

DRAFT REPORT

BASIC ASSESSMENT REPORT

In terms of Section 24 and 24(D) of NEMA (Act No. 107 of 1998)

for:

The proposed clearance of 6ha of indigenous vegetation, of which 5ha is located within a critical biodiversity area for the proposed establishment of a mixed use township development with associated services on a Portion Of The Remaining Extent Of Portion 25 Of The Farm Rietfontein 372JQ; Kgetlengrivier Local Municipality; Derby, Northwest Province.

NWP/EIA/77/2020

Report Date: March 2021



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Compiled for:

Kgetlengrivier Local Municipality



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EXECUTIVE SUMMARY

Kgetlengrivier Local Municipality has appointed **AB Enviro Consult CC**, an independent environmental consultancy, to undertake an Environmental Impact Assessment for the proposed clearance of 6ha of indigenous vegetation, of which 5ha is located within a critical biodiversity area for the proposed establishment of a mixed use township development with associated services on a Portion Of The Remaining Extent Of Portion 25 Of The Farm Rietfontein 372JQ; Kgetlengrivier Local Municipality; Derby, Northwest Province.

The proposed development falls within the Kgetlengrivier Local Municipality area of jurisdiction and is situated in the town of Derby.

The activity is listed in terms of the Regulations (in force since 4 December 2014) in terms of Section 24(M) and 44 made under section 24(5) of the National Environmental Management Act (NEMA) 1998 (Act 107 of 1998) as amended and published in Government Notice No. R 326 of 2017. The proposed development triggers the following regulations and listed activities:

Indicate the number and date of the relevant notice:	Activity No (s) and Activity Description (in terms of the relevant notice)	Describe each listed activity as per project description	Time for construction to be completed applied for
GN.R. 327, 7 April 2017	27	The proposed clearance of 6ha of indigenous vegetation for the proposed establishment of a mixed use township development with associated services on a Portion Of The Remaining Extent Of Portion 25 Of The Farm Rietfontein 372JQ; Kgetlengrivier Local Municipality; Derby, Northwest Province.	10 years
GN.R. 324, 7 April 2017	12 (h)(iv)	Proposed clearance of 5ha is located within a critical biodiversity area for the proposed establishment of a mixed use township development with associated services on a Portion Of The Remaining Extent Of Portion 25 Of The Farm Rietfontein 372JQ; Kgetlengrivier Local Municipality; Derby, Northwest Province.	5 years

The purpose of the study is therefore to determine the impacts that the environment may have on the proposed activity, as well as the possible impacts that the activity may have on the environment.

The study is being conducted according to normal scientific practices. A theoretical background review was compiled for the different variables by using available information from the literature. Field verification was undertaken and visits paid to the site to gather further information and/or to verify information. It also includes the identification of *key interest groups*, both governmental and non-governmental, and to establish good lines of communication. Specialist studies were undertaken to determine the impacts on sensitive areas and to determine whether the proposed project can be sustainably implemented. The specialists will also advise on mitigation measures where applicable.

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1. INTRODUCTION

Kgetlengrivier Local Municipality has appointed **AB Enviro Consult CC**, an independent environmental consultancy, to undertake an Environmental Impact Assessment for the proposed clearance of 6ha of indigenous vegetation, of which 5ha is located within a critical biodiversity area for the proposed establishment of a mixed use township development with associated services on a Portion Of The Remaining Extent Of Portion 25 Of The Farm Rietfontein 372JQ; Kgetlengrivier Local Municipality; Derby, Northwest Province.

The proposed development falls within the Kgetlengrivier Local Municipality area of jurisdiction and is situated in the town of Derby.

1.1 THE BASIC ASSESSMENT PROCESS

The purpose of this document is to adhere to the requirements for compilation of Basic Assessment Reports as amended and published in Government Notice R. 326 of 7 April 2017, Appendix 1, and the National Environmental Management Act (Act 107 of 1998) (NEMA).

