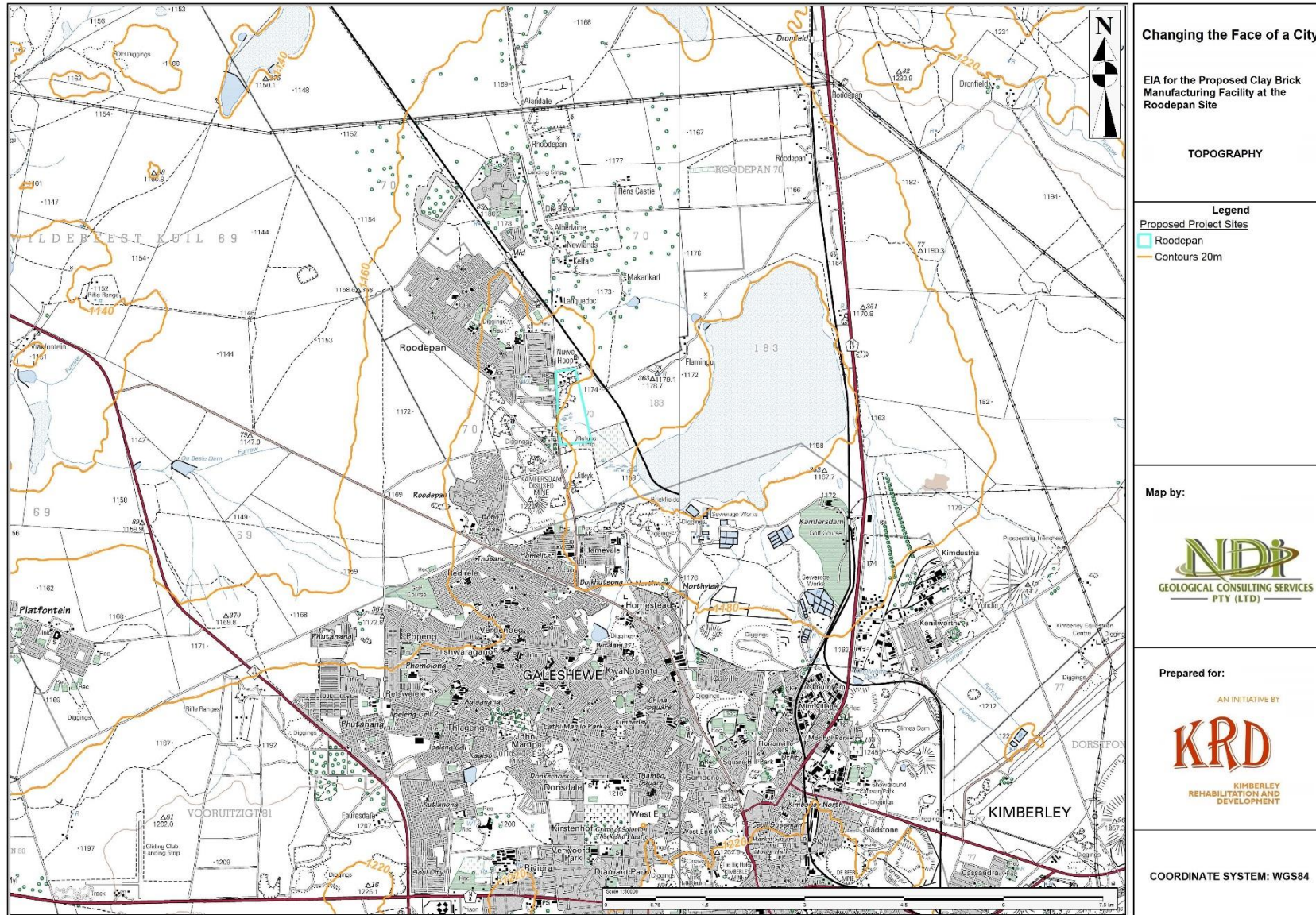


Figure 10-2: Topography

### 10.3 Geology and Soils

The area is underlain by rocks of the Karoo Supergroup. The Karoo sequence in the Kimberly area comprises sedimentary succession of the Dwyka, Ecca and Beaufort Groups. The Dwyka consists of Tillite, sandstone, mudstone and shale. The Dwyka Formation is found at the base of the Karoo Sequence. In the central of the Karoo it was deposited in a comparatively shallow basin with a rather even floor, so that the rocks in this area are practically horizontally bedded and not very thick.

A Land type unit is a unique combination of soil pattern, terrain and macroclimate, the classification of which is used to determine the potential agricultural value of soils in an area. The land type units represented within the project areas include the Ae45 land type. The land type, geology and associated soil type is presented in Table 10-1 as classified by the Environmental Potential Atlas, South Africa (ENPAT, 2000).

**Table 10-1: Land types, geology and dominant soil types of the proposed development site**

Landtype	Soils	Geology
Ae45	Red yellow apedal, freely drained soils; red, high base status, > 300 mm deep (no dunes)	Tillite (Dwyka Formation), shale and mudstone (Ecca Group) covered partially by surface limestone and red wind-blown sand. Dolerite intrusions also occur.

The soils in a regional context are reddish, moderately shallow, sandy, and often overlay layers of calcrete of varying depths and thickness. The soils are typically weakly structured with low organic content. These soils drain freely which results in a soil surface susceptible to erosion, especially wind erosion when the vegetation cover is sparse and gully erosion in areas where stormwater can concentrate.

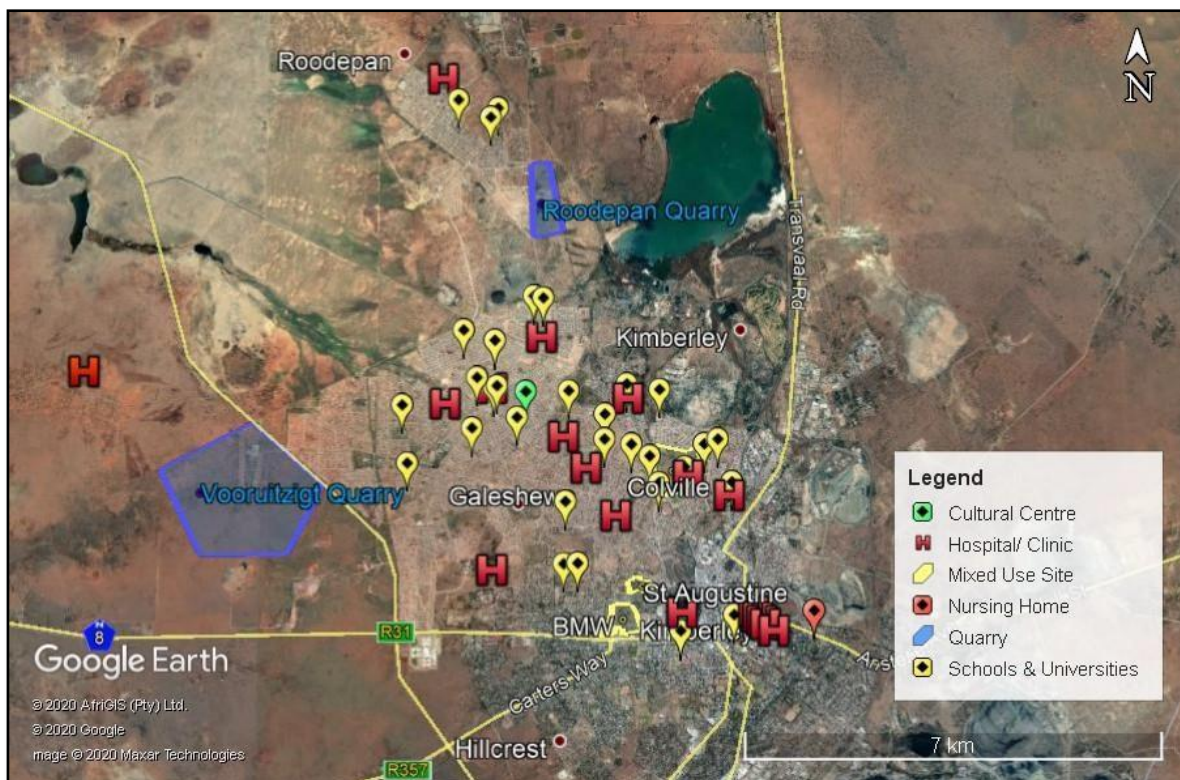
### 10.4 Land-Use and Land capability

The major land use of the study area as classified by the Environmental Potential Atlas of South Africa (2000) is vacant land. There are informal houses and a soccer pitch located on Portion32. There are mainly residential dwelling units to the west with quite a few non-residential land uses for including a police station, bottle store and supermarket. To the east and south is mainly farmland, a quarry and to the north a shooting range and road.

### 10.5 Air Quality

The quarry is located on the outskirts to the north of the city, next to Roodepan suburb. Air quality Sensitive Receptors (AQSR) are where people reside (residential areas) with the most vulnerable regarded to be children, the sick and the elderly. For this reason, schools, hospitals/clinics, and old age homes/frail care were identified from google maps and will be included in the air quality impact assessment as AQSRs. The locations of the residential areas and the AQSRs in relation to the proposed development areas and quarries are shown in Figure 10-3.





**Figure 10-3: Nearest schools and residential areas**

Particulates represent the main pollutant of concern from the current activities in the region – mining operations, vehicles and trucks on gravel roads, agricultural field tilling and windblown dust from exposed surfaces. Airborne particulate matter comes in different sizes and comprises a mixture of organic and inorganic substances, ranging in size, shape and density. As indicated previously, the particle size fraction of concern for air quality assessments include Total Suspended Particles (TSP), assessed as dust fallout and PM<sub>10</sub> and PM<sub>2.5</sub>, assessed for potential health impacts.

Gaseous emissions derive from the haul trucks, mining equipment, public vehicles, biomass burning and domestic fuel burning. These gaseous emissions include primarily SO<sub>2</sub>, CO, CO<sub>2</sub>, NO<sub>x</sub> and hydrocarbons. Vehicles on the roads in Kimberley, and on the national roads (N8, R64 and R357) will also contribute to these gaseous emissions but it is expected that they are not busy roads and therefore the contribution is negligible. It is not known what the frequency and magnitude of veld fires are in the region, but these could be significant contributors to ambient gaseous pollutants. Similarly, domestic fuel burning can be significant contributors to specifically indoor air pollution.

## 10.6 Water Resources

The site falls within the Lower Vaal Water Management Area (WMA) which is in the quaternary drainage region C91E (Figure 10-4). The Vaal River lies further to the north and the Modder River further south of the study area.

No natural watercourses traverse the Roodepan infrastructure site in the town of Kimberley although stormwater collected in the old quarries that formed artificial wetlands..

The project area is drained mainly by surface run-off (i.e.: sheetwash) with surface water flowing into the pans and drainage channels that bisect the larger Kimberley area. The storm water collects along roads and footpaths cutting through the area, to drain into the regional man-made canals and channels. It must be noted that surface flow generally only occurs in the period directly after

precipitation events or a wet rainy season, and that these channels / canals may exhibit a large base-flow component with groundwater flow occurring within the sandy sediments lining its channel.

