BRICKVALE INTERGRATED HOUSING DEVELOPMENT  
SITUATED ON THE WESTERN PART OF MOGALE CITY LOCAL MUNICIPALITY ON 
PORTION 0 OF THE FARM BRICKVALE 161 IQ, KRUGERSDORP, GAUTENG 
PROVINCE

GAUT: 002/13-14/E0110

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

DRAFT SCOPING REPORT FOR PUBLIC COMMENTS

Prepared by: 
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On behalf of: 
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1. EXECUTIVE SUMMARY

This Scoping Report concentrates on the proposed development of a mixed use housing in the area that falls under the jurisdiction of the Mogale City Local Municipality which is situated within the West Rand District Municipality.

The property is known as Portion 0 of the farm Brickvale 161 IQ. The site is situated on the Western part of the Krugersdorp CBD (Mogale City Local Municipality) immediately north of the R24 Krugersdorp and Tarlton Road and approximately 3.5km east of the N14-R28 Tarlton crossing and is approximately 130 hectares in extent. (Refer to Figure 1).

The proposed development will consist of a mixed use housing including land uses such as residential stands, commercial activities, institutional (schools, churches, community facilities, agricultural portion and recreational / open space). Essential infrastructure such as potable water, sewage, electricity, roads and storm water will be supplied to make the development sustainable.

The proposed development is listed in terms of Government Notice R544 and R546 under Chapter 5 of the National Environmental Management Act, (Act 107 of 1998) and therefore requires an Environmental Impact Assessment (EIA) to be undertaken. The aim of the EIA is to ultimately ensure that environmental impacts are taken into consideration, to ensure stakeholder engagement, and to provide decision makers with sufficient information to make an informed decision on the proposed development activities and facilities.

This document outlines the scoping process followed, describes the proposed development and the context in which it will take place, and identifies the potential environmental impacts. The purpose of the Scoping Phase is to define the range of the impact assessment in order to proceed to the Environmental Impact Assessment Phase.

A Public Participation Process runs concurrently with the Scoping Phase. The purpose of this process is to identify all Interested and Affected Parties (I&AP's), and to allow such parties the opportunity to provide input and comment regarding the Scoping and EIA process, including issues and alternatives that are to be investigated. The Scoping Report is made available for public comment. The Public Participation Process therefore facilitates informed decision-making.
The Scoping Report (this document) represents the initial identification of key issues as highlighted by the relevant authorities, Interested and/or Affected Parties (I&AP) and professional judgement of the Environmental Assessment Practitioner. Scoping allows for the identification of the anticipated impacts, particularly those, which require specialist investigations in order to inform decision making in terms of environmental sustainability of the site and natural resource management. The results of all the specialist studies, a full assessment of the impacts and proposed alternatives will form part of the Environmental Impact Assessment Report (EIAR).

The key issues and associated potential impacts include:

1.1 **Geology and Soils**

Impacts related to soil erosion, loss of topsoil and sedimentation. The area also has underlying dolomite rock strata which will present limitations in terms of the type of developments allowed.

1.2 **Hydrology**

Risk of contaminating the surface water is always a possibility with every development activities. Change in the hydrological regime by increased sedimentation, amplified storm water run-off, quality of storm water discharge and higher peak flows may present negative impacts.

1.3 **Biodiversity**

- Loss of open space, grassland and associated habitats (albeit disturbed).
- Reclamation of disturbed, old quarry (positive impact).
- Removal of alien vegetation (positive impact).

1.4 **Services and urban planning**

- Increased demand for the supply of electricity.
- Increased demand for the supply of potable water.
- Increased effluent loading on the waste water treatment works.
- Increased demand for handling and disposal of solid waste.
- Traffic volumes and associated safety issues.
- Improved service delivery (Housing & economic activities) for the area.
- Issues around the Urban Edge (EIA Regulations’ interpretation v/s Municipal Urban Edge).
- Realisation of municipal planning objectives: SDF, IDP & LED.

1.5 Socio-economic Issues

- Creation of jobs during the construction phase as well as employment opportunities associated with the operational phase (positive impact).
- Extensive economic spin-off can be expected in the area as a direct result of the development (positive impact).
- Development of mixed use residential housing (positive impact).
- Visual impact due to a change in the visual character from open space to residential (negative impact).
- Value of the Krugersdorp Nature Reserve as a conservancy area & recreational amenity (positive impact).
- Compromising the rural sense of place (negative impact).

1.6 Heritage

Impact on heritage / cultural attributes (Not expected).

1.7 Construction

- Destruction of vegetation.
- Impacts associated with the loss of topsoil (erosion, sedimentation etc.).
- Pollution of the ground and surface water resources.
- Noise pollution.
- Atmospheric pollution in the form of dust.
- Visual intrusion of construction activities (untidy building sites, denuded areas, material stockpiles, dust etc.).
- Social issues associated with construction camps.
- Creation of local employment.
- Generation of building rubble, spoil material, domestic waste, hazardous waste and liquid waste during construction.

- Traffic impact on the R24 Road.
- Unearthing of archaeological artefacts and possible damage of archaeological sites.
The EIAR represents the second phase of the EIA process and will assess the key issues and associated potential impacts. The EIAR will outline the necessary mitigation and management measures to be put in place in order to minimise negative impacts and optimise positive impacts.

1.8 ACRONYMS AND ABBREVIATIONS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>CMP</td>
<td>Construction Management Plan</td>
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<tr>
<td>DWA</td>
<td>Department of Water Affairs</td>
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<tr>
<td>ECO</td>
<td>Environmental Control Officer</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
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<tr>
<td>EIAR</td>
<td>Environmental Impact Assessment Report</td>
</tr>
<tr>
<td>EMPr</td>
<td>Environmental Management Programme</td>
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<tr>
<td>GDARD</td>
<td>Gauteng Department of Agriculture and Rural Development</td>
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<tr>
<td>GIS</td>
<td>Gauteng Information System</td>
</tr>
<tr>
<td>IDP</td>
<td>Integrated Development Plan</td>
</tr>
<tr>
<td>I&amp;AP</td>
<td>Interested and Affected Party</td>
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<tr>
<td>LED</td>
<td>Local Economic Development</td>
</tr>
<tr>
<td>NEMA</td>
<td>National Environmental Management Act, Act No. 107 of 1998</td>
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<tr>
<td>SAHRA</td>
<td>South African Heritage Resources Agency</td>
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CHAPTER 1 - INTRODUCTION

1.1 PURPOSE

KARP Consulting & Projects (Pty) Ltd. has submitted an application for Environmental Authorisation for the development of a mixed use housing on the western part of Portion 0 of the farm Brickvale 161 IQ.

The proposed development is listed in terms of the Environmental Impact Assessment Regulations of 2010 (Government Notice R544, and R546) under Chapter 5 of the National Environmental Management Act, Act 107 of 1998 and therefore requires an Environmental Impact Assessment (EIA) to be undertaken and submitted to the Competent Authority – in this case GDARD - for a decision. The EIA consists of two phases, namely the Scoping Phase and the Environmental Impact Assessment Phase.