1.2 DESCRIPTION OF THE PROCESS FOLLOWED

In order to assess a proposed development it is important to take into consideration the principles of NEMA. These principles are outlined in Chapter 1 and read as follows:

- 1) *“The principles set out in this section apply throughout the Republic to the actions of all organs of state that may significantly affect the environment and—*
 - a. *shall apply alongside all other appropriate and relevant considerations, including the State’s responsibility to respect, protect, promote and fulfil the social and economic rights in Chapter 2 of the Constitution and in particular the basic needs of categories of persons disadvantaged by unfair discrimination;*
 - b. *serve as the general framework within which environmental management and implementation plans must be formulated;*
 - c. *serve as guidelines by reference to which any organ of state must exercise any function when taking any decision in terms of this Act or any statutory provision concerning the protection of the environment;*
 - d. *serve as principles by reference to which a conciliator appointed under this Act must make recommendations; and*
 - e. *guide the interpretation administration and implementation of this Act, and any other law concerned with the protection or management of the environment.*
- 2) *Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.*
- 3) *Development must be socially, environmentally and economically sustainable.*
- 4) (a) *Sustainable development requires the consideration of all relevant factors including the following:*
 - (i) *That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied:*

- (ii) that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;*
 - (iii) that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;*
 - (iv) that waste is avoided. or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;*
 - (v) that the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;*
 - (vi) that the development use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised;*
 - (vii) that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and*
 - (viii) that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.*
- (b) Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.*
 - (c) Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.*
 - (d) Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination.*
 - (e) Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.*
 - (f) The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation and participation by vulnerable and disadvantaged persons must be ensured.*
 - (g) Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognizing all forms of knowledge, including traditional and ordinary knowledge.*
 - (h) Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.*

- (i) *The social, economic and environmental impacts of activities, including disadvantages and benefits must be considered, assessed and evaluated and decisions must be appropriate in the light of such consideration and assessment.*
- (j) *The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.*
- (k) *Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.*
- (l) *There must be intergovernmental co-ordination and harmonisation of policies, legislation and actions relating to the environment.*
- (m) *Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures.*
- (n) *Global and international responsibilities relating to the environment must be discharged in the national interest.*
- (o) *The environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage.*
- (p) *The costs of remedying pollution, environmental degradation consequent adverse health effects and of preventing, controlling or minimizing further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.*
- (q) *The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted.*
- (r) *Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure."*

The above mentioned principals and the applicable legislation, Policies and Guidelines as described in Paragraph 5 of this Report were taken into account in the assessment of the Environmental Impacts for the proposed development. The process followed can be described as follows:

- 1) The EAP was contracted by Kgetlengrivier Local Municipality as their Independent Environmental Assessment Practitioner.
- 2) A Geotechnical Engineer was appointed to determine whether the Geology and Soils of the site is suitable for the proposed development.
- 3) A Town and Regional Planner designed the proposed development in such a way that the layout of the proposed development, takes into account the measures described by the Civil Engineer and that the layout satisfies the needs of future occupiers of the site
- 4) The Civil Engineers were appointed to determine the capability of existing infrastructure to be linked to proposed development and readily available bulk services.

- 5) A SAHRA Specialist has been appointed to determine the possible impact of the development on Archaeological and Cultural features.
- 6) A Botanical specialist has been appointed to determine the impact of the proposed development on the Fauna and Flora of the area.
- 7) An Environmental Screening Process was conducted by the EAP to ensure that all the relevant Environmental Legislation is taken into consideration.
- 8) Desk top studies were conducted and alternatives assessed.
- 9) Site inspections were carried out to verify the outcomes of the desktop studies, and the preferred alternative defined.
- 10) A full Public Participation Process is being followed to obtain inputs from interested and affected parties.
- 11) All the information obtained from the above mentioned processes is being used to assess the Environmental Impact that the proposed development may have on the Environment and vice versa.
- 12) The inputs from Specialists, interested and affected parties, together with the knowledge of the EAP is being used to determine measures to avoid, mitigate and manage potential impacts. These measures are described in the Environmental Management Programme.

1.3 ASSESSMENT PHASE

The assessment phase included the necessary investigations to assess the suitability of the identified site and its surrounding environment, for the development proposal. The assessment phase described the “status quo” of the bio-physical, social, economic and cultural environment, and identifies the anticipated environmental aspects associated with the proposed development. The assessment phase included the identification of *key interest groups*, (both government and non-government), and strived to establish efficient and effective communication. Identifying and informing Interested and affected parties of the proposed development may have an impact on the focus of the EIA. (S. Cliff, 2015).

This phase also determines the *significance of the impact* of the proposed activity on the surrounding Environment. During this phase, a Basic assessment Report (BAR) is compiled, and, following public review, is submitted to the approving authority – the DEDECT.