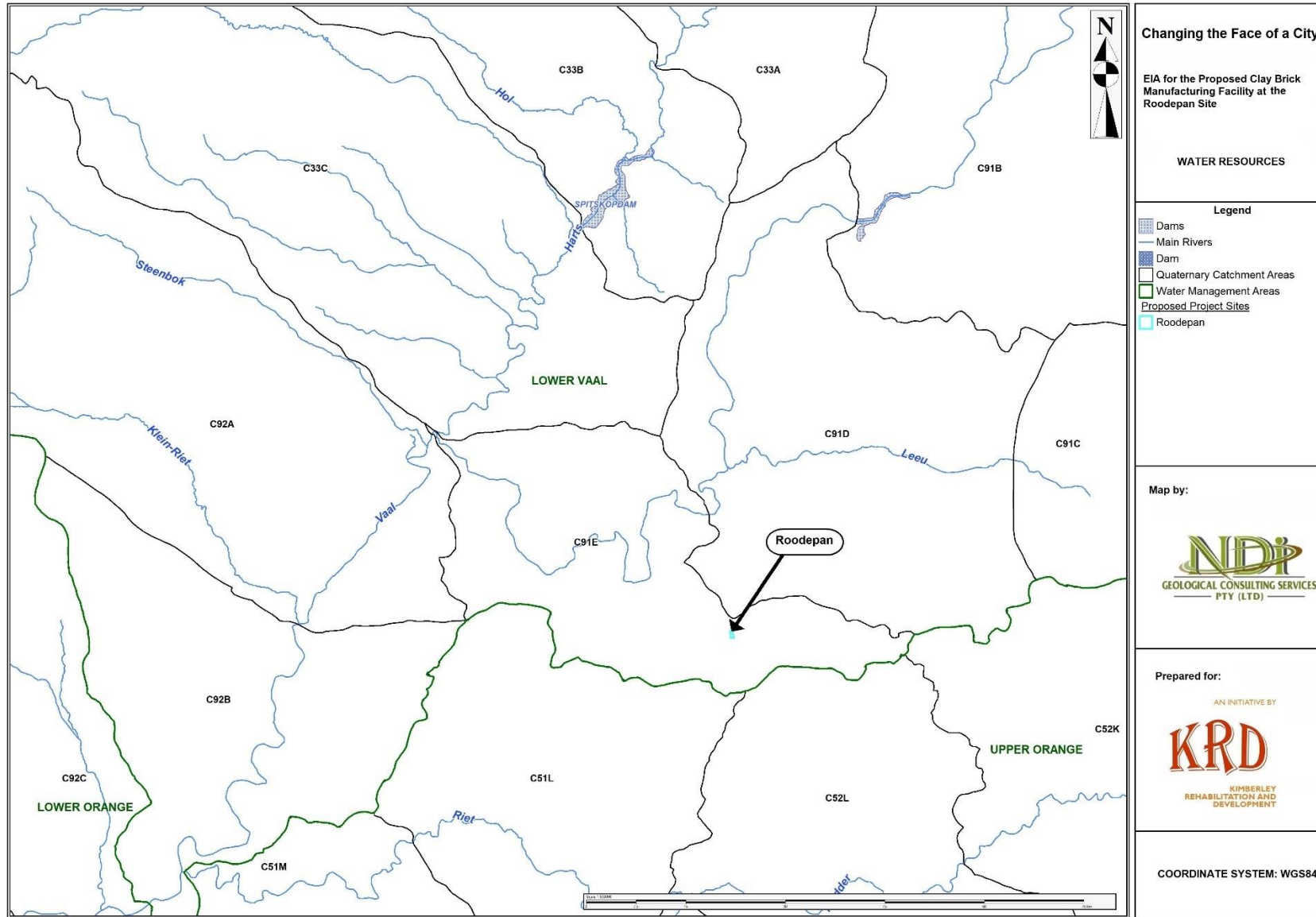


Figure 10-4: Water Resources

## 10.7 Geohydrology

The local hydrogeology within the study area is hosted by the Karoo dolerite rock and basement rocks. The surrounding lithological units are classified as intergranular and fractured with the estimated yield of 0.5 – 2 l/s as indicated on Figure 10-5.

Groundwater aquifers within the study area are potentially recharged through regional and local recharge system due to the limited rainfall in the area. Groundwater harvest potential as indicated by Baron et al, (1998) is approximately 6 000 to 10 000 m<sup>3</sup>/km<sup>2</sup>/annum, which is the maximum groundwater which can be sustainably abstracted per square kilometre.

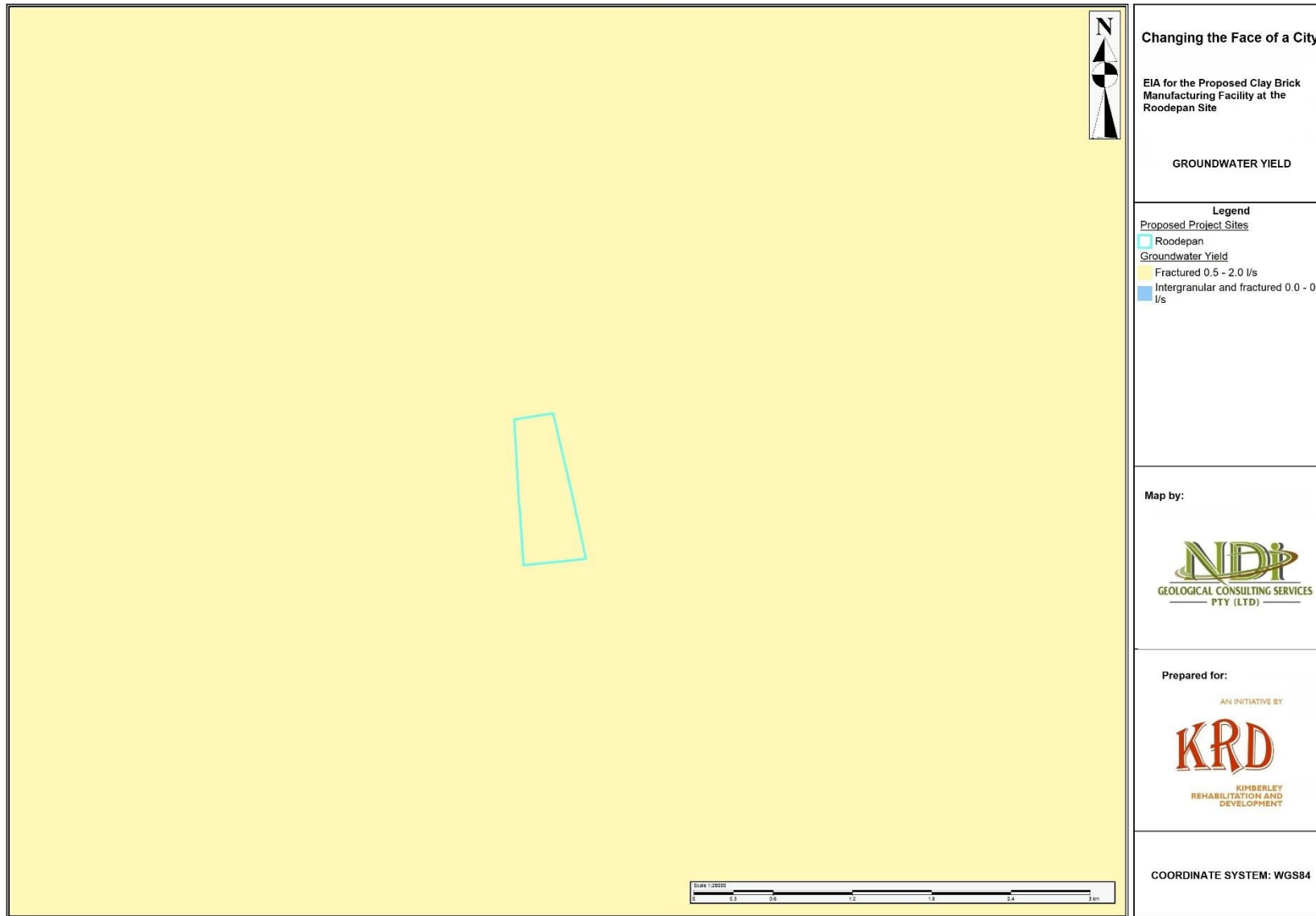
The quaternary catchment is within the Vegter Region 30 referred to as North-eastern Pan Belt. Two basic types of aquifer storage are assumed to exist in this region, namely the “Weathered /Jointed” (WZ) and Fractured” Zone (FZ). In fractured rock (FZ) aquifers the number of water-bearing fractures generally decreases with depth (Vegter, 1995) and this often results in a similar decline in aquifer storativity with depth. While saturated zone (WZ) is normally a relatively thin zone (i.e. 5 to 40m thick) with its upper surface formed by the water table, therefore making this portion of the aquifer semi-unconfined to unconfined. This zone is characterised by a large number of relatively low-yielding water-strikes.

Groundwater use within the quaternary catchment is very limited as indicated on the hydrocensus, this was further validated by the absence of registered groundwater users on the DWS Water Resource Management Services Database. The proposed project will also not use groundwater, but surface water will be delivered by bowsers to the project area.

**Table 10-2: Groundwater Quantification**

Quaternary Catchment	Area km <sup>2</sup>	Saturated Thickness (m)			Specific Yield of WZ	Storage Coefficient Of FZ	Volume of Water Stored in Aquifer X 10 <sup>3</sup> m <sup>3</sup> /km <sup>2</sup>		
		Weathered Zone (WZ)	Fractured Zone (FZ)	Aquifer			Weathered Zone	Fractured Zone	Aquifer
C91E	1507	12	149	161	2.08E-03	7.05E-05	33 827	16 630	50 457

Source: Groundwater Resource Assessment: Task 1D



**Figure 10-5: Localised groundwater yield**



## 10.8 Artificial wetlands

Two major wetland types were identified on site namely:

- Man-made depressions (quarries);
- Artificial wetlands created by leaking pipelines.

### 10.8.1 Man-made Depressions

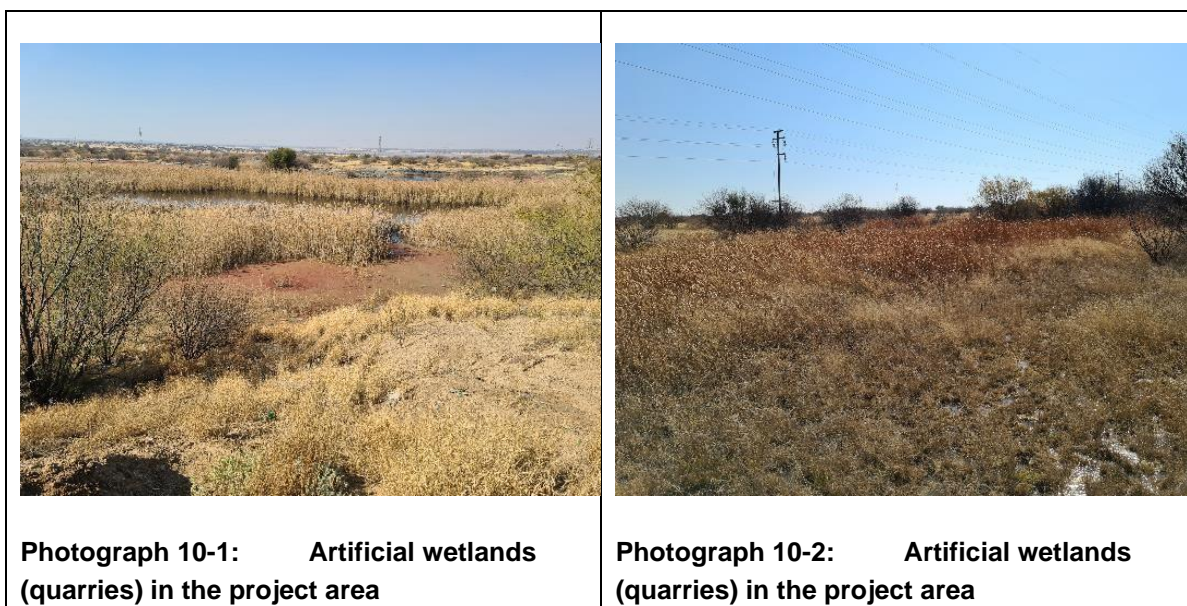
The depressions in the project area represent man-made quarries or artificial depressions created where stormwater or water from surrounding leaking pipelines collect. The vegetation associated with depressions is mostly sedges, reeds and bulrushes depending on the depth of the water and the substrate. Species such as *Phragmites australis*, *Typha capensis*, *Persicaria serullata*, *Schoenoplectus corymbosus*, *Ludwigia stolonifer* and *Leersia hexandra* mostly grow on a muddy substrate along the shallow edges of the quarries in the project area.