The purpose of this document is to identify the initial key issues or concerns as highlighted by the relevant authorities, Interested and/or Affected Parties (I&AP’s) and professional judgement of the Environmental Assessment Practitioner. Scoping allows for the identification of the anticipated impacts, particularly those, which require specialist investigations. The document further communicates the process and the project to all stakeholders and compliance organisations in an easily understandable manner.

The purpose of the Environmental Impact Assessment Phase is to address the issues, potential impacts and feasible alternatives which were identified during the Scoping Phase. This phase will be documented in a separate Environmental Impact Assessment Report (EIAR) which will further contain an Environmental Management Plan.

1.3 REGIONAL CONTEXT

The site for the proposed development is approximately 130 hectares in extent and is located to the west of Krugersdorp town, adjacent to the R24 Road and approximately 3.5 km east of the N14-R28 Tarlton crossing. It is situated within a peripheral area surrounded by Agricultural Holdings, and Municipal Nature Reserve on the eastern side of the area (refer to Figure 1). The coordinates of the site are S 26°08'53.1" E 27°67'98.0".

The site falls within the jurisdiction of the Mogale City Local Municipality which is situated within the West Rand District Municipality. The current Zoning of the site is for Agriculture.
1.3 LEGISLATION AND GUIDELINES

1.3.1 The Environmental Impact Assessment Process:

The Environmental Impact Assessment process is regulated by the Environmental Impact Assessment Regulations of 2010 in terms of Government Notice 544 and 546 of 18 June 2010) which is promulgated in terms of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998).

The proposed development involves the ‘listed activities’. These activities could impact significantly on the environment and therefore require Environmental Authorisation from the Competent Authority which is GDARD.
The following activities are listed in terms of the Government Notice 544 and 546 of 2010 and would trigger the Scoping and EIA process:

Listing Notice 1 (9):

The construction of facilities or infrastructure exceeding 1000 meters in length for the bulk transportation of water, sewerage or storm water–

(i) with an internal diameter of 0.36 metres or more; or
(ii) with a peak throughput of 120 litres per second or more excluding where:

a. such facilities or infrastructure are for bulk transportation of water, sewerage or storm water drainage inside a road reserve; or
b. such construction will occur within urban areas but further than 32 metres from a water course, measured from the edge of the water course.

Listing Notice 1 (10):

The construction of facilities or infrastructure for the transmission and distribution of electricity–

(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or
(ii) inside urban areas or industrial complexes with a capacity of 275 kilovolts or more.

Listing Notice 2 (15):

Physical alteration of undeveloped, vacant or derelict land for residential, retail, commercial, recreational, industrial or institutional use where the total area to be transformed is 20 hectares or more; except where such physical alteration takes place for:

(i) linear development activities; or
(ii) agricultural or afforestation where activity 16 in this schedule will apply.

Listing Notice 2 (3):
The construction of filling stations, including associated structures and infrastructure, or any other facility for the underground storage of a dangerous good, including petrol, diesel, liquid petroleum gas or paraffin.

1.3.2 Water and Wastewater Management

The National Water Act (Act No. 36 of 1998) aims to provide management of the National water resources to achieve sustainable use of water for the benefit of all water users. This requires that the quality of water resources is protected as well as integrated management of water resources with the delegation of powers of institutions at the regional or catchments level. The purpose of the Act is to ensure that the Nation’s water resources are protected, used, developed, conserved, managed and controlled in ways, which take into account:

- Meeting the basic human needs of present and future generation;
- Promoting equitable access to water;
- Promoting the efficient, sustainable and beneficial use of water in the public interest;
- Facilitating social and economic development;
- Providing for growing demand for water use;
- Protecting aquatic and associated ecosystems and their biological diversity; and
- Reducing and preventing pollution and degradation of water resources.

Various sections of the Act are relevant for this application. These are, amongst others:

- Section 19 states that measures must be undertaken to cease, modify or control any act or process causing pollution, to contain or prevent the movement of pollutants, and to remedy the effects of pollution.
- A Water License in terms of section 21 and 22 may be required for the supply of water and the discharge of waste water, although it is anticipated that this would be regulated via the Municipality.

1.3.3 Waste

All waste must be disposed of at appropriately licensed (in terms of Section 20 of the Environment Conservation Act, 1989 (Act No 73 of 1989) landfill sites. Waste generated during the construction as well as operational phases of the project must therefore be disposed of at sites which have received the necessary permits or exemptions.

1.3.4 Heritage Resources
The protection of archaeological and paleontological sites and material is the responsibility of the Provincial Heritage Resources Authority and all archaeological objects, paleontological material and meteorites are the property of the state. Any person who discovers archaeological or paleontological objects or material or a meteorite in the course of development must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such Heritage Resources Authority.

The Act identifies various activities that require the submission of an EIA to Provincial Heritage Resource Authorities, if an evaluation of the impact of such development on heritage resources is not required in terms of any other legislation. The proposed development requires a heritage investigation as it will involve changing the character of the site >5 000 m² (Section 38 of NHRA).

Furthermore, other legislative measures which may be of relevance include the Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925), the Human Tissues Act (Act no. 65 of 1983, as amended), the Ordinance on Excavations (Ordinance no. 12 of 1980) as well as any local and regional provisions, laws and by-laws that may be in place.

The final decision for the approval of permits, or the removal or destruction of sites, structures and artefacts, rests with the South African Heritage Resources Agency (SAHRA) (or relevant PHRA).

### 1.3.5 GDARD Policy Documents and Guidelines

The following documents were consulted as part of the Scoping Process and have informed planning as well as specialist studies:

- GDARD Requirements for Biodiversity Assessments (Draft, March 2008);
- Gauteng Ridges Policy (April 2006); and
- GDARD GIS Layers (C-Plan Version 3.3 as updated).

The GDARD GIS Layers were especially useful to screen possible environmental sensitivities on the proposed development site. The grain of this information, however, is of such a scale, that it necessitates more detailed surveys and / or specialists investigations. The following attributes were, however, identified on the site:

<table>
<thead>
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<th>Attribute</th>
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<tbody>
<tr>
<td>Pasture grass covering 50% of the site of development</td>
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<tr>
<td>Eucalyptus and wattle trees covering another 50% of the site</td>
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</table>
A flora and fauna study will be undertaken to ascertain the viability of the vegetation cover and habitat suitability. Appropriate land uses for the area affected by the Medium Use Zone of the Protected Area north of the site will be established and planned:

- Birds, with specific reference to African Grass Owl;
- Amphibians, with specific reference to snakes and lizards; and
- Vegetation.

Refer to Section 1.7 below for specialists assigned to the project to investigate the required aspects.

### 1.3.6 West Rand District Municipality Environmental Management Framework (2012)

The aim of the Environmental Management Framework (EMF) is to provide a policy framework for sustainable development in the District. There may be geotechnical constraints found in the form of dolomite, however, studies will determine measures to be implemented on the development site. Eight so-called ‘land use and development control zones’ were delineated and a set of ‘development control guidelines’ were formulated for each of the control zones. The site is affected by one of these zones, namely:

- Malmani Subgroup, Chuniespoort Group control zone which has control zones in terms of building requirements.