The purpose of the Basic Assessment Report is to document the outcome of the Assessment Phase of the project. The report fulfilled the requirements of the EIA Regulations (2014) for the documentation of the Basic Assessment Process. The Report was compiled in accordance with Section 21(3) of NEMA’s 2014 EIA Regulation (GN R. 982) as amended and published in Government Notice R. 326 of 7 April 2017.

The Draft Basic Assessment Report will be submitted to DEDECT on the 12th March 2021.

1.3.1 Objective of the basic assessment process

The objective of the basic assessment process is to, through a consultative process-

- (a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
- (b) identify the alternatives considered, including the activity, location, and technology alternatives;

- (c) describe the need and desirability of the proposed alternatives;
- (d) through the undertaking of an impact and risk assessment process, inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine–
 - (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
 - (ii) the degree to which these impacts–
 - (aa) can be reversed;
 - (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;
 - (cc) can be avoided, managed or mitigated; and
- (e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to–
 - (i) identify and motivate a preferred site, activity and technology alternative;
 - (ii) identify suitable measures to avoid, manage or mitigate identified impacts; and
 - (iii) identify residual risks that need to be managed and monitored.

1.3.2 Scope of assessment and content of basic assessment reports

The BAR assesses those identified potential environmental impacts and benefits (direct, indirect and cumulative impacts) associated with the project design, construction, and operation phases, and recommends appropriate mitigation measures for potentially significant environmental impacts. The Environmental impacts are assessed both before and after mitigation to determine:

- The significance of the impact despite mitigation; and
- The effectiveness of the proposed mitigation measures.

The BAR addresses potential environmental impacts and benefits associated with all phases of the project, including design, construction and operation, and aims to provide the environmental authorities with sufficient information to make an informed decision regarding the proposed project.

Table 1 below provides a summary of the legislative requirements in terms of a Basic Assessment Report as stipulated in Section 23 of the 2014 EIA Regulation (GN R. 982) as amended and published in Government Notice R. 326 of 7 April 2017. Cross-references are provided in terms of the relevant section within this BA Report where the NEMA and BA Report requirements have been addressed.

Table 1: Basic Assessment Report content as per Section 23 of NEMA’s 2014 EIA Regulation (GN R. 982) as amended and published in Government Notice R. 326 of 7 April 2017 Appendix 1.

3. (1) A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include:

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for Basic Assessment Reports	Location in this report
Appendix 1, section 3 (a)	Details of the EAP who prepared the report; and the expertise of the EAP;	Paragraph 2
Appendix 1, section 3 (b)	The location of the development footprint of the activity on the approved site as contemplated in the accepted scoping report, including – (i) The 21 digit Surveyor General code of each cadastral land parcel; (ii) Where available, the physical address and farm name; (iii) Where the required information in items (i) and (ii) is not available, coordinates of the boundary of the property or properties	Paragraph 4 Paragraph 4 Paragraph 4
Appendix 1, section 3 (c)	A plan which locates the proposed activity or activities applied for, at an appropriate scale, or, if it is – (i) A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) On land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Appendix A1 and Appendix A2 Paragraph 4
Appendix 1, section 3 (d)	A description of the scope of the proposed activity, including – (i) all listed and specified activities triggered and being applied for; and (ii) a description of the activities to be undertaken including associated structures and infrastructure;	Paragraph 3 Paragraph 3
Appendix 1, section 3 (e)	A description of the policy and legislative context within which the development is proposed including (i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and (ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments explanation of how the proposed development complies with and responds to the legislation and policy context	Paragraph 5.1 Paragraph 5.2 Paragraph 5.2
Appendix 1, section 3 (f)	A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location.	Paragraph 6
Appendix 1, section 3 (g)	a motivation for the preferred site, activity and technology alternative	Paragraph 4
Appendix 1, section 3 (h)	A full description of the process followed to reach the proposed preferred alternative within the site, including- (i) Details of all alternatives considered; (ii) Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; (iv) The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (v) 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	Paragraph 8 Paragraph 10 Paragraph 10 Paragraph 8 Paragraph 9 Paragraph 9 Paragraph 9