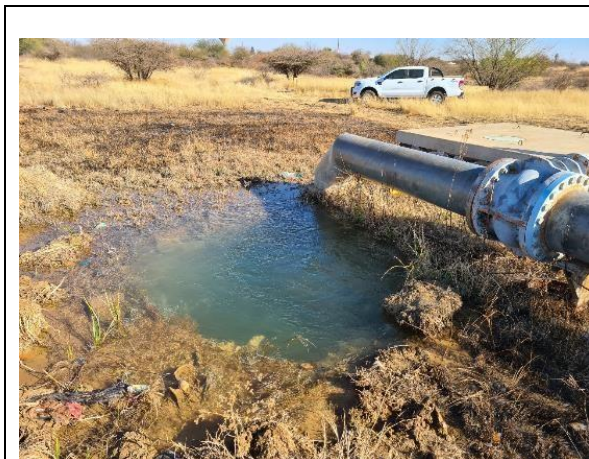
### 10.8.2 Artificial Wetlands

The artificial wetland identified on the eastern section of the Roodepan site primarily exist due to the leaking of a water supply pipeline that leads to the wetness regime in soils needed for wetland formation. This artificial hydraulic regime caused by the leaking pipe will remain until the infrastructure is repaired to allow the areas to rehabilitate. Due to the rich abundance of natural water sources in the primary catchment (in the form of natural pans, wetlands, rivers and streams) contributing largely to ecosystem functioning, the ecological significance of these artificial systems is minimal.

The most abundant and most conspicuous plant species include *Phragmites australis*, *Typha capensis* and *Cyperus esculentis*.

The artificial wetlands have a medium sensitivity and still has some functionality in terms of the hydrology of the area as well as providing habitat to various waterfowl. The area should be drained, backfilled and levelled according to rehabilitation specifications.





**Photograph 10-3: Artificial wetland that formed as a result of the leaking pipeline**



**Photograph 10-4: Leaking pipeline in the north-eastern section of the Roodepan site**

### 10.9 Areas of Conservation Concern

According to the Northern Cape Conservation Plan, the project area is located in an area classified as a Critical Biodiversity Area 2 (CBA2) (near natural landscape). However, the biodiversity assessment conducted for the site found that the development site is in a highly degraded state and should not be classified as a CBA2 area as indicated on the map in Figure 10-6.

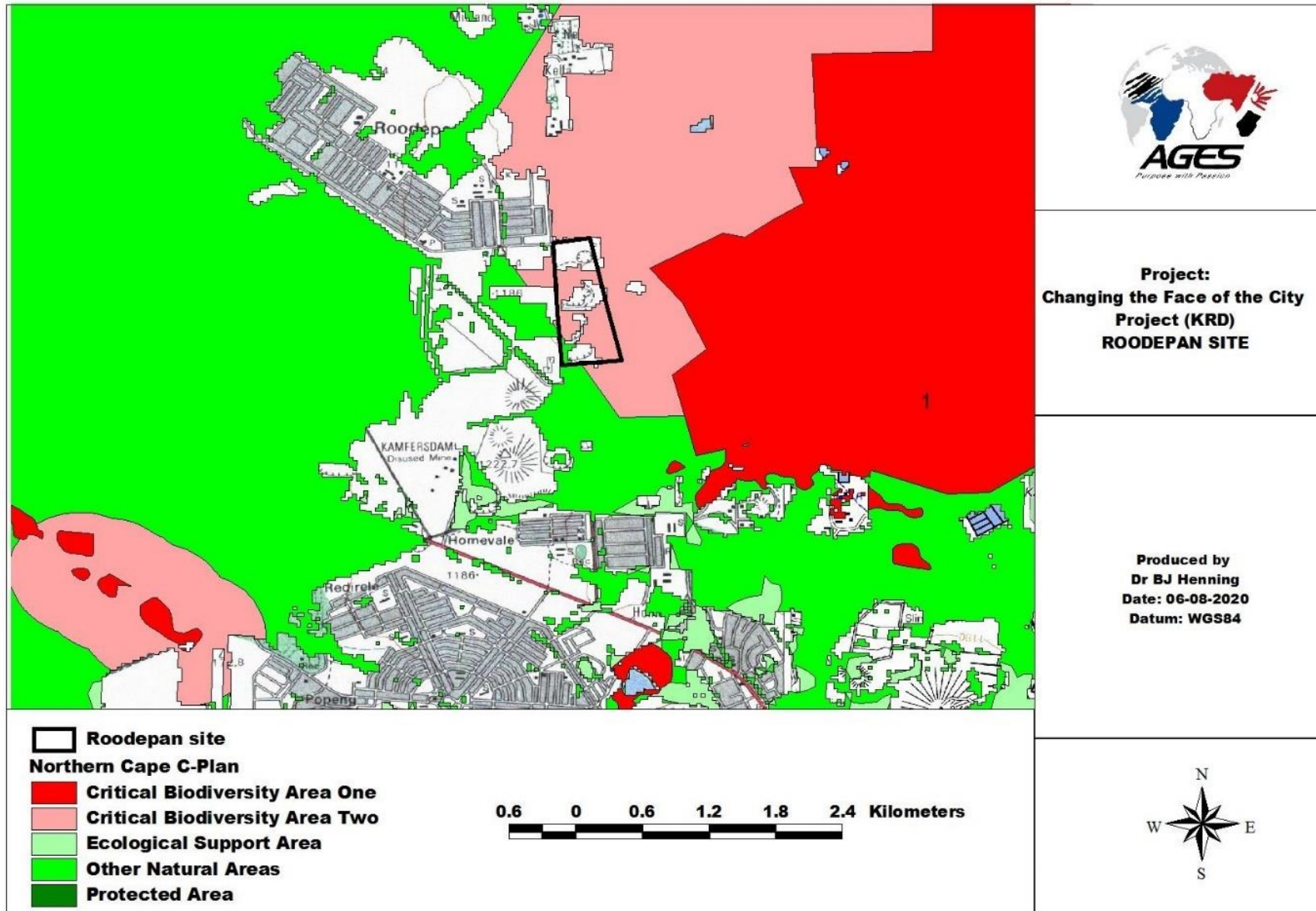


Figure 10-6: Areas of Conservation Concern



## 10.10 Visual

Roodepan is the closest residential areas, located across the road from the Roodepan Quarry. It is expected that the proposed project will result in visual impacts on the residents of Roodepan. The impact assessment section of the report includes an assessment of the visual impacts and the EMPr provides for practical mitigation measures that may be implemented to avoid and/or minimise the impacts.

## 10.11 Biodiversity

### 10.11.1 Vegetation

A specialist was appointed to undertake a biodiversity assessment. The findings from the assessment were as follows:

- Biomes: The development site lies within the Savanna biome which is the largest biome in Southern Africa. It is characterized by a grassy ground layer and a distinct upper layer of woody plants (trees and shrubs). The environmental factors delimiting the biome are complex and include altitude, rainfall, geology and soil types, with rainfall being the major delimiting factor. Fire and grazing also keep the grassy layer dominant. The most recent classification of the area by Mucina & Rutherford shows that the site is classified as Kimberley Thornveld.
- Vegetation types: The indigenous flora of area is mostly represented by the Kimberley Thornveld (Mucina & Rutherford, 2006) which occurs on slightly irregular plains with well-developed tree layer dominated by tree species such as *Vachellia erioloba*, *V. tortilis*, *V. karroo* and *Boscia albitrunca* and well developed shrub layer with occasional dense stands of *Tarchonanthus camphoratus* and *Senegalia mellifera*. The grass layer is often open with much uncovered soil, although erosion is very low. This vegetation type has a Least Threatened conservation status with 18% transformed mostly through cultivation, while only 2% conserved.
- Vegetation units: 5 major vegetation units were identified on the proposed development site as follows:
  - Degraded *Vachellia tortilis* – *Prosopis woodland*: This vegetation unit occurs in the northern and south-eastern section of the site on red apedal soils of the Hutton soil form. The woody layer is characterised by the dominance of the indigenous *Vachellia tortilis* and the alien invasive *Prosopis glandulosa*. The woodland is typical of the Kimberley Thornveld vegetation type on plains and can be considered as the only natural vegetation unit occurring on the Roodepan site. Herbaceous species within the understorey included grass species such as *Enneapogon cenchroides*, *Enneapogon desvauxii*, *Cenchrus ciliaris*, *Eragrostis echinochloidea*, *Aristida congesta*, *Fingerhutia africana* and *Themeda triandra*. The vegetation unit has a medium-low sensitivity and unlimited development can be supported within the footprint area.
  - *Prosopis glandulosa* woodland: This vegetation unit represent the denser *Prosopis* thickets that invaded areas on the most southern old quarry and the more open unit on the plains where *Prosopis* have invaded. The Mesquite tree (*Prosopis glandulosa*) is synonymous with dry arid areas in especially the Karoo and the Northern Cape. The tree is loved by livestock for its sweet seed pods which is sometimes also used

among residents for its medicinal purposes. It has since become the second most widespread invasive tree species in South Africa. *Prosopis* trees are extravagant users of readily available groundwater and dense stands could seriously affect the hydrology of the ecosystems they invade. Dense stands compete with and replace indigenous woody and grassland species. Dense stands produce few pods and thus replace natural pasturage without providing pods in return. Dense stands are virtually impenetrable, restricting the movement of domestic and wild animals and causing injuries. These species and hybrids have been listed as invasive species in terms of the Alien and Invasive Species (AIS) Regulations, National Environmental Management: Biodiversity Act (Act No 10 of 2004). They were listed as category 3 species in the Northern Cape recently and the Kimberley area have a serious problem with *Prosopis* invasion. The development will ensure that the *Prosopis* stands are controlled, although a specific approach would be needed to prevent spreading to neighbouring areas. The vegetation unit has a low sensitivity and unlimited development of the brick manufacturing site can be supported within the footprint area. The old quarry should be rehabilitated through backfilling by the debris produced from the clay brick manufacturing.

- Degraded grassland / bare ground: This vegetation unit occurs in the northern section of the site and represent the bare ground area (sports field) and other areas that form secondary grassland. Although secondary grasslands may superficially look like primary grasslands, they differ markedly with respect to species composition, vegetation structure, ecological functioning and the ecosystem services they deliver. These grasslands are still in an early successional state, although somewhat older (older than 5 years) with several grass species like *Enneapogon scoparius*, *Aristida junciformis*, *Aristida congesta s. congesta* and *Eragrostis echinchoidea*. The herbaceous layer is characterised by dense stands (density 60-70%) of climax grasses of medium height (0.6-1.2m). The vegetation unit has a low sensitivity and unlimited development can be supported within the footprint area;
- *Senegalia mellifera* thickets: This vegetation unit occurs in pockets in between the quarries and further to the east where the calcrete bedrock is closer to the surface, although still overlaid by red-yellow sandy soils. The bush clumps are almost completely dominated by *Senegalia mellifera* (black thorn). A poor grass layer occurs in and around the bush clumps because of overgrazing. The habitat type can be considered degraded. No red data species occurs; probably because of the habitat being different compared to the potential red data species that could occur. The vegetation unit has a medium-low sensitivity and unlimited development can be supported within the footprint area.
- Drainage features (Old quarries and leaking pipelines - Artificial wetlands): The vegetation associated with depressions is mostly sedges, reeds and bulrushes depending on the depth of the water and the substrate. Species such as *Phragmites*

*australis*, *Typha capensis*, *Panicum serotinum*, *Schoenoplectus corymbosus*, *Ludwigia stolonifera* and *Leersia hexandra* mostly grow on a muddy substrate along the shallow edges of the quarries in the project area. The most abundant and most conspicuous plant species include *Phragmites australis*, *Typha capensis* and *Cyperus esculentus*.