Generally, these zones are suitable for residential and commercial developments, but are subjected to various guidelines, conditions and procedures. Noteworthy is the need to be located within the urban built area and the importance in some zones that development be of low impact, clustered and incorporate the sensitive areas as conservation areas.

As part of its status quo analysis, the EMF has summarized West Rand District Municipality’s 2012 SDF. Noteworthy, are the following proposals pertaining to the area:

- The main routes R24/N14 Freeways are considered as urban nodes in the sub-region.
- Two ecological focus areas occur in the sub-region, namely the Krugersdorp Nature Reserve (Protected Area) and the Proteadal Ridges both East and West of Krugersdorp respectively. These
areas should be conserved and promoted as major eco-tourism and recreational centers. Ecological transition areas should be created around these resources.

- In terms of the Urban Edge, the main routes R24/N14 corridor is a natural extension of the Krugersdorp future urban form looking at limitations posed by the Cradle of Humankind World Heritage Site located north of the Town. It is proposed that the provincially demarcated urban edge be extended to include this area west of Krugersdorp.

The EMF further deals with Environmental Management Guidelines and Actions Plans and has the following classification in terms of the area / site of development:

- The site falls under a moderate to low control zone because of the fact that it does not have significant sensitivities as compared to other surrounding areas. The GDARD’s C-Plan Version 3.3 also supports these findings and reflects only a small central portion as having sensitive vegetation.

1.3.7 Mogale SDF (2012)

The Spatial Development Framework (SDF) for Mogale has been finalized and approved by the Council during 2012. The implications of such approval are that the document now has legal standing as a guideline for future development. The SDF is also being used as a policy document for the evaluation of land use proposals.

The main objective of the Mogale SDF is to ensure that the Local Municipality contributes towards the orderly spatial structure of the District and the Gauteng Province. Some of the most notable statements in the SDF include the following:

- The area needs to be promoted as the primary development node.
- The provision of land for residential developments must provide a range of alternative housing typologies aimed at different income categories. The infill developments must be complimented with adequate complimentary land uses.
- Areas where development pressures are being experienced need to be supported, subject to development becoming natural extensions of the existing urban structure, to infrastructural availability and capacity, to implementation of higher densities and to other pieces of legislation (such as EIA).
- Looking at the SDF, future urban expansion area includes the area to the west of Krugersdorp for developments sensitive to the environmental considerations such as the Krugersdorp Nature Reserve.
- It is furthermore interesting to note, that there are smallholdings acting as buffers between the site of development and the sensitive environment. The site is located within a semi-urban area of plots, smallholdings and small farms.
- The R24 and N14 are two strategically linked transportation corridors and potential development which need to be defined and structured to create economic opportunities.
- The conservation of passive open spaces on the site is, however, very important.

In terms of the resource base, a host of generic guidelines are applicable in order to achieve a desired state of the environment. Some of these include integrated planning, protection of sensitive features, conservation of agricultural land, alignment of development with service provision and indigenous garden planting, to name a few. With the proposed housing development, the provision of complimentary activities such as schools, clinics, recreation and other activities is important to create sustainable living environments.

According to GDARD’s GIS layers, the site falls outside the urban built-up area. However, it is bordered by the Small Agricultural Holdings to the east and west while the major provincial and National routes border it on the north and south. However, according to the approved 2012 SDF, the proposed development falls within the proposed Urban Expansion Area. A major objective of the Mogale City SDF was the re-definition of the urban edge. Seven principles were used to determine the current urban edge and these include:

Spatial development must facilitate managed economic growth and development, taking into account the availability of infrastructure and natural resources.
Spatial development must seek to overcome the legacy of apartheid settlement patterns.
Polluting industries should not be mixed with or be adjacent to residential land uses.
Residential developments with a diversity of housing typologies, mixed income and mixed land use must be promoted. Development must be concentrated around identified nodes and corridors to promote an efficient urban form and improved accessibility and mobility of people.
Spatial development must seek to maximise the responsible use of the municipality’s natural resources, promote and conserve the region’s natural features and cultural heritage and ensure a district wide open space network. Spatial development must seek to promote increased safety and security through avoiding development on potentially dangerous areas e.g. close to the flood line or on dolomite.

The proposed mixed use housing development falls within the determined future Urban Expansion Area as defined in the SDF. It is submitted that the proposed housing conforms/complies with most or all of the afore-mentioned criteria.
1.3.8 Servitudes

There is Eskom servitude that affects the site on the eastern side as indicated in photo 3 and the R24 Road that crosses the site on the south-western portion.

1.3.9 Other Legislation, Regulations, Policy and Guidelines

Other relevant legislative framework, regulations, policy and guidelines which are or may become applicable during the EIA process include, amongst others, the following:

- Constitution of the Republic of South Africa, 1996: The Constitution states that ‘…everyone has the right to an environment that is not harmful to their health or well-being: and to have the environment protected for the benefit of present and future generations.’
- National Environmental Management Act (Act 107 of 1998): The principles underpinning environmental management contained in the National Environmental Management Act (NEMA), must be taken into account by any organ of state in the exercise of any power that may impact on the environment. NEMA provides for further regulation and guidance in terms of sustainable development other than for the EIA process.
- National Environmental Management: Biodiversity Act: The aim of this act is to provide for the management of South Africa’s biodiversity with NEMA’s framework.
- National Environmental Management: Protected Areas Act: The Protected Areas Act provides for the protection and conservation of ecologically viable areas, which are representative of South Africa’s diversity, as well as natural landscapes and seascapes.
- Conservation of Agricultural Resources Act: Regulations 7 and 8 deals with the protection of wetlands and water courses, while regulations 15 and 16 deals with invasive plant species and bush encroachment.
- Convention of Biological Diversity: South Africa is a signatory of the Convention on Biological Diversity, and therefore has a duty to conserve and rehabilitate biological resources which are considered important for the conservation of biological diversity.
- Species of Concern: The IUCN has a system in place which classifies species as threatened. Threatened species are those that are in danger of becoming extinct and the protection of these species is vital.
- Environmental Conservation Act (Act No. 73 of 1989), also known as ECA.
- Development Facilitation Act (Act No. 67 of 1995)
1. National Building Regulations.
2. The Gauteng Noise Control Regulations (GN 5479).
3. Municipal Bylaws.

1.3.10 THE PUBLIC PARTICIPATION PROCESS

The complete description of the Public Participation Process has been included in Appendix.

1. A summary of the most pertinent events is as follows:

- Pre-Application consultation meeting was held with officials of the Department of Agriculture and Rural Development in June 2013.
- An application form for EIA Authorisation was submitted to the GDARD on 15 July 2013.
- Notices were pinned up on the site on 28 August 2013.
- Letters together with a Background Information Document and I&AP Registration Form were distributed by hand (‘knock and drop’), by post, by fax and by email to adjacent landowners and residents, relevant authorities and other I&AP’s in the third week of August 2013. KARP has since become aware of the existence of additional I&AP's, and these people were immediately notified.
- A newspaper notice was placed in the Mogale Local Newspaper and in the Daily Sun Newspapers on 06 September 2013.
- Authorities Meetings were held on 30 August and again on 20 September 2013 on the site.
- A Public Participation Meeting will be / was held on 14 September 2013 at the adjacent Sedaven.