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for Basic Assessment Reports	Location in this report
	<p>(cc) can be avoided, managed, or mitigated.</p> <p>(vi) The methodology used in deterring and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;</p> <p>(vii) Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographic, physical, biological, social, economic, heritage and cultural aspects;</p> <p>(viii) The possible mitigation measures that could be applied and level of residual risk;</p> <p>(ix) the outcome of the site selection matrix</p> <p>(x) If no alternatives, including alternative footprints for the activity were investigated, the motivation for not considering such and;</p> <p>(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity.</p>	<p>Paragraph 9</p> <p>Paragraph 9</p> <p>Paragraph 9</p> <p>Paragraph 9</p> <p>Not Applicable</p> <p>Paragraph 12</p>
Appendix 1, section 3 (i)	<p>A full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including-</p> <p>(i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and</p> <p>(ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;</p>	<p>Paragraph 9</p> <p>Paragraph 8</p> <p>Paragraph 9</p>
Appendix 1, section 3 (j)	<p>An assessment of each identified potentially significant impact and risk, including-</p> <p>(i) cumulative impacts;</p> <p>(ii) the nature, significance and consequences of the impact and risk;</p> <p>(iii) the extent and duration of the impact and risk;</p> <p>(iv) the probability of the impact and risk occurring;</p> <p>(v) the degree to which the impact and risk can be reversed;</p> <p>(vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and</p> <p>(vii) the degree to which the impact and risk can be mitigated;</p>	<p>Paragraph 9</p> <p>Paragraph 9</p> <p>Paragraph 9</p> <p>Paragraph 9</p> <p>Paragraph 9</p> <p>Paragraph 9</p>
Appendix 1, section 3 (k)	<p>Where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;</p>	<p>Paragraph 11</p>
Appendix 1, section 3 (l)	<p>An environmental impact statement which contains-</p> <p>(i) a summary of the key findings of the environmental impact assessment:</p> <p>(ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and</p>	<p>Paragraph 12.2 and 12.2 Figure 2</p> <p>Paragraph 12</p>

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for Basic Assessment Reports	Location in this report
	(iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	
Appendix 1, section 3 (m)	Based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the EMPr	Paragraph 11 and 12
Appendix 1, section 3 (n)	Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation	Paragraph 3.1.2.1
Appendix 1, section 3 (o)	A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed	Paragraph 1.4.3
Appendix 1, section 3 (p)	A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation	Paragraph 12.4
Appendix 1, section 3 (q)	Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised	Not Applicable
Appendix 1, section 3 (r)	An undertaking under oath or affirmation by the EAP in relation to- (i) The correctness of the information provided in the report; (ii) The inclusion of the comments and inputs from stakeholders and interested and affected parties; and (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) 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.	Paragraph 13 Paragraph 13 Paragraph 13 Paragraph 13
Appendix 1, section 3 (s)	Where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts.	Not Applicable
Appendix 1, section 3 (t)	Any specific information that may be required by the competent authority.	Not Applicable
Appendix 1, section 3 (u)	Any other matters required in terms of section 24(4)(a) and (b) of the Act	Not Applicable

1.3.3 Assumptions, uncertainties, limitations and gaps in knowledge:

This report is based on current available information and, as a result, the following limitations and assumptions are implicit –

The report is based on the *project description* provided by the Applicant as a result of reports that was compiled by the following Specialists:

- A Geotechnical Engineer has been appointed to assess the geology and soils.
- A Civil engineer and Town planner has been appointed to determine the availability of services and the layout of the development
- A SAHRA Specialist has been appointed to determine the possible impact of the development on Archaeological and Cultural features.
- An Ecologist specialist has been appointed to determine the impact of the proposed development on the Fauna and Flora of the area.
- An Environmental Screening Process was conducted by the EAP to ensure that all the relevant Environmental Legislation is taken into consideration.

- Desktop studies were conducted and alternatives assessed.

Descriptions of the biophysical and social environments are based on specialist fieldwork, investigations, and the Public Participation Process.

2. DETAILS AND EXPERTISE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

AB Enviro Consult (CC) is a registered consultancy, owned and operated as an independent unit by the registered owner and consultant: **Prof. A.B. de Villiers**

- **Mr J.P. De Villiers** joined the consultancy during 2004
- **Mrs J.E. du Plooy** is a consultant since 2001

PERSONAL PARTICULARS AND CAREER HISTORY OF PROF DE VILLIERS

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Lecturer & Professor – Potchefstroom University 1969- 2004