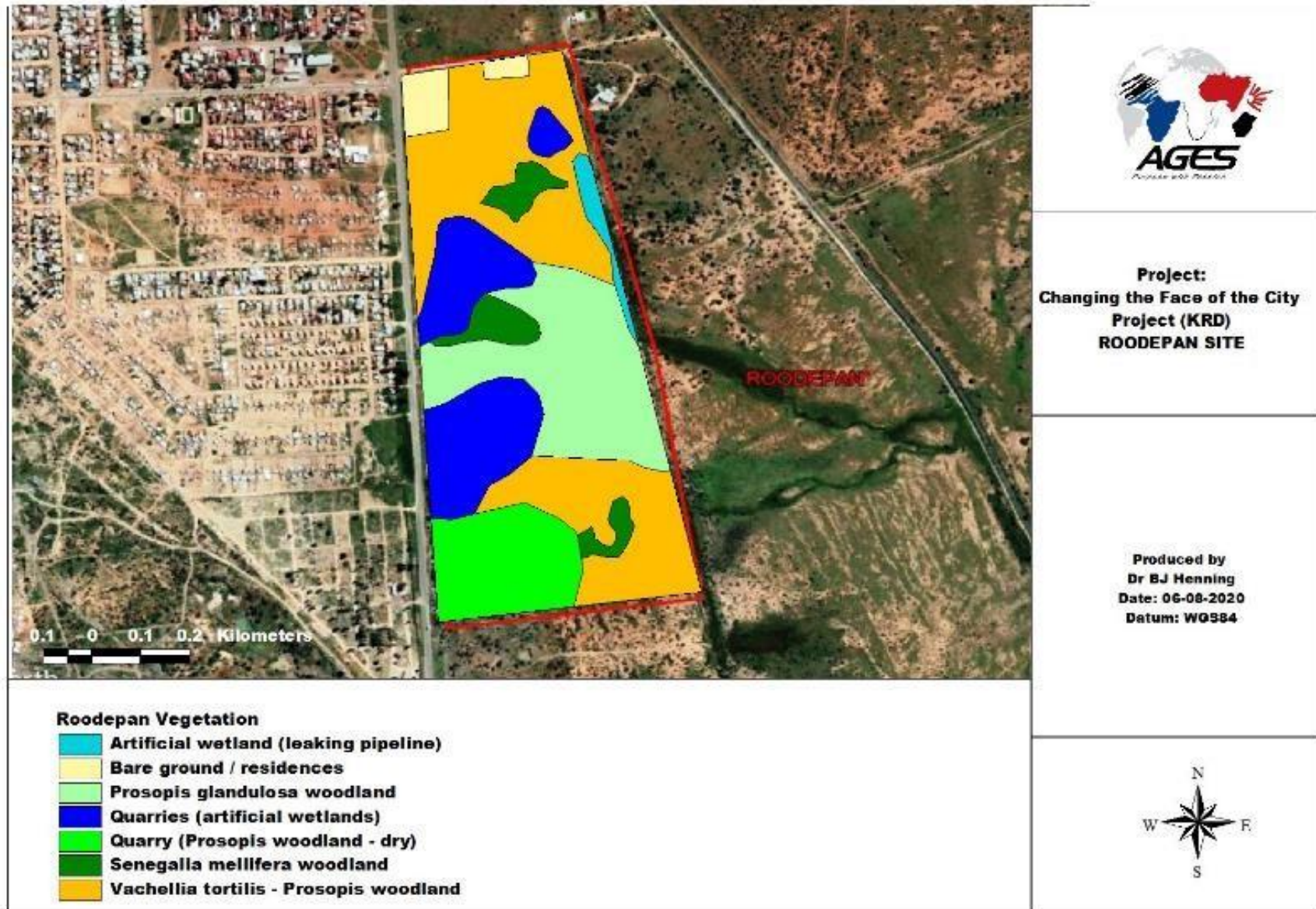


Figure 10-7: Vegetation Units on the project site



- Species of Conservation Concern (SCC): A list of red data plant species previously recorded in the study area in which the proposed development is planned was obtained from the Plants of Southern Africa (POSA) database of SANBI. There are various categories for Red Data Book species, such as 'Endangered', 'Vulnerable', 'Rare' and 'Near threatened' as listed in the Red Data List of Southern African Plants (Hilton-Taylor 1996). The following red data species was listed for the project area (Table 10-3).

**Table 10-3: Red data species documented during the surveys**

Species Name	Conservation Status
<i>Gallienia pallens</i>	Data Deficient

None of the red listed plants was found on site:

- Protected tree species (NFA): Taking cognizance of the data obtained from the field surveys no listed protected tree species was documented on site.
- Protected Plants (NC DENC): Plant species are also protected according to the Northern Cape Department of Environment of Nature Conservation (DENC). According to this Act, no person may pick, import, export, transport, possess, cultivate or trade in a specimen of a specially protected or protected plant species. After a detailed survey was conducted during July 2020, no protected plant species was found on site:
- Invasive alien species and exotic weeds: The following alien invasives and exotic plant species were recorded on site during the surveys as stipulated in the Alien and Invasive Species Regulations (GNR 599 of 2014) (Table 10-3):

**Table 10-4: Declared weeds and invader plants of the study area**

Species	Common name	NEMBA status
<i>Agave sisalana</i>	Sisal	2
<i>Argemone ochroleuca</i>	Mexican poppy	1b
<i>Atriplex nummularia</i>	Old man salt bush	2
<i>Cirsium vulgare</i>	Scotch thistle, spear thistle	1b
<i>Datura stramonium</i>	Common thorn apple	1b
<i>Flaveria bidentis</i>	Smelters bush	1b
<i>Melia azedarach</i>	Seringa tree	3 (in urban areas)
<i>Nicotiana glauca</i>	Tobacco tree	1b
<i>Opuntia ficus-indica</i> ; <i>Opuntia stricta</i>	Prickly pear	1b
<i>Prosopis glandulosa</i>	Mesquite trees	3
<i>Ricinus communis</i>	Castor oil plant	2
<i>Salsola kali</i>	Common saltwort / tumbleweed	1b
<i>Tipuana tipu</i>	Tipu tree	3
<i>Xanthium strumarium</i>	Large cocklebur	1b

## 10.11.2 Fauna

The faunal assessment found the following:

- **Fauna Habitats:** The area represents mixed woodland vegetation components with a diverse vegetation structure and height class. The regional fauna has not been as extensively studied and is not known to exhibit many unique features. The area has been settled for many centuries, and the fauna is usually considered impoverished due to overgrazing and other man-induced impacts. There are three main faunal habitat types present on the site that might be impacted on by the proposed project namely open water habitat (wetlands), degraded grassland and mixed woodland (alien invasive and indigenous).
- **Common fauna documented and potentially occurring in the project area:** As a result of anthropogenic disturbance in the larger area and the limitations created by game fences, only the most tolerant generalists of the larger vertebrates still occur in the project area outside the nature reserves including grey duiker, steenbok and vervet monkey. The more sensitive habitat-specialist species like honey badger, brown hyena and caracal have retreated into areas of lower disturbance such as the surrounding woodland outside Kimberley city.
  - **Mammals:** Large mammals that occurred historically at the site, are absent from the area, owing to anthropogenic impacts in recent centuries. This loss of large species means that the mammal diversity at the site is far from its original natural state not only in terms of species richness but also with regards to functional roles in the ecosystem. Mammals are sensitive to disturbances and habitat destruction and degradation and as such the anticipated species diversity of the study area would be low. Settlement areas have negated the possibility of encountering any medium to large mammals. The presence of dogs as well as poaching activities (snares observed on site), poses a threat to the presence of mammals on sites. The mammals are mostly represented by generalised species such as rodents and scrub hares that will move through the area while foraging. The proximity of the informal settlements does however place constant pressure on these mammal populations and many of these populations will eventually disappear from the area completely. Most mammal species are highly mobile and will move away during construction. The connectivity<sup>1</sup> of the project site is low.
  - **Birds (avifauna):** The conservation status of many of the bird species that are dependent on wetlands reflects the critical status of wetland nationally, with many having already been destroyed. In the study area, only pans (artificial wetlands in old quarries) were observed. These pans are extremely important sources of water for most bird species and will be regularly utilised not only as a source of drinking water and food, but also for bathing. The pans in this study area could also be used as flight paths for certain species. Species such as greater flamingos will utilize the salt pans in the area for foraging, although the artificial wetlands are not considered a habitat of significance compared to the Kamfers Dam to the east of the Roodepan site.

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<sup>1</sup> **Connectivity (habitat connectivity)** - Allowing for the conservation or maintenance of continuous or connected habitats, to preserve movements and exchanges associated with the habitat.

Microphyllous woodland usually supports much higher bird numbers compared to the broadleaved woodlands. The area represents microphyllous woodland and supports many smaller bird species such as Ashy Tit, Pied Babbler, Kalahari Robin, Burntnecked Eremomela, Desert Barred Warbler, Marico Flycatcher, PriritBatis, Crimsonbreasted Shrike, Longtailed Shrike, Threestreaked Tchagra, Great Sparrow, Whitebrowed Sparrowweaver, Scalyfeathered Finch, Violeteared Waxbill and Blackcheeked Waxbill. Degraded grasslands sometimes cover extensive areas and have become an artificial habitat that attracts a wide range of generalist species. These grasslands represents a significant feeding area for many bird species in any landscape through opening up the soil surface, land preparation which makes many insects, seeds, bulbs and other food sources suddenly accessible to birds and other predators; the grasses are often eaten themselves by birds, or attract insects which are in turn eaten by birds.

- o Herpetofauna (Reptiles and Amphibians): Typical species associated with arid and semi-arid habitat types occur in the study area. Venomous species such as the puff adder and cape cobra are expected to occur in the larger study area, although the location within Kimberley City makes the probability of these snakes occurring on site virtually zero. The general habitat type for reptiles consists of open woodland and grassland with limited available habitat for diurnally active and sit-and-wait predators, such as terrestrial skinks and other reptiles. The amphibians appear to be poorly represented on site and the artificial wetlands represent the most suitable habitat for the few amphibian species that could occur in the area. No threatened species occur in the area.
- Red data fauna: Some red data fauna potentially occurs in the vicinity of the proposed developments, although it has a very low to almost zero probability of occurring on the site. Table 10-5 lists potential red data species occurring in the study area.

**Table 10-5: Red data fauna species potentially occurring in the study area**

English Name	Conservation Status	Probability of occurrence on site
<b>BIRDS</b>		
Bustard, Kori	Near threatened	Low
Bustard, Ludwig's	Endangered	Low
Courser, Burchell's	Vulnerable	Medium
Courser, Double-banded	Near threatened	Medium
Crane, Blue	Near threatened	Very low
Duck, Maccoa	Near threatened	High
Eagle, Martial	Endangered	Low
Eagle, Tawny	Endangered	Low
Eagle, Verreaux's	Vulnerable	Low
Falcon, Lanner	Vulnerable	Low
Flamingo, Greater	Near threatened	Medium

English Name	Conservation Status	Probability of occurrence on site
Flamingo, Lesser	Near threatened	Medium
Korhaan, Southern Black	Vulnerable	Low
Painted-snipe, Greater	Vulnerable	High
Pipit, African Rock	Near threatened	Low
Roller, European	Near threatened	Medium
Secretarybird	Vulnerable	Low
Stork, Abdim's	Near threatened	Low
Stork, Saddle-billed	Endangered	Low
Stork, Yellow-billed	Endangered	Medium
Vulture, Lappet-faced	Endangered	Low
Vulture, White-backed	Endangered	Low
<b>MAMMALS</b>		
Bushveld Gerbil	Data Deficient	Medium
African Striped Weasel	Data deficient	Low
Southern African Hedgehog	Near Threatened	Low
African Straw-coloured Fruit Bat	Near Threatened (IUCN ver 3.1)	Low
Roan Antelope	Vulnerable	Zero – restricted to game reserves
Sable antelope	Vulnerable	Zero – restricted to game reserves

### 10.12Heritage Resources

An analysis of historical aerial imagery and archive maps of the project area subject to this assessment suggests a landscape which has been sparsely populated in historical times, but the area was subjected to development and extensive quarrying and digging towards the end of the 20<sup>th</sup> century. The following observations were made during the archaeological site survey:

- Previous studies in the area noted that the terrain on the north eastern and northern outskirts of Kimberley is likely to include a generally low density and widespread occurrence of mainly Pleistocene Stone Age material, including what has been defined as Fauresmith, mainly based on hornfels as raw material. It would tend to occur on calcrete where exposed, or in the lower margins of Hutton sands that veneer the landscape (Morris 2008). A single highly weathered Middle Stone Age (MSA) scraper was noted in the project area but this occurrence is of no heritage significance.
- In this landscape, Industrial Archaeological traces often occur in association with former mining activity associated with the diamond retrieval process up to 1914, particularly with respect to the Kimberley Mine and smaller De Beers Mines. Also associated are mine dumps, some of which were used for redoubts (forts) in the Defence of Kimberley during the Siege, 1899-1900. Some discarded mining areas subsequently became dumping areas for industrial and domestic waste which is also the case with the Kamfersdam Mine area. Similarly, single fragments of dated bottles and bottle necks, porcelain, glass and metal were noted in a midden along the southern periphery of the project area. These artefacts were found in low densities in association with mining debris from the Historical Period – particularly relating to the nearby Kamfersdam Mine. However, the local site context of the artefacts has unfortunately been lost due to the state of preservation of the site and the alteration of surface deposits. This aspect combined with the low artefact density and general absence of diagnostic material implies a

low heritage significance of the material found at the Roodepan Site. However, the site is situated within the larger historical Kimberley Mine Complex and on a regional scale associated material within intact site contexts might be of some importance.