1.3.11 NEED AND DISERABILITY

The need for Brickvale Mixed Use Development has been addressed by the town planner and be described as follows:

- The primary aim of this proposal is to create an integrated residential housing where a variety of housing types will be offered. The project is aimed at the low-cost housing unbunded market, bonded housing (bank charter) market, commercial market (business stands) and social amenities such as open spaces, sports fields and agricultural portion.
- It is accepted that the housing, as proposed, will not be a short term project in view of the current economic climate.
- The proposed development is aimed at achieving a balanced and functional development, optimally integrating the rural and urban environment.
- The development area is largely surrounded by rural land use to the west and small holdings, protected area and urban area to the east.
In his Memorandum, the town planner has explained the desirability as:

- Accessibility to and from the proposed development is good and it is within easy reach of available job opportunities.
- Traffic generations will be within acceptable levels given the single access nature of the development. If required traffic impact analysis will be conducted.
- The site is situated on R24-N14 Roads, which has been identified as an “activity corridor” in the Mogale City SDF.
- There are no activities that may be considered detrimental or noxious to the proposed development site.
- The proposed development will have no detrimental effect on existing, surrounding land uses, as no air pollution is envisaged.
- The agricultural potential is low and such has been concluded that a small portion of land will be made available for urban agricultural based inputs to fertilise the soil.
- The site has geological limitations brought about by dolomite rock and sound foundations must be laid to ensure safety of the residents.
- Access is as per Gautrans standards and a 16m building line and lines of no access have been provided for.

### 1.3.12 THE ENVIRONMENTAL PLANNING EXERCISE

An Environmental Planning Exercise was undertaken by KARP Consulting as a separate task. This exercise addresses the spatial development of the various components, specifically in terms of producing a development layout which is directly informed by the environmental characteristics (opportunities and constraints) of the site. Environmental planning, commonly referred to as ‘design with nature’, is based on a system of spatially overlaying environmental feature plans with the intention of excluding highly sensitive features from the development as well as matching the remaining landscape with appropriate land uses. Ultimately, this sensitivity exercise culminates in a Value Plan, which informs a development which will result in the least possible environmental impact while still achieving the development need.

A strategic description of the land use zones can be summarised as follows:

- Commercial Zone: Commercial opportunities along preferred access road.
- Development Zone: Opportunity for dense development.
- Medium Density Zone: Opportunity for less dense, yet high value stands.
- Agricultural Zone: area with disused tunnels provides an opportunity for agriculture.
The environmental planning exercise benefits the EIA process, in that most issues and impacts would have already been addressed through sustainable planning decisions.

**1.3.13 SPECIALIST STUDIES**

Specialist studies are undertaken to investigate issues of concern where these require specialist know-how. The need for specialist studies is identified during the Scoping Phase by means of consultation with relevant stakeholders, I&AP’s and professional judgement.

In an effort to isolate the salient opportunities and constraints of the environment upfront, some of the specialist studies have been undertaken at an early stage, and are thus already included in the Scoping Report. This approach is considered proactive as it enables informed decision making in the planning and design processes.

The following specialist investigations have been conducted or are underway:

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<tr>
<td>Vegetation and Ecology</td>
<td>Natural Scientific Services</td>
<td>Although report indicates sensitive on the site, 50% is covered by invasive tree species</td>
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<tr>
<td>Geo-technical</td>
<td>Bear Geo-Consultants</td>
<td>Dolomite underlay the entire site and measures would be applied to ensure public safety</td>
</tr>
<tr>
<td>Cultural Heritage Survey</td>
<td>G &amp; A Heritage Consultants</td>
<td>Site inspection revealed no heritage features</td>
</tr>
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CHAPTER 2 - PROJECT DESCRIPTION

2. DEVELOPMENT ACTIVITIES AND FACILITIES

The development intent can broadly be described as a mixed use housing development. The land use proposal is essentially in compliance with directives as contained in the Mogale Spatial Development Framework, 2012. The residential component will target the low cost market and the bonded market. The housing layout comprises of the following land uses:

“Residential 1”:  
6000 Erven at a ruling area of ±250m² for low cost housing are proposed...

“Residential 2”:  
2000 Erven are 500m² or bigger to make provision for higher income households on the site.

“Educational”:  
Two Erven, one primary school and one a high school are provided for in the layout plan. Department of Education would indicate if an additional site is needed and/or if the one that is provided is required and/or adequate.

“Community Facility”:  
One stand opposite the primary school and adjacent to the primary collector road is provided.

“Business 2”:  
2 Erven are proposed at just less than 1 hectare each in order to allow for the commercial activities to provide convenience goods to residents in future. It is also big enough to accommodate amenities such as restaurant, etc.

“Institutional”:  
Two Erven are provided with the specific intent for these to be used for church purposes. If demand proves to be greater for church sites it would only require a consent use procedure to convert residential stands to church purposes.
“Municipal”:

One Erf which accommodates the sub-station will be provided. This Erf would be transferred to the local authority in future.

“Public Open Space”:

At least three Erven for parks (two) and one Erf (Agriculture) are provided and will cover an area measuring 15 hectares in extent. The Public Open Space will accommodate the demarcated area with sensitive vegetation. This open space area can function as recreational area for the community at large if facilities are being made available for such recreational activities as a local authority initiative and also provide natural space of indigenous vegetation for bird life.

2.1 ESSENTIAL SERVICES AND INFRASTRUCTURE

A Services Report prepared by the engineers will be included in the EIR. This report will detail all the service and infrastructure aspects pertaining to the strategic planning of the project and will include service agreements regarding the provision and / or acceptance of services. At this point in time only a broad overview can be provided.

2.1.1 Water

Potable water will service each stand in the development. Bulk water supply will be supplied by the municipality. A water pipeline will be installed from an existing bulk storage water reservoir in Krugersdorp to the development. The water pipeline will run along an existing servitude.

2.1.2 Sewage

Liquid waste will be collected from each stand via a waterborne sewage system delivering effluent to an existing municipal pump station located on the adjacent Holdings. From there sewage will be pumped to the existing municipal wastewater treatment works where it will be treated.

2.1.3 Electricity
Electricity will be supplied via an internal reticulation system. Supply will be provided by Eskom from existing networks and the necessary transformer capacity will be provided in the development in collaboration with Eskom and the municipality.

2.1.4 Solid Waste

Solid waste will be collected and disposed of in accordance with relevant legislative guidelines and procedures. At this stage it is anticipated that the municipality would take over such services.

2.1.5 Communications

The need for telephone communication links will be established once detail planning has commenced. Negotiations would then be entered into with a selected service provider to provide the necessary infrastructure.