ACADEMIC AND PROFESSIONAL QUALIFICATIONS

Post–Matric Qualifications

YEAR	Qualification	Institution	Field of Study
1968	B.Sc.	PU FOR CHE	Geography, Geology
1970	HONNS. B.Sc.	PU FOR CHE	Soil Science
1974	M.Sc.	PU FOR CHE	Geography
1981	Ph.D.	UOFS	Geography

PROFESSIONAL QUALIFICATIONS AND REGISTRATIONS

YEAR	Qualification/ Registration	Institution	Field of Study
1986	Professional Natural Scientist	S.A. Council for Natural Scientists	Environmental Science
1994	Quality Auditor	ESKOM	Auditing
1998	Personnel & Verifying Auditor	SAATCA	Environmental Auditing
2006	Environmental Assessment Practitioner	Interim Certification Board EAPSA	Environmental Science

MEMBERSHIP AND PARTICIPATION IN SOCIETIES, COUNCILS, ETC.

Name of professional societies	YEAR	Capacity
S.A. Geographical Society.	1967-1996	Board Member
Society for Geography	1968-2004	Member
SAGS Western Transvaal	1985-1989 1987-1989 1996	Chairman
Africa Geographical Association	1993-1995	Vice-President.
Society for the Vaal River Catchment	1980-1999	Member
S.A. Society for Photogrammetry, Remote Sensing and Cartography	1984-1996	Member
Dendrological Society	1986-2005	Member
Birdlife South Africa	2003-present	Member
British Geomorphological Research Group	1985-1997	Member
Int Com on Water Resource Systems	1985-1997	Member
Int Com on Continental Erosion	1986-1990	Member
Int Com on Remote Sensing and Data Transmission	1986-1991	Member
Society for S.A. Geographers	1995-2005	Member
SA Photogrammetrical and Geo. Info.	1995-2003	Member
S.A. Association of Geomorphologists	1994-1999	Board Member and member
SADC Mine Dump Study Group	1996-2005	Member

ACADEMIC AND PROFESSIONAL QUALIFICATIONS MR J.P. DE VILLIERS

YEAR	Qualification	Institution	Field of Study
1993	BA	PU FOR CHE	Geography, Economics
1994	HED	PU FOR CHE	Geography Economics
2006	B.Sc.(Honns) Cum Laude	North-West University	Environmental Management
2007	M.Sc.	North-West University	Geography

PROFESSIONAL QUALIFICATIONS AND REGISTRATIONS

YEAR	Qualification/ Registration	Institution	Field of Study
2008	Basic Principles of Ecological Rehabilitation and Mine Closure	Centre for Environmental Management (North West University)	Ecological Rehabilitation
2019	Registered as Environmental assessment Practitioner	EAPASA Registration number: 2019/808	

ACADEMIC AND PROFESSIONAL QUALIFICATIONS MRS J.E. DU PLOOY

YEAR	Qualification	Institution	Field of Study
1999	BA	PU FOR CHE	Geography, Tourism
2000	BA (Honns) Cum Laude	PU FOR CHE	Geography
2003	Master's degree in Environmental Management	PU FOR CHE	Environmental Management
2001	Aquabase Intro	AQUABASE	Hydrology
2001	Geomedia Professional	INTERTECH	GIS
2001	Map Info	SPATIAL TECHNOLOGY	GIS
2020	Registered as Environmental Assessment Practitioner	EAPASA : 2019/1573	

EXPERIENCE OF THE CONSULTANCY

Over a period of 25 years (1996-2021) this consultancy has successfully applied for, and obtained positive ROD's and EA's for more than 380 projects. Environmental Control Officer's duties are also performed on various projects.

The company was involved (from 1992-1994) in evaluation of 114 applications for the subdivision of land, 23 applications for resort developments, and 54 applications for business rights for the Department of Agriculture, Conservation and the Environment - North West Province.

The consultancy is qualified to undertake professional studies in waste management and is still involved in the development of waste disposal- (solid and liquid effluent), and emission studies. These studies are conducted both academically and practically. This work relates to mine waste, domestic waste and effluent as well as to the monitoring of waste disposal. Environmental audits in this respect are undertaken on a regular basis.

3. DESCRIPTION OF THE ACTIVITY

Environmental Impact Assessment for the proposed clearance of 6ha of indigenous vegetation, of which 5ha is located within a critical biodiversity area for the proposed establishment of a mixed use township development with associated services on a Portion Of The Remaining Extent Of Portion 25 Of The Farm Rietfontein 372JQ; Kgetlengrivier Local Municipality; Derby, Northwest Province.