- The Roodepan Municipal Cemetery occurs along the western boundary of the project area in Midlands Road. The graveyard, which is currently in use, is partially fenced off and maintained by local authorities. The burial site is of high heritage significance and, even though it is situated outside of the project area, every measure should be taken to avoid direct and indirect impacts on the site.



**Photograph 10-5: A single Middle Stone Age artefact found in the project area**



**Photograph 10-6: A glass bottle top and other glass fragments from the refuse dump in the project area**



**Photograph 10-7: The degraded refuse dump where scattered glass and porcelain were noted**



**Photograph 10-8: View of the entrance to the Roodepan Cemetery in the project landscape**

Figure 10-8 provides a map showing a historical aerial image of the project area (yellow outline, left) dating to 1938 with the location of the refuse dump indicated by the yellow arrow. On the 2018 image (right, diggings and wetlands) are indicated with green arrows and the Roodepan Cemetery is indicated with an orange arrow





Figure 10-8: A historical aerial image of the project area



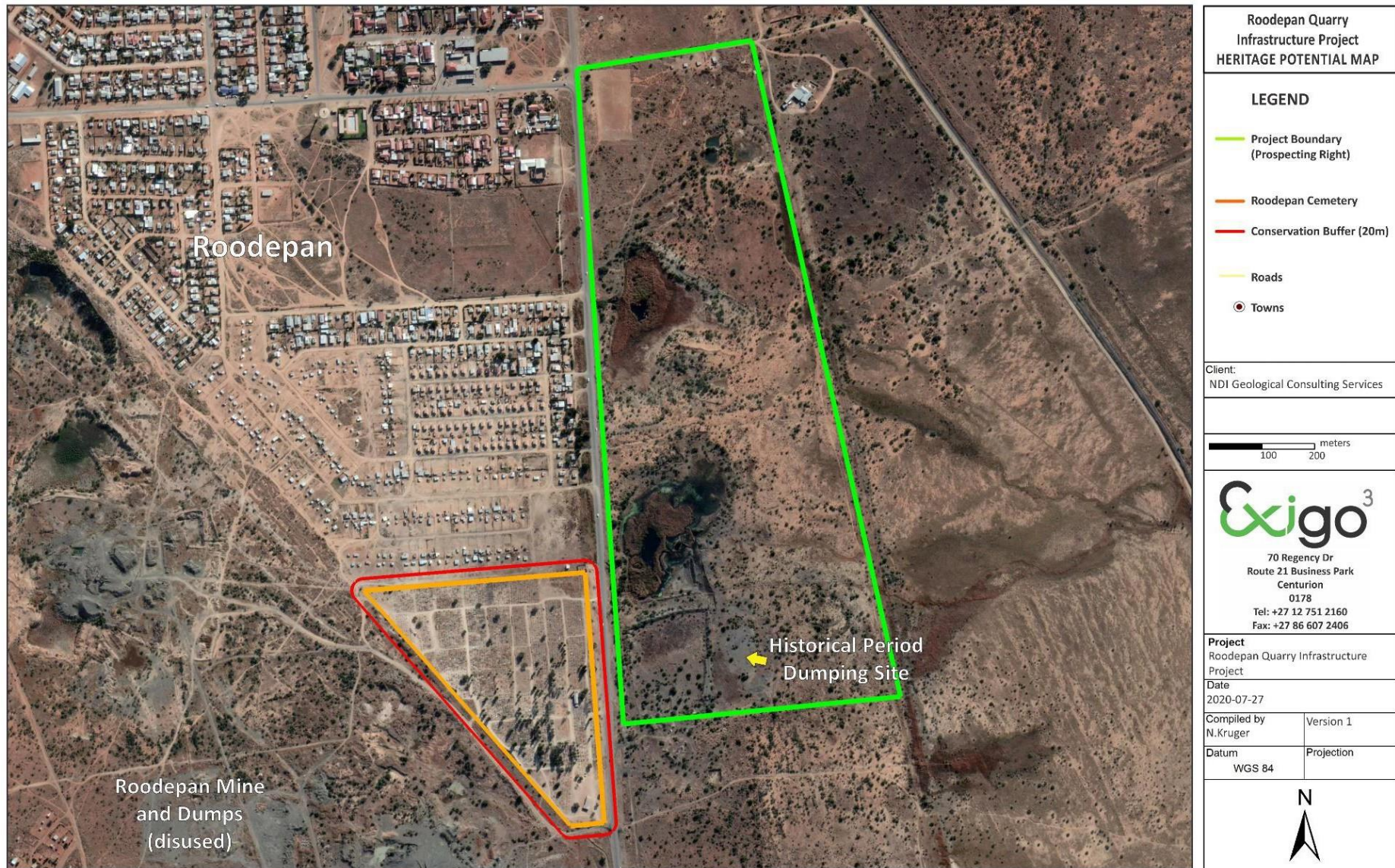


Figure 10-9: Aerial image indication the locations of heritage features



### 10.13 Socio – Economical Environment

The proposed project will be located within the Sol Plaatje Local Municipality which is situated in the Francis Baard District Municipality.

- Population: The municipality has experienced negative growth (-0.3%) in the population from 1996 to 2001 and an upswing to 2% from 2001 to 2011. Between 2005 and 2015 the population growth averaged 2.22% per annum which is slightly higher than the growth rate of South Africa as a whole (1.51%). The population projection of Sol Plaatje Local Municipality shows an estimated average annual growth rate of 1.9% between 2015 and 2020.
- Economic profile of local municipality: The Sol Plaatje Local Municipality is a Category B municipality located in the Frances Baard District in the Northern Cape Province. It is bordered by Dikgatlong in the north, the Pixley ka Seme District in the south and west, and the Free State Province in the east. The size of Sol Plaatje local economy is approximately R46.0 billion. The municipality contributes 78.0% and 25.5% to the Frances Baard District Economy and the Northern Cape Province Economy respectively. The main economic sectors: include agriculture, business services, game farming, tourism and hospitality, manufacturing, transport, community services, social and personal services. The fastest growing sectors in the Municipality are agriculture, electricity and water, and mining sectors. The IDP notes that the current growth occurring in these sectors should be exploited to ensure the creation of new job opportunities for local people.
- Level of education: Of the population over 20 years, 30% of the population has obtained matric and higher education, while 10% indicate no schooling. The remaining 60% have some primary schooling and some secondary schooling (Figure 10-10). This will pose a serious problem for the future economic trajectory as skills will have to be built to suit the economic path and in the short-term skills will have to be brought in from skilled areas.

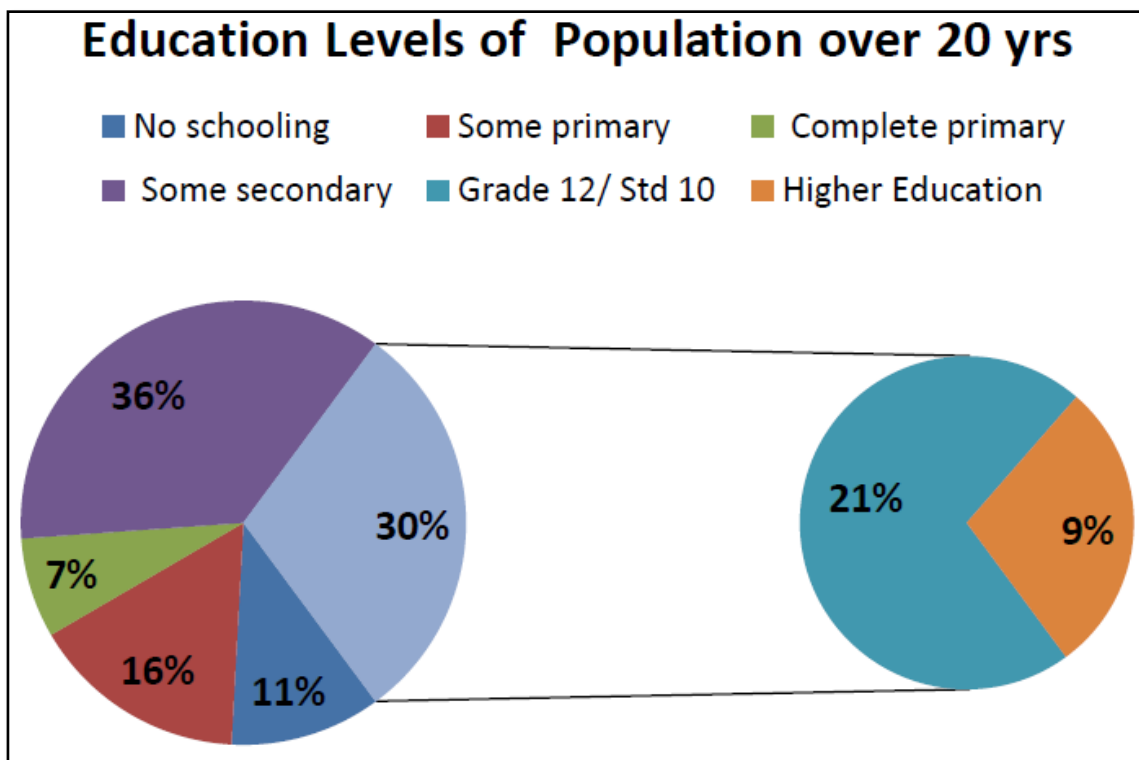


Figure 10-10: Education (Source – Stats SA, 2011)

Table 10-6 provides a summary of educational levels in the Sol Plaatje Local Municipality.

**Table 10-6: Educational Levels in the Sol Plaatje Local Municipality**

No schooling age 20+	10%
Higher education aged 20+	9%
Matric aged 20+	21%

# 11 Plan of Study for the Environmental Impact Assessment

A full EIA process will be conducted for the proposed project, where an EIR and EMPr will be compiled and submitted to the DENC. A summary of the approach to be followed is provided in Figure 2-1 **Error! Reference source not found.**

This Plan of Study (PoS) for the EIA is provided to give an indication of further studies and assessments to be undertaken for the project and the impact assessment methodology that will be used to qualify and quantify the identified impacts.

The scoping process is designed to identify impacts and determine if these impacts are sufficiently significant to warrant a specialist investigation in the impact assessment phase. Issues requiring further investigation require a common set of assessment criteria against which the impacts can be described, evaluated and the significance determined.

## 11.1 Purpose of this Plan of Study

The purpose of the scoping phase of this EIA process is to identify potential environmental impacts, and to discuss the alternatives considered. This PoS outlines the process to be followed during the course of the EIA and will be submitted to the DENC for review and comment as part of the Draft Scoping Report. The Draft Scoping Report, with the PoS will also be made available to all the stakeholders for review and comment. Comments received will be incorporated into the Final Scoping Report and PoS, which will be submitted to the DENC for approval. Depending on the responses received during the registration period, a public meeting may be held during the Scoping Phase of the project.