2.1.6 Access and Roads

Access to the development will be gained from the R24 Road. A new entrance will be applied for with the Gautrans. This entrance will be the only entrance to service vehicular access to the development. The proposed access has 300m plus sight lines. The R24 will be redesigned to accommodate the access road, acceleration lanes and other traffic requirements. Design and construction will be according to Gautrans’ specification.

Standard hierarchy of streets are provided with a 16m collector road (25m wide at junction with R24) running through the central portion of the site and affording a link to the two adjacent roads (to the south-east) close to the agricultural holdings. From the 16m road, two 13m loops are proposed to the east and west thereof. Into the 13m roads a number of 10m wide roads feed which will function as local collectors.

2.1.7 Storm water management

A storm water system will be designed to collect and convey runoff to discharge into the adjoining river. Control measures at the outlets will be provided to obviate scour.

Wherever possible, the storm water will be captured in landscaped retention ponds in the open space system and allowed to infiltrate naturally.
2.1.8 CONSTRUCTION

- Timing

Ultimately, the initiation of the construction phase of the project is dependent on the timing of the Record of Decision (RoD) issued by GDARD. Assuming all processes run on time and according to plan, an RoD could be issued by mid November 2013, giving due regard to review periods and submission requirements.

Provided this RoD is in favour of the development and other relevant authorisation processes are in place, construction for the first phase of development could commence. It is anticipated that this will include the installation of bulk services as well as the road network. The residential components, remaining services and other facilities will be implemented as further phases.

It is envisaged that houses will be constructed as a turnkey contract to avoid the project turning into an on-going construction site.

- Construction Camp and Associated Services

The nature and scale of the development and the expected duration of construction requires that a construction camp be demarcated prior to the commencement of works, and maintained throughout the construction period. This construction camp will be primarily a materials lay down area and offices. The scale of the development may require the establishment of satellite construction camps on the property. Construction labourers will be bussed in on a daily basis and not be housed on the site.

Services which are currently available on site will be utilised during the construction phase until such time as the new services are operational. If the need arises additional services will be brought in. This could include the carting in of water, electricity from portable generators, site toilets as well as the disposal of refuse and construction waste.

- OPERATION

Once established, the housing will be operated similar to suburban residential areas. Residential stands will be maintained by the individual property owners and the open space system, roads and other services will become the responsibility of the municipality.
CHAPTER 3 - ENVIRONMENTAL SYNOPSIS

3.1 BIOPHYSICAL ENVIRONMENT

3.1.1 Climate

The study area is located within the central Highveld, which is characterised by long warm to hot summers and relatively mild winters, although frost can occur as early as May and can be as late as September.

The average daily minimum temperature in June and July reaches 5°C. This gradually increases between 20°C and 27°C in December.

The rainfall is typical of the summer rainfall region of South Africa where the rain commences in October and continues to April. An average annual rainfall of approximately 359 mm can be expected.

3.1.2 Topography and Hydrology

The site is rather flat with an average slope of 2.5%.

Although highly disturbed, the site does have sensitive features. A Vegetation Study was undertaken, with the intention of ring-fencing the sensitive flora area in order to exclude these from the development footprint. This Study is contained in Appendix 4 and the core findings are mapped in Figure 5 and are summarised hereunder:

The site is mostly covered by reddish top soil with a mixture of sandy soil. The site shows signs of previous diggings (quarry) he especially on parts covered by invasive vegetation and is largely flat. There are no water bodies (wetlands and streams) on the site.

3.1.3 Geology

An initial Geotechnical Assessment was compiled by Bear Geo-Consultants and is contained in Appendix 7. The objective of the investigation can be summarized as follows:

- To provide a preliminary evaluation of the suitability of the site for the proposed development in terms of the NHBRC classification with specific reference to the risk of subsidence due to the presence of dolomite.
- To make a recommendation for further detailed investigations.
The 1:250 000 series geological map of the area and GDARD’s GIS map were consulted and they indicate that the site is underlain by dolomite belonging to Malmani Subgroup, Chuniespoort Group and Transvaal Subgroup. Based on the above, there is a moderate to high hazard potential for sinkholes and subsidence.

The geotechnical constraints, described in the report are not adverse and would not inhibit the proposed residential/commercial development. This means that deeper foundations may be effective to offset the risks associated with dolomite.

In respect of geology, the following conclusions were reached:

3.1.4 Soils and Agricultural Potential

The GDARD’s GAPA 3 indicates that the site has low to high agricultural potential. The site can therefore provide an opportunity for a small scale community urban agriculture which can provide food security to the lower income segment residing within the development site. This also provides an opportunity for direct selling to the market (commercial sector) in the development area and beyond the housing itself. All in all, the value of the land for agricultural use can thus be considered to be feasible with significant requirement for soil care and application of fertilisers.
3.1.5 Vegetation

The site is situated within the Grassland Biome as classified by Rutherford & Westfall (1994) as cited by Natural Scientific Services (2012). This is found primarily on the high plateau of South Africa, the inland regions of KwaZulu-Natal and the Eastern Cape. The majority of species within the grassland are non-grassy herbs (forbs) most of which are perennial plants with underground storage structures. Tree species are limited due to frost, fire and grazing which maintains the herbaceous grass and forb layer and ultimately prevents the establishment of tall woody plants.

A Vegetation Assessment was conducted by Natural Scientific Services. The vegetation can be summarised as being mostly transformed grassland, due to the previous agricultural activities (pasture grass planting) that led to very limited floristic diversity and vegetation structure. The Flora and Avifaunal Assessment will be submitted with EAIR.

Figure 3: C-Plan showing low sensitivity on the site

3.1.6 Fauna
As the site has been severely transformed and human activity is constantly present, it can be expected that many animals have moved away. Further studies will be included in the EIAR.

3.2 SOCIAL ENVIRONMENT

3.2.1 Resource Utilisation

There is hardly a piece of land on this site which has not been disturbed in one way or another. Parts of the site are occupied by informal settlers while other parts are overgrown with invasive vegetation. The inhabitants on the site use wood from the trees to make fire for cooking and warming their households. The western part of the show signs of digging. Refer to photos 5 to 8.

The site has been used as accommodation for workers for the owner’s brick manufacturing company. Some of the remaining infrastructure includes:

- A shop and buildings used as accommodation.
- Eucalyptus and Wattle trees.
- Dilapidated old buildings and storage dam.
- Power lines on the eastern and western side.

Photo 5: A shop and associated buildings on the site
Photo 6: Eucalyptus and wattle trees

Photo 7: Disused buildings and a storage dam (right-hand side)
3.2.2 Regional Land Use

The site is surrounded by Agricultural Holdings on all sides. There is, however, a conservation area not far from the proposed site of development such as the Krugersdorp Nature Reserve and the site is within 7 kilometers from the Krugersdorp town.

Although substantial public investment has taken place in Mogale during the past decade, the general standard of development in outlying areas is still not improved such as:

- Under-provision of certain community facilities, e.g. houses, parks and sports fields.
- Little economic activity and few economic opportunities.
- Substantial informal settlement in and around the main formal area of Krugersdorp and Magaliesburg.
- Lack of urban amenities such as shops, transport, banking facilities and general economic activities etc.