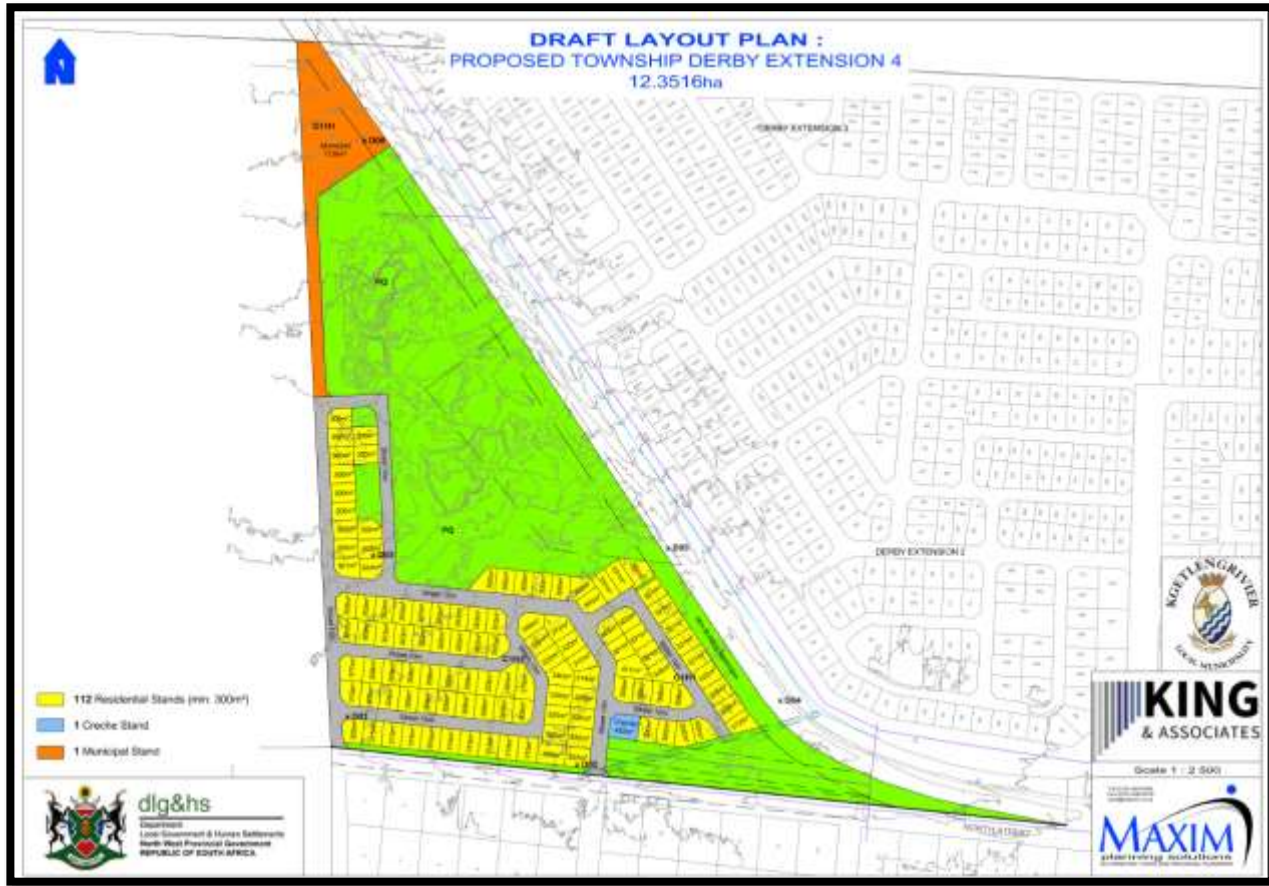


Figure1: Proposed Layout Plan

The development is proposed to comprise of:
Residential 112 Erven (300sq.m minimum)
Institutional: 1 Crèche
Municipal: 1
Roads

According to the Civil Engineer's report Services will connect to municipal infrastructure and is proposed as follows:

Water:

Water source and bulk water infrastructure:

There is an existing municipal owned water reticulation system installed in Derby Extension 2, the system consists of elevated storage and reticulation pipes. The system is fed by boreholes. The proposed Derby Extension 4 development can connect

directly to this system. Certain upgrades will have to be identified by the Kgetleng Rivier Local Municipality to accommodate the extra demand.