The purpose of the PoS is to layout an effective methodology to be followed during the assessment of impacts, should this be deemed necessary, in order to meet the requirements of the NEMA.

## 11.2 Purpose of the EIA/EMPr Phase

The objectives of the EIA/EMPr phase will be to:

- Identify and assess the environmental (biophysical, socio-economic, and cultural) impacts of the construction, operation, decommissioning and post closure impacts of the proposed project. The cumulative impacts of the proposed development will also be identified and evaluated;
- Identify and evaluate potential management and mitigation measures that will reduce the negative impacts of the proposed development and enhance the positive impacts;
- Compile monitoring, management, mitigation and training needs in the EMPr; and
- Provide the decision-making authorities with sufficient and accurate information in order to make a sound decision on the proposed development.

## 11.3 Methodology

This report presents the biophysical, socio-economic and cultural impacts that have been identified and assessed at a scoping level.

A comprehensive and standardized methodology will be used to assess the environmental impacts during the EIA Phase of the project. A plan will be prepared to mitigate and manage these impacts.

The EMPr will focus on the appropriate management of the proposed impacts resulting from the construction, operation and decommissioning of the proposed project.

## 11.4 Environmental Impact Assessment Report

Upon acceptance of the Final Scoping Report by the DENC, a Draft EIAR and EMPr will be compiled in terms of Appendix 3 of GNR 326 promulgated in terms of the NEMA. The purpose of the impact assessment phase of this EIA process is to systematically assess the impacts of the proposed project on the immediate and surrounding biophysical and socio environment. All comments received on the Draft EIAR and EMPr will be addressed and taken into consideration prior to submission of the Final EIAR to the DENC.

## 11.5 Environmental Management Programme

The EMPr will be compiled in accordance with Appendix 4 of GNR 326 of the NEMA. This will provide effective management and mitigation measure pertaining to the proposed development relating to the identified environmental impacts. These management and mitigation measures will strive to minimise the negative impacts of the proposed development and enhance the positive impacts.

## 11.6 Stakeholder Engagement Going Forward

The stakeholder engagement process conducted thus far is provided in Section 8. The PoS for the proposed development should achieve the following:

- Describe the tasks that are undertaken as part of the EIA/EMPr process and the process followed in undertaking these tasks;
- Describe the authority consultation process and an indication when consultation will be conducted;
- Provide the assessment methodology used to assess the potential environmental impacts; and
- Provide an overview on the on-going I&AP consultation process.

### 11.6.1 Submission of EIA Report and EMPr for Review

Upon acceptance of the Final Scoping Report by the DENC, a draft Environmental Impact Assessment Report (EIAR) will be compiled in terms of Appendix 3 of GNR 326 promulgated in terms of the NEMA. The purpose of the impact assessment Phase of this EIA process is to systematically assess the impacts of the proposed project on the immediate and surrounding biophysical and socio environment.

The draft EIAR and EMPr will be made available for a 30-day commenting period. Registered I&APs will be notified of the availability of the draft EIAR and EMPr Report through email, fax, SMS and posted registered letters. Depending on the responses received during the registration period, and where requested by the stakeholders, a public meeting may be held during the impact assessment phase of the project, ensuring that the COVID-19 Regulation requirements are met. Should a meeting be required, where possible online meetings will be held, and where stakeholders do not have internet access, the meetings will be held with no more than 50 stakeholders in attendance. Stakeholders will be informed of the COVID-19 Regulation requirements that will be enforced during the meeting.

Where necessary, comments and issues raised by I&APs during the commenting period will be consolidated into the Final EIAR and EMPr with the relevant response issued by the EAP. The Final EIAR and EMPr will then be submitted to the DENC for decision making. The comments will also be collated into the CRR that will form an Appendix to the Final EIAR.

### 11.6.2 Authority Consultation

Ongoing consultation with the different authorities will be conducted during the course of the EIA process. Further consultations with the competent authorities will be conducted should they become necessary. Authority consultation is considered an on-going process until a decision is made on the environmental application.

Other authorities that will be included are the local and district municipalities, ward councillors, and any others identified during the scoping phase of the project.

## 11.7 Alternatives

According to GNR 326 promulgated in terms of the NEMA, feasible alternatives need to be considered and assessed during the scoping Phase of the project, or where no alternatives have been considered, motivation for not considering alternatives must be included in the Scoping Report.

Two manufacturing processes alternatives were considered for the proposed project as follows:

- Using a zig-zag kiln and an extruder (preferred alternative); and
- Using a clamp kiln and presses.

In addition to these alternatives, the “no-go” alternative was also assessed. All alternatives, including the no-go option will be subject to the impact assessment.

## 11.8 Specialist Studies

The following specialist studies will be conducted:

- Biodiversity;
- Heritage Resources;
- Noise; and
- Air Quality.

The generic ToR for each specialist study are to:

- Describe the existing baseline characteristics of the study area and place this in a regional context;
- Identify and assess potential impacts resulting from the project (including impacts associated with the construction and operation of the project), using a prescribed impact rating methodology;
- Identify and describe potential cumulative impacts resulting from the proposed development in relation to proposed and existing developments in the surrounding area;
- Recommend mitigation measures to avoid or minimise impacts and/or optimise benefits associated with the proposed project; and
- Recommend and draft a monitoring programme, if applicable.

Certain impacts that are anticipated to be of limited or lower significance, either by virtue of the scale of the impacts, their short duration (e.g. construction phase only), disturbed nature of the receiving environment and/or distance to communities, will be assessed by EAP Team and reported directly into the EIA Report.

## 11.9 Impact Assessment Methodology

The anticipated impacts associated with the proposed project will be assessed according to a standardised impact assessment methodology, which is presented below. This methodology has been utilised for the assessment of environmental impacts where the consequence (severity of impact, spatial scope of impact and duration of impact) and likelihood (frequency of activity and frequency of impact) have been considered in parallel to provide an impact rating and hence an interpretation in terms of the level of environmental management required for each impact.

The first stage of any impact assessment is the identification of potential environmental activities<sup>2</sup>, aspects<sup>3</sup> and impacts, which may occur during the commencement, and implementation of a project. This is supported by the identification of receptors<sup>4</sup> and resources<sup>5</sup>, which allows for an understanding of the impact pathway and an assessment of the sensitivity to change. Environmental impacts<sup>6</sup> (social and biophysical) are then identified based on the potential interaction between the aspects and the receptors/resources.

The significance of the impact is then assessed by rating each variable numerically according to defined criteria as outlined in Table 11-1.

The purpose of the rating is to develop a clear understanding of influences and processes associated with each impact. The severity<sup>7</sup>, spatial scope<sup>8</sup> and duration<sup>9</sup> of the impact together comprise the consequence of the impact and when summed can obtain a maximum value of 15. The frequency of the activity<sup>10</sup> and the frequency of the impact<sup>11</sup> together comprise the likelihood of the impact occurring and can obtain a maximum value of 10. The values for likelihood and consequence of the impact are then read off a significance rating matrix table as shown in Table 11-2.

This matrix thus provides a rating on a scale of 1 to 150 (low, medium low, medium high or high) based on the consequence and likelihood of an environmental impact occurring.

Natural and existing mitigation measures, including built-in engineering designs, are included in the pre-mitigation assessment of significance. Measures such as demolishing of infrastructure, and reinstatement and rehabilitation of land, are considered post-mitigation.

<sup>2</sup>An **activity** is a distinct process or task undertaken by an organisation for which a responsibility can be assigned. Activities also include facilities or pieces of infrastructure that are possessed by an organisation.

<sup>3</sup>An **environmental aspect** is an 'element of an organisations activities, products and services which can interact with the environment'. The interaction of an aspect with the environment may result in an impact.

<sup>4</sup>**Receptors** comprise, but are not limited to people or man-made structures.

<sup>5</sup>**Resources** include components of the biophysical environment.

<sup>6</sup>**Environmental impacts** are the consequences of these aspects on environmental resources or receptors of particular value or sensitivity, for example, disturbance due to noise and health effects due to poorer air quality. Receptors can comprise, but are not limited to, people or human-made systems, such as local residents, communities and social infrastructure, as well as components of the biophysical environment such as aquifers, flora and palaeontology. In the case where the impact is on human health or well-being, this should be stated. Similarly, where the receptor is not anthropogenic, then it should, where possible, be stipulated what the receptor is.

<sup>7</sup>**Severity** refers to the degree of change to the receptor status in terms of the reversibility of the impact; sensitivity of receptor to stressor; duration of impact (increasing or decreasing with time); controversy potential and precedent setting; threat to environmental and health standards.

<sup>8</sup>**Spatial scope** refers to the geographical scale of the impact.

<sup>9</sup>**Duration** refers to the length of time over which the stressor will cause a change in the resource or receptor.

<sup>10</sup>**Frequency of activity** refers to how often the proposed activity will take place.

<sup>11</sup>**Frequency of impact** refers to the frequency with which a stressor (aspect) will impact on the receptor.

**Table 11-1: Criteria for Assessing Significance of Impacts**

<p><b>SEVERITY OF IMPACT</b></p> <p>Insignificant / non-harmful</p> <p>Small / potentially harmful</p> <p>Significant / slightly harmful</p> <p>Great / harmful</p> <p>Disastrous / extremely harmful</p>	<p><b>RATING</b></p> <p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p>	
<p><b>SPATIAL SCOPE OF IMPACT</b></p> <p>Activity specific</p> <p>Project Area specific</p> <p>Local area (within 5 km of the site boundary)</p> <p>Regional (Sol Plaatje LM area)</p> <p>National</p>	<p><b>RATING</b></p> <p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p>	
<p><b>DURATION OF IMPACT</b></p> <p>One day to one month</p> <p>One month to one year</p> <p>One year to ten years</p> <p>Life of operation</p> <p>Post closure / permanent</p>	<p><b>RATING</b></p> <p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p>	
<p><b>FREQUENCY OF ACTIVITY / DURATION OF ASPECT</b></p> <p>Annually or less / low</p> <p>6 monthly / temporary</p> <p>Monthly / infrequent</p> <p>Weekly / life of operation / regularly / likely</p> <p>Daily / permanent / high</p>	<p><b>RATING</b></p> <p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p>	
<p><b>FREQUENCY OF IMPACT</b></p> <p>Almost never / almost impossible</p> <p>Very seldom / highly unlikely</p> <p>Infrequent / unlikely / seldom</p> <p>Often / regularly / likely / possible</p> <p>Daily / highly likely / definitely</p>	<p><b>RATING</b></p> <p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p>	



**Table 11-2: Interpretation of Impact Rating**

		Consequence														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Likelihood	1	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
	2	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60
	3	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90
	4	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120
	5	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
	6	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180
	7	14	28	42	56	70	84	98	112	126	140	154	168	182	196	210
	8	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240
	9	18	36	54	72	90	108	126	144	162	180	198	216	234	252	270
	10	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300

	<b>High</b>	76 to 150	Improve current management
	<b>Medium High</b>	40 to 75	Maintain current management
	<b>Medium Low</b>	26 to 39	
	<b>Low</b>	1 to 25	No management required

**SIGNIFICANCE = CONSEQUENCE x LIKELIHOOD**

## 12 Anticipated Environmental, Social and Cultural Impacts

The scoping phase aims to identify the potential positive and negative biophysical, socio-economic and cultural impacts that the proposed project. Anticipated impacts that have been identified by the project team are summarised in Table 12-1.

All impacts in terms of construction, operation and decommissioning together with the recommended mitigation measures will be and addressed in the impact assessment phase of the project.