According to the EMF (2006), the land use on and around the site is categorised as Vacant / Rural / Agriculture. On closer inspection, the area around the site can rather be described as rural-residential that includes agricultural holdings and formal dwellings (refer to Photo 9):
3.2.3 Infrastructure

The R24 is a major tarred road which transects the site. There is also a newly tarred road that provides access to properties along the western side of the proposed site of development. The remaining roads in the area are gravelled or consist of informal tracks.

Water in the area (specifically on the proposed site) is supplied directly via a single communal tap for the informal settlement on the site. The closest area which would be supplied with piped municipal water is most likely the proposed existing new houses on shown on Photo 9 above.

Sewage in the region is generally disposed of locally via septic tank systems. Solid waste in the area is most probably delivered privately to the nearest waste disposal site. However, a site inspection showed evidence of illegal dumping of building rubble and domestic waste. The new development will dispose of its solid and effluent at the municipal waste disposal site.

A three phase electric power lines are located on the site and along its boundary including major power line servitude on the western side.

3.2.4 Development Trends

The population of the Mogale City Local Municipality is estimated at 319 633 (Community Survey, 2007).
Mogale is traversed by three key roads (N14, R28 and R24), which create real opportunities for future corridors for economic development. Mogale also fulfils a residential function for many people working in the West Rand/Far East Rand and even western parts of Johannesburg.

The residential settlement pattern within the Mogale is fragmented, with the primary urban concentration located in Krugersdorp/Kagiso, with secondary areas located in Magaliesburg and Muldersdrift. Kagiso is characterised by its residential nature which functions primarily as a dormitory town adjacent to the previously white town and hosts most of the urban amenities. This is reinforced by the 5km physical separation of the Kagiso from Krugersdorp.

According to the Mogale SDF 2011-2012, the development trends include infill and densification, pressure for the westward expansion of Krugersdorp and development of agricultural holdings by providing infrastructure.

A number of subsidy-linked housing projects are being undertaken in Mogale to relieve the demand for housing. One of the most noteworthy projects is the project known as Azaadville situated in the north-eastern part of Kagiso.

3.2.5 Heritage

A Cultural Heritage Survey was conducted by G & A Heritage Consultants. The preliminary investigations on the site shows no evidence of cultural or heritage resources. The statement of significance is classified as low.

Should there be any artefacts found on the site during construction, the SAHRA guidelines will be followed to ensure protection of those artefacts.

3.2.6 Aesthetics

The landscape character of the site can be explained as largely vacant with informal settlements in the middle. There are signs of agricultural activities consisting of foundations for green-houses and growing tunnels. These were rather obtrusive due to the contrast that the reflective and monotonous facades created in the landscape (photo 10).

The process of removing the greenhouses has been rather disruptive; resulting in an ephemeral landscape of rubble and desolation (photo 11).
CHAPTER 4 –

4.1 INVESTIGATION OF ALTERNATIVES

The identification of alternatives provides a basis for choice among the options available. The exploration of such alternatives allows for the incorporation of practically, and technologically, the least environmentally impacting options available, whilst still meeting the need and purpose of the proposal. An alternative should thus be practicable, feasible, relevant, reasonable and viable.

The role of alternatives is to find the most effective way of meeting the need and purpose of the proposal, either through enhancing the environmental benefits of the proposed activity, and or through reducing or avoiding potentially significant negative impacts.

During the Environmental Planning Exercise, opportunities and constraints automatically introduce a dialogue around options. As such, many alternatives have been identified at an early stage and already evaluated in the Scoping Report. However, there are instances where the alternatives have been referred to the EIAR phase for further clarification and /or investigation. Additional alternatives can still be identified, evaluated and if viable, also implemented. These alternatives will then be incorporated in the EIAR phase as additional alternatives.
In addition to giving consideration to the relative impacts of each alternative, weight is also given to the issues raised by I & AP’s, and government stakeholders when determining which of the proposed alternatives should be adopted.

4.2 ALTERNATIVE LAND USES

- Alternative 1: No-Go Alternative

A possible alternative is one of no development at all, leaving the site in its present state and land use. The site is presently in a disturbed state covered by eucalyptus trees and wattles. The land use is to a large extent disused (vacant), with a part utilised as an informal settlement and there is also diggings on parts of the site. This use has resulted in disturbances on the site leaving it with few or no sensitivities at all. The consequences of the continuation of this scenario would imply the following:

- The proposed project objectives will not materialise, which implies a significant loss of opportunity for the development the site and creation of a safe living environment for the community residing on the site.
- Many direct and indirect spin-off benefits, such as job creation, capacity building, rates for the municipality and the upgrading and supply of services will not be realised.
- The 2011-2012 SDF has earmarked the site as Future Integrated Development. An informal settlement and a vacant derelict site would definitely not meet this classification.
- Signs of human use are evident throughout the site, and it is possible, that with such prolonged (mis-)use, the already non-existent environmental sensitivity of the site will be totally lost (dumping, illegal dumping, uncontrolled fires etc.). The portion of land which is disused (vacant) could become a heaven for future unplanned / informal settlements.
- Invasive vegetation would probably continue to spread in areas where land is vacant and not actively used.
- Impacts associated with current and previous uses (informal settlement and quarrying etc.) may well result in impacts of a higher significance, especially in terms of pollution risk. The continuation of the current (or similar) land use does not automatically trigger an EIA; and without an EIA, it would be difficult to identify, evaluate and monitor any potential negative impacts.

It follows that the no-project alternative yields mostly negative impacts of a long term nature. The No-Go alternative should therefore not be exercised.

- Alternative 3: Agricultural Activities
Considering that the historic use of the site was for agriculture, the option of agriculture as a land use needs to be considered. This would, however, imply the following:

- This outcome will be the preservation of a relatively small piece of low to high potential agricultural land (40%) of the site for that purpose. Given the agricultural economy of scale, the site that small will not provide significant commercial opportunities to whoever is looking to practice intensive agriculture.
- Based on development drivers that exist in the area, this would probably only be a short-term outcome, if it is at all feasible.
- The GAPA has further shown that the site does not fall within the Agricultural Hubs. Agriculture is therefore not a viable alternative.

However, a small portion of the land should be allocated to low-income residents to grow vegetables for their own use and commercial purposes. The potential stand buyers should be made aware if their property falls within an area of moderately high agricultural potential.

- **Alternative 4: Residential Development**

Much of the surrounding land is or has been utilised for rural-residential to residential development and as such, it would make sense that the site be used for this purpose too (as is described in Chapter 2), especially since the proposed development is aligned with the approved 2011-2012 Mogale SDF.

As the other land use alternatives are not considered feasible, any further investigations during the EIAR phase would not be warranted. It is, therefore, considered progressive to uphold the proposed development as the preferred alternative, subject to the EIAR phase and provided planning and design aspects are sustainable and the project follows the recommendations of the EIA process.

### 4.3 SERVICES: POTABLE WATER

- **Alternative 1: Water line on the western side of site**

It is anticipated that bulk water supply will be supplied by the municipality. A water line would need to be installed from an existing bulk storage water reservoir in Azaadville to the development.

- **Alternative 2: Water line to the east of the site**

Alternatively, a link can be created from the existing residential developments adjacent to the site. This alternative will be investigated during the EIAR phase.
4.4 SERVICES: SEWAGE TREATMENT

- **Alternative 1: Sewage Treatment at Mogale Sewerage Plant**

The current proposal (refer to Chapter 2) is to dispose of the waste water emanating from the proposed development at the municipal Wastewater Treatment Works. Considering the proximity of the proposed development to Krugersdorp Town, an existing wastewater treatment works seems like a feasible option. Making efficient and effective use of existing service systems is generally seen as an approach that supports the notion of integrated planning and development.

- **Alternative 2: Sewage Treatment Plant on Site**

Should the existing municipal Wastewater Treatment Works not have sufficient capacity to accommodate the wastewater from the proposed development, then an alternative wastewater treatment package would need to be developed on the site.

Soak-away systems would definitely not be a feasible alternative, meaning the only other alternative would be development of a new ‘package plant’ that meet the standards of the DWA. This alternative will be investigated during the EIAR phase.

**CHAPTER 5 – ENVIRONMENTAL ISSUES AND IMPACTS**

5.1 **SCOPING FOR KEY ISSUES AND IMPACTS**

With an understanding of the project activities and facilities, project alternatives as well as the environmental characteristics of the area, it is possible to start listing the key issues pertaining to the proposed project. These key issues have been identified in the scoping process through the following means:

- Site visits
- Legal and policy review
- Gleaning over existing information pertaining to similar developments and issues
- Discussions, meetings and site visits with Authorities
- Opinions and concerns raised by interested and affected parties
- Specialist studies and qualified opinions
- Professional judgement
Key issues are potential environment effects. Impacts, both positive and negative, are associated with these key issues. At this stage of the project the impacts must be seen as preliminary or anticipated, as these will be addressed in accordance with the methodology outlined in Chapter 6 during the EIAR phase of the project.

5.2 KEY ISSUES

- **Geology and Soils**
  - Impacts related to soil erosion: loss of topsoil and sedimentation
  - Rehabilitation of degraded land from previous activities (positive impact)
  - Geotechnical suitability (establish the need for foundations)

- **Hydrology**
  - Risk of pollution contaminating the surface and ground water resource
  - Change in the hydrological regime (increased sedimentation, amplified storm water run-off, quality of storm water discharge, higher peak flows etc.)
  - Rehabilitation of the quarry (positive impact)

- **Biodiversity**
  - Loss of open space, grassland and associated habitat (albeit disturbed)
  - Reclamation of disturbed environments (positive impact)
  - Removal of alien vegetation (positive impact)

- **Services and urban planning**
  - Increased demand on the supply of electricity
  - Increased demand on the supply of potable water
  - Increased loading on existing telecommunication networks
  - Increased effluent loading on the waste water treatment works
  - Increased requirement for handling and disposal of solid waste
  - Traffic volumes and associated safety issues
  - Improved efficiency of existing services (positive impact)
  - Improved service provision for the region (positive impact)
  - Urban Edge inconsistency (Provincial Urban Edge versus Municipal Urban Edge)
  - Realisation of municipal planning frameworks: SDF (positive impact)
 Rates income for the local municipality (positive impact)

**Socio-economic Issues**

- Creation of jobs during the construction phase as well as employment opportunities associated with the operational phase (positive impact)
- Extensive economic spin-off can be expected in the region as a direct result of the development (positive impact)
- Development of mixed use residential neighbourhoods (positive impact)
- Visual impact due to a change in the visual character from vacant land to residential (negative impact)

**Heritage**

- Impact on hidden artefacts

**Construction**

- Destruction of vegetation
- Impacts associated with the loss of topsoil (erosion, sedimentation etc.)
- Pollution of the ground and surface water resource
- Noise pollution
- Atmospheric pollution in the form of dust
- The introduction of construction activities and workers to a relative quiet region

**CHAPTER 6 – PLAN OF STUDY FOR ENVIRONMENTAL IMPACT REPORT (EIR)**

6.1 DESCRIPTION OF TASKS

**General Tasks**

- The final Scoping Report will be submitted to GDARD.
- The supply and availability of services will be clarified: engineering report, relevant confirmations.
- All issues, concerns and impacts raised during the investigation, public participation, scoping process, specialist and authority consultation will be clarified and evaluated.
- Project progression (layout amendments, available designs etc.) will be documented and included in the EIAR report.
- Any additional information which is relevant to the project or to the process (such as specialist investigations) as required by GDARD and / or other relevant authorities will be included in the EIAR report.
- Mitigation measures will be proposed in the format of a Draft EMPr.
- The Comments and Response Report of the Public Participation Process will be updated.
- A Sensitivity Map will be provided, informed by all relevant existing and additional sensitivity findings.
- A draft EIAR will be prepared.
- The Draft EIAR report will be made available to all I&AP’s (including relevant departments).
- The final EIAR will be submitted to GDARD for consideration.

- **Specialist Tasks**

  - Specialist studies on Amphibians will be finalised.
  - Specialist studies on Birds will be finalised.
  - Services Report will be finalised.
  - Any other requirements as specified by GDARD and / or other relevant authorities.

- **STAGES OF CONSULTATION WITH COMPETENT AUTHORITIES**

  Authority involvement undertaken during this scoping exercise has thus far included and will include

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<td>15 July 2013</td>
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<td>Submission of Draft Scoping Report &amp; Plan of Study for EIAR to I&amp;AP’s</td>
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<td>Permission to proceed with EIAR from GDARD</td>
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<td>Submission of EIR to GDARD</td>
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the following:

- **PROPOSED PUBLIC PARTICIPATION PROCESS**

  The Public Participation Process undertaken to date is outlined in Section 1.4 above. Following on from this, the following activities are envisaged:
The Draft Scoping Report will be made available for public review for 4 weeks. Comments on the Draft Scoping Report will be included in the Final Scoping Report and addressed in the Draft EIAR.

I & AP’s will be able to register throughout the EIA process.

The EIAR will be made available for public review for a period of four weeks. Registered I & AP’s will be contacted directly regarding the availability of the report.

Digital copies of the EIR will be made available to registered I & AP’s and hardcopies will be made available in Krugersdorp and the offices of the municipality.

The EIAR will include an update of the Public Participation Process, the summary of the comments received from I & AP’s during the scoping process and how these comments have been considered in the EIAR.

Comments from I & AP’s on the Draft EIAR would be included before submission of the final EIAR to GDARD.

**METHODODOLOGY FOR ENVIRONMENTAL IMPACT ASSESSMENT**

The impacts anticipated to occur as a result of the proposed development will be evaluated in the EIAR to determine their significance. The assessment of such impacts is a multi-faceted process, which incorporates criteria such as nature, extent, duration, intensity and probability. These criteria cumulatively lead to the significance determination.