**Table 12-1: Summary of Potential Environmental Impacts Associated with the Proposed Development**

Element of Environment	Potential Impact Descriptions
Socio-Economic	Possible limited and temporary job opportunities during the construction phase of the clay brick manufacturing plant
Hydrogeology	Possible groundwater contamination from hydrocarbons leaking from vehicles and machinery.
Surface water	Possible surface water contamination.
Air Quality	Possible impact on air quality in the area.
Noise	Possible generation of noise during the construction and operational phases of the proposed project
Heritage Resources	Possible, but highly unlikely impact on heritage resources due to chance finds
Visual	Possible visual impacts will be associated with the proposed facility
Soils/Land Use/Land Capability	Localised loss of soil resource and change in land capability and land use due to the clearance of vegetation is expected.
Traffic	Possible impacts on traffic due to transportation of materials
Biodiversity	Loss of biodiversity due to vegetation clearance for construction.
Wetland	Possible impacts on the artificial wetlands that are located on the proposed manufacturing site.

### 12.1 Socio Economic

The proposed manufacturing facility forms part of the larger “Changing the face of a City” project that KRD is proposing. The main aim of the project is to provide low cost housing to the residents in Sol Plaatje Local Municipality. According to the Sol Plaatje Local Municipality IDP, 30% of the Northern Cape housing backlog exists in Sol Plaatje, with the municipality advocating for focus to be on ramping up the planning and delivery of houses, with clear economic spin offs to boost the local economy. Under the proposed project, a total of 12 369 houses will be constructed, outside of the commercial development that will also be part of the proposed project.

The anticipated investment from the project is approximately R 6 billion. In addition, the project will provide permanent employment (1500 direct and indirect) to local people within a local municipality with a high rate of unemployment, potentially providing job security (and the benefits thereof) not only for employed individuals but for households. The proposed project will also provide an economic stimulus to the local economy through the establishment of other small businesses (transporters, builders, providers of other material required).

Additionally, the project provides the municipality with an opportunity to rehabilitate old mine dumps that are not currently in use and to collect additional rates and taxes from the housing developments.

The project will thus in the long run have an overall positive economic impact for the receiving area and will have a cumulative impact that can be considered to be of high significance.

Potential negative socio-economic impacts associated with the proposed project include:

- Generation of dust due to movement of construction vehicles potentially resulting in a health and nuisance impact;
- Impact on safety and security as a result of theft, the occurrence of additional trucks on the roads, uncontrolled lighting of fires on site, littering and driving irresponsibly;
- Health and safety risk as a result of the movement of vehicles increasing the risk of accidents;
- Clearing of land which may potentially impact on the sense of place; and
- Squatting of job seekers.

The EIA team will include a socio-economic impact assessment and statement in the EIAR and will provide management and mitigations measure to prevent and/or minimise the proposed impacts.

## 12.2 Hydrogeology

The construction and operational phases of the project may result in the possible contamination of groundwater from hydrocarbons leaking from vehicles and machinery used in the construction and operational phases to transport material.

A groundwater impact assessment and statement will be included in the EIAR and mitigation measures included in the EMPr for KRD to ensure that the proposed project will have minimal impacts on the groundwater resources.

## 12.3 Surface water

No natural watercourses traverse the Roodepan infrastructure site. The project area is drained mainly by surface run-off (i.e.: sheetwash) with surface water flowing into the pans and drainage channels that bisect the larger Kimberley area. The storm water collects along roads and footpaths cutting through the area, to drain into the regional man-made canals and channels. It must be noted that surface flow generally only occurs in the period directly after precipitation events or a wet rainy season, and that these channels / canals may exhibit a large base-flow component with groundwater flow occurring within the sandy sediments lining its channel.

Although it is considered highly unlikely that the project will have impacts on the surface water resources in the area due to the location of the proposed facility, the following possible impacts may occur:

- Reduced water quality as a result of possible hydrocarbon spills;
- Siltation of watercourses as a result of cleared areas and erosion;
- Incorrect separation of clean and dirty water; and
- Leaching of contaminated ground water into water resources.

The EIAR will include an assessment of the likelihood and significance of the impacts of the proposed project on the hydrology of the area, as well as the management and mitigation measures, including proper stormwater management, required to minimise the impacts.

## 12.4 Air Quality

Construction normally comprises a series of different operations including land clearing, topsoil removal, road grading, material loading and hauling, stockpiling, grading, bulldozing, compaction, etc. In the context of this study, the activities at Roodepan Quarry are for the construction of the mixed-use sites – bricks are manufactured as part of the building supply for development of these sites. Thus, all activities assessed fall under construction, but for the purpose of this study construction is seen as the site preparation activities for the brick making facility, with all other activities assessed as operational phase.

The construction of a Clay Brick facility will be undertaken simultaneously with the quarry construction and land clearing at the mixed-use sites. Table 12-2 provides a list of sources of air pollution associated with these activities.

**Table 12-2: Sources of fugitive particulate emission associated with construction**

Source	Activity	Pollutants
Vehicle tailpipe	Transport and general construction activities	Gases (PM, SO <sub>2</sub> ; NO <sub>x</sub> ; CO; CO <sub>2</sub> )
Clay Brick facility infrastructure and other administrative buildings	Clearing of groundcover	Dustfall, PM <sub>10</sub> and PM <sub>2.5</sub>
	Levelling of area	
	Wind erosion from open areas	
	Materials handling	
On-site road infrastructure	Clearing of vegetation and topsoil	
	Levelling of proposed transportation route areas	
Mixed-use sites preparation	Clearing of groundcover	
	Levelling of area	
	Materials handling	
	Wind erosion from open areas	

The main pollutant of concern from construction operations is particulate matter, including PM<sub>10</sub>, PM<sub>2.5</sub> and TSP. PM<sub>10</sub> and PM<sub>2.5</sub> concentrations are associated with potential health impacts due to the size of the particulates being small enough to be inhaled. Nuisance effects are caused by the TSP fraction (20 µm to 75 µm in diameter) resulting in soiling of materials and visibility reductions. This could in effect also have financial implications due to the requirement for more cleaning materials.

Each of the operations in Table 12-2 has their own duration and potential for dust generation. It is therefore often necessary to estimate area wide construction emissions, without regard to the actual plans of any individual construction process. Quantified construction emissions are usually lower than operational phase emissions and since the construction schedule was not available (and due to their temporary nature); and the likelihood that these activities will not occur concurrently at all portions.

The Roodepan Quarry will primarily include the clay brick manufacturing. Since no detailed design or layout of the site was available at the time of the study, the layout as shown in **Figure 12-1** was assumed and emissions quantified accordingly.



Figure 12-1: Assumed site layout of activities at Roodepan Quarry and Clay Brick facility

### 12.4.1 Screening and Blending

The weathered clay materials will be crushed at the mixed-use sites from where it will be loaded onto trucks and transported via the public paved roads to the Roodepan Quarry. At the quarry, the clay material will be off-loaded and stockpiled using front-end-loaders. The clay material will first be screened to get the size fraction down for ease of blending and mixing. Typical plants operate by means of box-feeders, which release a pre-determined quantity of clay and other additives for proper blending (CBA, 2002). Significant emissions from screening and blending of clay materials include TSP, PM<sub>10</sub> and PM<sub>2.5</sub> (Akinshipe, 2013; Akinshipe & Kornelius, 2017a).

### 12.4.2 Sun Drying

Bricks are typically stacked on an open rack-line to utilize the free source of energy from the sun, a common method among brick makers in South Africa due to relative abundance of sun light. This cheap method of drying takes about 14 to 21 days to complete, especially during rainy season (Akinshipe, 2013; CBA, 2002).

### 12.4.3 Firing

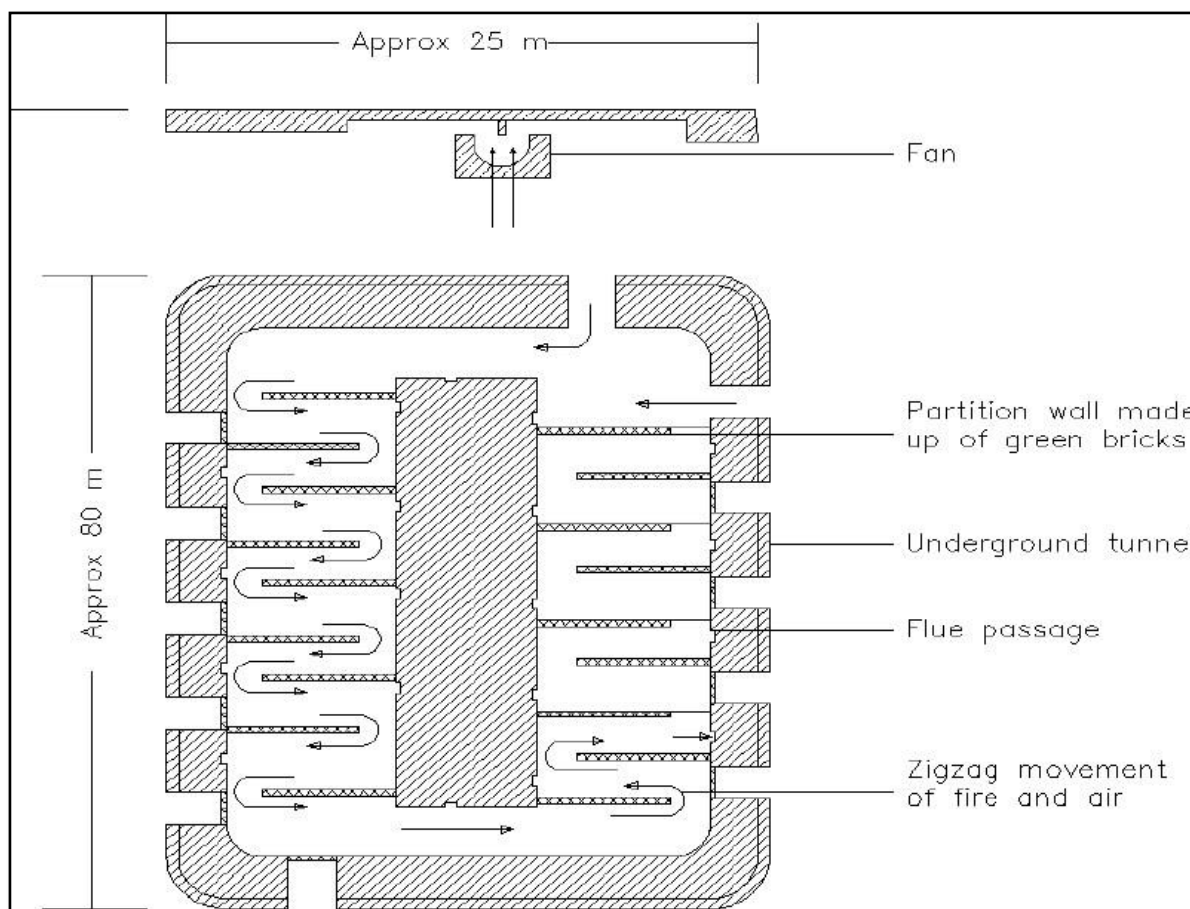
Clamps are traditional kilns, and the most commonly used kiln type in developing countries (CBA, 2002). The bricks are packed in a pyramid-shaped formation with a layer of combustible material such as coke, cinder or coal at the bottom of the kiln and after each layer of brick. Three layers of fired bricks (skinkles) are arranged to serve as funnel to accommodate the base combustible material (Akinshipe, 2013; Akinshipe & Kornelius, 2017a). When the base layer of coal is ignited, it sets the bricks on fire layer by layer until the whole kiln is ablaze. The kiln temperature rises gradually, igniting the fuel in the clay until the entire kiln is ablaze (Akinshipe, 2013; Akinshipe & Kornelius, 2017a; Akinshipe & Kornelius, 2017b).

In South Africa, “duff” coal or carbon-containing fly ash are added to the clay material before processing to serve as internal or body fuel (the ratio of coal – body fuel – to clay as about 1:10). The

internal fuel ensures that the bricks are evenly fired and that the temperature change in the kiln is evenly distributed. “Small nuts” coal is used as external fuel in the skinkles.