Significance will be determined for scenarios involving both ‘before’ and ‘after’ mitigation. The baseline scenario which is ultimately evaluated is the proposal as described in the EIAR, bearing in mind that the environmental planning exercise as well as the process of investigating alternatives has already excluded a number of significant impacts.

The following evaluation criteria are used:

- **Nature**: This is a qualified description of the impact and how it affects the receiving environment.

- **Extent**: Here it is established what the spatial size of the impact will be:
  - Limited to the development footprint.
  - Within the defined study area (the site).
  - Affects the neighbours (region).
  - Within the relevant province.
  - Extends way beyond the site (National / International).
➢ **Duration:** The timeframe over which the effects of the impact will be felt are described as:

  - Immediately reversible (unique).
  - Short term (e.g. 0-10 yrs).
  - Medium term (e.g. 11-25 yrs).
  - Long term (as long as the operational phase).
  - Permanent.

➢ **Intensity:** The impact is assessed with regards to levels of modification it has on the receiving environment:

  - No known impact.
  - Natural processes not affected.
  - Environment is affected, yet the modified processes will continue and return to a similar functioning state.
  - Environment is affected, yet the modified processes will continue.
  - Process is disturbed and as a consequence will permanently cease.

➢ **Probability:** The likelihood of the impact actually occurring is indicated as:

  - Extremely unlikely – Less than 5% sure of a particular fact or likelihood of an impact occurring.
  - Unlikely – Less than 40% sure of a particular fact or the likelihood of an impact occurring.
  - Possible – Only 40% sure of a particular fact or of the likelihood of an impact occurring.
  - Probable – Over 70% sure of a particular fact, or of the likelihood of that impact occurring.
  - Definite - More than 90% certainty. Substantial supportive data exists to verify the assessment.

➢ **Status:** The status is clarified in terms of it being a benefit or a constraint:

  - P - Positive impact
  - N - Negative impact

➢ **Significance:** Based on the above, the significance rating scale is determined as follows:

  - Very low - Impact would be negligible. In the case of negative impacts, almost no mitigation and or remedial activity would be needed, and any minor steps, which might be needed, would be easy, cheap and simple. In case of positive impacts, alternative means would almost all likely be better, in one or a number of ways, than this means of achieving the benefit.
o Low - Impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and / or remedial activity would be either easily achieved or little would be required, or both. In case of positive impacts alternative means for achieving this benefit would likely be easier, cheaper, more effective, less time-consuming, or a combination of these.

o Moderate - Impact would be real but not substantial within the bounds of those, which could occur. In the case of negative impacts, mitigation and / or remedial activity would be both feasible and fairly easily possible. In the case of positive impacts, other means of achieving these benefits would be about equal in time, cost and effort.

o High - Impacts of a substantial order. In the case of negative impacts, mitigation and / or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these. In the case of positive impacts, other means of achieving this benefit would be feasible, but these would be more difficult, expensive, time-consuming or some combination of these.

o Very high - Of the highest order possible within the bounds of impacts which could occur. In the case of negative impacts, there would be no possible mitigation and / or remedial activity to offset the impact at the spatial or time scale for which it was predicted. In the case of positive impacts, there is no real alternative to achieving the benefit.
CHAPTER 7 – CONCLUSION AND RECOMMENDATIONS

The objective of the Scoping Phase is to define the range of the impact assessment in order to proceed to the Environmental Impact Assessment Phase. It is believed that this objective has been achieved and adequately documented in the Scoping Report.

It is therefore recommended that this Scoping Report be accepted and that the Project Brickvale Mixed Use Housing be allowed to proceed to the next phase of EIAR.
BIBLIOGRAPHY


APPENDICES:

PUBLIC PARTICIPATION PROCESS

A. Site Notice (Photo)

B. Hand Posted Letters (Photo)

C. Newspaper Advert (Photo)
CULTURAL HERITAGE SURVEY
RE: DESK STUDY FOR FARM BRICKVALE 161 IQ

Desk study was carried in accordance to the Client (KARP Consulting & Projects Pty LTD) for the Farm Brickvale 161IQ, located on the western part of Mogale City Local Municipality CBD in Krugersdorp, immediately north of the R24 Krugersdorp-Tarlton Road and approximately 3.5km east of the N14-R28 Tarlton crossing. The Google site coordinates are as follows 26° 5′13.05″S and 27°40′45.19″E.

As you are aware much of West Rand is underlain by dolomite and dolomitic residuum. The available geological map of the areas is at a scale of 1:250 000 and the site indeed underlain by dolomite. Therefore a dolomite stability investigation would be required.

Dolomite Stability Investigation includes:
- Desk study
- Dolomite Stability Investigation

The South African National Standard SANS 1936-2 is standard used by the CGS to adjudicate and approve dolomite stability investigation reports. The standard establishes requirements for feasibility-level geotechnical investigations, design-level investigations, the determination of the inherent hazard class of dolomite land, and inspection and verification during the implementation phase of a project on dolomite land.
For an area size 132ha feasibility-level (Table 1: Minimum frequency of boreholes required to be drilled according to SANS 1936-2 in dolomite areas for feasibility level investigation) geotechnical investigation on the Farm Brickvale 161iq will require percussion boreholes drilling total of 27 percussion boreholes to comply with SANS 1936-2.

Boreholes to be drilled on dolomite terrain are not drilled arbitrarily, they are drilled targeting geophysical anomalies obtained after gravity survey has been conducted on the site(s). According to the information gathered for the site(s), i.e. existing reports and Council for Geoscience (CGS), all available information lacks gravity survey data; hence the gravity survey shall be required to be conducted at Farm Brickvale 161IQ.

Please see the attached peg showing the nearest boreholes to your site. They are all found in report F3555, a report done by Water Affairs on the Krugersdorp West Dolomite Compartments. Please contact Judith Grobler at jgrobler@geoscience.org.za if you would like to view/copy any of the reports in the area.

**Table 1: Minimum frequency of boreholes required to be drilled according to SANS 1936-2 in dolomite areas for feasibility level investigation**

<table>
<thead>
<tr>
<th>Study area (ha)</th>
<th>Minimum number of data points per hectare</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 1.0</td>
<td>3</td>
</tr>
<tr>
<td>&gt; 1.0 but ≤ 2.5</td>
<td>2</td>
</tr>
<tr>
<td>&gt; 2.5 but ≤ 10.0</td>
<td>1</td>
</tr>
<tr>
<td>&gt; 10.0 but ≤ 50.0</td>
<td>0.5</td>
</tr>
<tr>
<td>&gt; 50.0 but ≤ 100.0</td>
<td>0.3</td>
</tr>
<tr>
<td>&gt; 100.0 but ≤200.0</td>
<td>0.2</td>
</tr>
<tr>
<td>&gt; 200.0</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Table 1: Minimum frequency of boreholes required to be drilled according to SANS 1936-2 in dolomite areas for feasibility level investigation was utilized in order to derive at the number of the percussion boreholes required to be drilled to a minimum of 5.0m into bedrock or 60.0m if no bedrock is encountered between 0.0m to 60.0m depending on which one comes first, this is necessary in order for CGS to classify the borehole(s).

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