### 12.4.4 Zig-Zag Kilns

Clamp kilns are regarded the most energy inefficient brick kiln technology (CAEM, 2016), not only is the fuel consumption high but also the firing of brick are not uniform. KRDC agreed to implement Zig-Zag kilns rather than the traditional Clamp kilns<sup>2</sup>. Zig- Zag kiln technology is a fixed, high draught kiln which is similar to the Fixed Chimney Kiln (FCK) technology. Where the FCK has a chimney providing natural draught, the zig-zag path increases the length of the firing channel thus accelerating the firing through a flue gas fan (Pengoriya, 2016). The Zig-Zag kilns has a rectangular shape with a height of 80 m and a width of 25 m as shown in Figure 12-2.



**Figure 12-2: Schematic view of a Habla Zig-Zag kiln (source: Pengoriya, 2016)**

The zig-zag design causes continuous change in the flue gas direction which leads to the deposition of significant amounts of particulate matter, resulting in less emissions than the FCK technology, which in turn is a significant improvement on the Clamp kiln technology. Also, the Zig-Zag kiln incorporates a flue gas scrubber which reduced particulate matter emissions even further. Reported PM emissions range between 14-37 mg/Nm<sup>3</sup> for a natural draught Zig-Zag kiln and 151 mg/Nm<sup>3</sup> for a forced draught Zig-zag kiln (Pengoriya, 2016).

### 12.4.5 Vehicle entrainment

Vehicle-entrained particulate emissions from unpaved roads are significant sources of dust, especially where there are high traffic volumes on a road. The force of the wheels travelling on unpaved roads causes the pulverisation of surface material. Particles are lifted and dropped from the rotating wheels,

and the road surface is exposed to strong air currents in turbulent shear with the surface. The turbulent wake behind the vehicle continues to act on the road surface after the vehicle has passed. The quantity of particulate emissions from unpaved roads will vary linearly with the volume of traffic expected on a road.

The findings from the specialist study will be incorporated into the EIAR and EMPr.

## 12.5 Noise

It is expected that noise will be generated from the movement of vehicles and the use of heavy equipment during the construction and operational phases of the project.

The EIAR will include an assessment of the significance of the impacts of the facility on noise, as well as the management and mitigation measures required to minimise the impacts.

## 12.6 Visual

During the construction phase, clearing of vegetation and the presence of construction vehicles and equipment may result in visual intrusion and impact on sense of place. There is also a possibility of indirect visual impact due to dust generation as a result of the movement of vehicles and materials, to and from the site area.

An impact assessment will be conducted, and mitigation and management measures will be included in the EIAR and EMPr.

## 12.7 Soils, Land Use and Land Capability

It is expected that during the construction phase, the proposed project will have short lived, low significance impacts on soils, land use and land capability as follows:

- Movement of construction vehicles, machinery and workers in unprotected areas (bare) may result in compacting of the soil;
- Clearing of vegetation will result in the soils being particularly more vulnerable to soil erosion. The impact can persist long after cessation of construction activities depending on mitigation and rehabilitation strategies.
- Soil contamination as a result of construction activities can be as a result of a number of activities (i.e. incorrect hazardous substance storage, incidental hydrocarbon leakages from construction vehicles);
- Loss of soil resource and utilisation as a result of the cleaning and topsoil stripping of the construction footprint. Although soils will be stripped and stockpiled, loss of seed reserve and organic matter depletion through decomposition during stockpiling will reduce soil quality and its ecological function if not managed appropriately; and
- In areas of permanent changes where the infrastructure will be permanently located, the current land capability and land use will be lost permanently. This will however be localised to the footprint of the infrastructure.

The impacts on soils, landuse and land capability will be localised to the project footprint. A soil, landuse and land capability impact assessment will be conducted, and mitigation and management measures will be included in the EIAR and EMPr.



## 12.8 Biodiversity

The biodiversity assessment field work conducted for the project found that the proposed project will not have an impact on any SCC in terms of flora and fauna and that due to degraded nature of the environment and historical impacts, the likelihood of any SCC occurring there is low. The study area the habitat has been exposed to various historic disturbances, resulting in degraded habitat with generally low floral and faunal abundance and diversity. Much of the study area is dominated by species associated with disturbance, including alien and invasive plants (AIPs). The Mesquite tree (*Prosopis glandulosa*) currently located on the site is considered the second most widespread invasive tree species in South Africa and are extravagant users of readily available groundwater and dense stands could seriously affect the hydrology of the ecosystems they invade. In that instance, the proposed project will have a positive impact on biodiversity as it will result in removal of Alien Invasive Plant Species currently on the property.

The impacts on the floral and faunal habitat, diversity and SCC are considered to range from very low to low significance impacts prior to the implementation of mitigation measures. The full impact assessment conducted by the specialist will be included in the EIAR and EMPr.

## 12.9 Wetland

There are artificial wetlands located on eastern section of the Roodepan site that formed as a result of stormwater that collected in the old quarries and the leaking of a water supply pipeline that led to the wetness regime in soils needed for wetland formation. This artificial hydraulic regime will remain until the infrastructure is repaired to allow the areas to rehabilitate. Due to the rich abundance of natural water sources in the primary catchment (in the form of natural pans, wetlands, rivers and streams) contributing largely to ecosystem functioning, the ecological significance of these artificial systems is minimal.

According to the ecologist, the artificial wetlands have a medium sensitivity and still has some functionality in terms of the hydrology of the area as well as providing habitat to various waterfowl. The specialist recommended that the area should be drained, backfilled and levelled according to rehabilitation specifications.

The recommendation will be included in the impact assessment phase of the project in the EIAR and the EMPr.

## 12.10 Heritage

Although the heritage field assessment found no heritage resources located on the proposed project area, the EIAR and EMPr will include mitigation and management measures that must be implemented should there be chance findings of heritage resources.

## 12.11 Traffic

Although trips can be optimised, transportation of material during the construction and operational phases will result in increased traffic count in the area.

The impact assessment phase will include an assessment and quantification of possible traffic impacts and mitigation measures that can be implemented to reduce the significance of the impacts.

## 12.12 Cumulative impacts

Incomparable activities can result in several complex effects on the natural biophysical and social environment. These impacts are mainly identified as direct and immediate effects on the environment

by a single entity affecting a variable of the environment. These direct impacts have the potential to combine and interact with other activities, depending on the surrounding environmental state and land use. These impacts may aggregate or interact with other impacts to cause additional effects, not easily quantified when assessing an individual entity.

The NEMA EIA Regulation of 2014 (as amended in 2017) specifically requires that cumulative impacts be assessed. The impact assessment phase will include a description and analysis of the potential cumulative effects of the proposed clay brick manufacturing facility, and past and present projects hereby considering the effects of any changes on the:

- Biophysical; and
- Socio – Economic conditions.

The EAP team and specialists will identify significant past and present projects and activities that may interact with the clay brick manufacturing facility project to produce cumulative impacts. The preliminary assessment indicates that the project will have low to negligible cumulative impacts on:

- Ground and Surface Water;
- Air quality;
- Noise; and
- Biodiversity.

The EAP team and specialists will include mitigation and management measures in the EMP that KRD will be required to implement to, where possible avoid the negative impact and/or minimise the significance of the impacts.

## 13 Undertaking of Oath by the EAP

Section 16 (1) (b) (iv), and Appendix 3 Section 2 (j) of the EIA Regulations, 2014 and amended in 2017 (promulgated in terms of the NEMA, require an undertaking under oath or affirmation by the EAP in relation to:

- The correctness of the information provided in the report;
- The inclusion of comments and inputs from stakeholders and I&APs;
- Any information provided by the EAP to I&APs and any responses by the EAP to comments or inputs made by I&APs; and
- The level of agreement between the EAP and I&APs on the Plan of Study for undertaking the EIA.

The EAPs managing this project hereby affirm that:

- To the best of our knowledge the information provided in the report is correct, and no attempt has been made to manipulate information to achieve a particular outcome. Some information, especially pertaining to the project description, was provided by the applicant and/or their sub-contractors. In this respect, Ndi Geological's disclaimer pertaining to information provided by third parties applies.
- To the best of our knowledge all comments and inputs from stakeholders and I&APs have been captured in the report and no attempt has been made to manipulate such comment or input to achieve a particular outcome. Written submissions are appended to the report while other comments are recorded within the report. For the sake of brevity, not all comments are recorded verbatim, and in instances where many stakeholders have made similar comments, they are grouped together, with a clear listing of who submitted which comment(s).
- Information and responses provided by the EAP to I&APs are clearly presented in the report. Where responses are provided by the applicant (not the EAP), these are clearly indicated.
- With respect to EIA Reports, Ndi Geological will take account of I&APs comments and, insofar as comments are relevant and practicable, accommodate these during the EIA/EMPr process

## 14 Conclusions and Recommendations

The aim of this Scoping Report is to provide an indication of the identified, positive and negative environmental and socio-economic impacts associated with the proposed project activities. Extensive consideration has been given to the proposed design and location of the project. No fatal flaws have been identified during the scoping phase of this project. The heritage, air quality and noise biodiversity (including wetland delineation) specialists have conducted field assessments and found no resources of significant importance that will be affected by the project.

The stakeholder engagement in the scoping phase will play an important role in determining possible impacts and allowing the concerns by the stakeholders to be adequately addressed in the Impact Assessment Phase of the EIA process.

The Draft Scoping Report has presented:

- The environmental process undertaken so far;
- A brief description of the proposed project;
- A baseline description of the current environment;
- The potential environmental and social impacts identified to date; and
- The recommended environmental process to be followed to develop the EIA/EMPr Report.

Once the Scoping Report comment period is concluded, the report will be updated with the additional issues, and submitted to DENC for decision making. Once the scoping report has been accepted by the DENC, an EIAR, including a Draft EMPr, will be compiled and subjected to a round of public comment. The EIAR and EMPr will then be submitted to the authorities for decision-making. On submission of the EIA and EMPr to the DENC, notification will be sent to registered I&APs to inform them of the submission of the documents; and the opportunity to request copies of the Final Reports.

Findings from specialist studies impact assessment will be incorporated into the EIAR and EMPr during the EIA phase. The proposed comprehensive stakeholder engagement process in the PoS will ensure that the stakeholders are involved throughout the process, from the conception of the EA application process to the end. It is anticipated that implementation of the PoS presented in this report will result in an adequate EIA process which will result in the formulation of a sound EMPr with mitigation measures that will be implemented during the construction and operational phases of the proposed project.

## 15 References

1. Ages-Group. 2020. A Terrestrial Biodiversity and Wetland Impact Assessment for the Proposed Cement Brick Manufacturing on Portion 32 And 33 Of Farm Roodepan 70 That Forms Part of the “Change the Face of Kimberley City” Project, Northern Cape Province
2. Airshed. 2020. Air Quality Screening Assessment for the proposed Kimberley Rehabilitation and Development Project. South Africa
3. dBAcoustics. 2020. Environmental Noise Impact Assessment for the Kimberley Rehabilitation and Development Project, Kimberley
4. Demacon. 2020. Kimberly UDDF Mixed Use Market Study Presentation
5. Exigo. 2020. Archaeological Impact Assessment (AIA) for the Proposed Roodepan Quarry Project on a Portion of the Farm Roodepan 70, Frances Baard District Municipality, Northern Cape Province
6. National Environmental Management Act, 1998 (Act 107 of 1998)
7. National Water Act, 1998 (Act 36 of 1998)
8. Sol Plaatje. 2017-2022. Sol Plaatje Municipality: Integrated Development Plan - IDP (2017 – 2022)
9. South African Weather Service (SAWS)

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All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.



# Appendices

## **Appendix A: Curriculum Vitae of the EAP**

## **Appendix B: Project Experience**

## **Appendix C: Stakeholder Engagement**

## **Appendix C 1: Pre-application Authority Consultation Documents**

## **Appendix C 2: Stakeholder Engagement Plan and DENC Response**



## **Appendix C 3: Stakeholder Database**

## **Appendix C 4: Announcement Phase Notifications**

## **Appendix C 5: Site Notices**

## **Appendix C 6: Newspaper Advertisements**

## **Appendix C 7: Comments and Responses Report**

## **Appendix C 8: Stakeholder Communications**



## **Appendix C 9: Commenting Authority Correspondence**

## **Appendix D: Specialist Studies Reports**