Water Demand

The water demand for the proposed development will be based on Table 9.11 and Table 9.14 of the “Guidelines for Human Settlement Planning and Design” – Red Book. Provision is made for full-flush sanitation and irrigation. The table below reflects the estimated water consumption from Table 9.11 and Table 9.14 to be applied once the development is approved:

Land Use	Units	Annual Average Daily Demand (AADD)	Water Demand (kℓ/d)
Residential 1 (Low Income)	112	800ℓ/day/unit	89.6
Creche	1	1400ℓ/day/unit	1.4
Municipal / Institutional	1	1200ℓ/day/unit	1.2
Total			92.2

Sewer:

Bulk Sewer

The existing sewerage reticulation in the area is partly non-functional. It is proposed to install a new packaged sewer treatment system for the proposed Derby Extension 4 development. Such system treats sewerage through biological process by manipulating oxygen levels in the sewerage. The plant is best situated along the northern extents of the proposed development to facilitate gravity flow towards the plant.

Sewerage Run-Off

The sewer flow for the proposed development will be estimated at 80% of the average daily water demand. Provision is made for full-flush sanitation.

The table below reflects the estimated sewer flow determined as indicated above.

Land Use	Units	Annual Average Daily Flow (AADF)	Sewerage Outflow (kℓ/d)
Residential 1 (Low Income)	112	640ℓ/day/unit	71.68
Creche	1	1120ℓ/day/unit	1.12
Municipal / Institutional	1	960ℓ/day/unit	0.96
Total			73.76

Internal Sewer Layout

The internal sewerage system will be designed to accommodate the average annual daily flow (AADF) and to service every unit and development structure within the development.

The topography found at the proposed development is of such a nature that all sewerage will be adequately transported via a gravity line to the proposed sewer treatment plant situated in the northern corner of the development.

Storm-water

There is no formal storm water system to connect to in the vicinity. It is proposed that new field inlets be constructed with energy breakers to discharge storm water from low points towards natural undeveloped areas along the eastern border of the proposed development.

Internal Layout

The natural drainage pattern of the terrain is towards north-east. The area drains via sheet flow.

The storm water design will be done in accordance with the "Guidelines for Human Settlement Planning and Design" compiled under the patronage of the Department of Housing by the CSIR, DWAF and design specifications of the Local Authority.

Run-off and peak flow rates will be calculated according to selected return periods and outflow points. The 1:50-year recurrence interval will be used for the major system design and the 1:5-year recurrence interval will be used for storm water design of the subsurface system. A formal drainage system of pipes or canals will be provided to convey storm water and to discharge this water into natural water courses or similar systems connecting to natural water courses near the proposed development.

Erosion protection will either be in the form of open drains and shallow side drains, or they could consist of standard municipal type kerbs or mountable kerbs. Energy dissipaters will be provided at the lower end of each watercourse and at sites where the drainage is diverted away from roads.

The drainage system will be designed to minimize the impact of the development on the storm water characteristics of the property and adjacent properties by utilizing:

- Surface drainage where possible.
- Sub-surface (underground) pipe systems to convey storm water from higher laying areas.
- Erosion protection, stabilisation of erodible materials, and sediment control.
- Retention where applicable.

Solid Waste

The solid waste that will be generated by the proposed development will be in the region of 2000kg of solid waste per week. The Kgetleng Rivier Local Municipality can collect the waste on a weekly basis.

Site Access:

The development will gain access from the existing road network.

4. DESCRIPTION OF THE PROPERTY

The property is located on a Portion Of The Remaining Extent Of Portion 25 Of The Farm Rietfontein 372JQ; Kgetlengrivier Local Municipality; Derby, Northwest Province.

The proposed development falls within the Kgetlengrivier Local Municipality area of jurisdiction and is situated in the town of Derby, directly to the easts of Derby X2 development.

Although the site is located within a CBA, the area has been highly disturbed in the past. Photographs 1- 4 indicates: informal developments, diggings and extensive informal dumping at large parts of the site have led to extensive transformation, modification and degradation of vegetation at the site. Indigenous grass species, forbs and a few shrubs or small trees remain at some isolated patches at the site. The alien invasive tree species *Acacia decurrens* and the alien invasive reed species, *Arundo donax* are present at the site. Alien invasive weeds are conspicuously abundant at the site. There is little scope for the site to be part of a corridor of particular conservation importance.

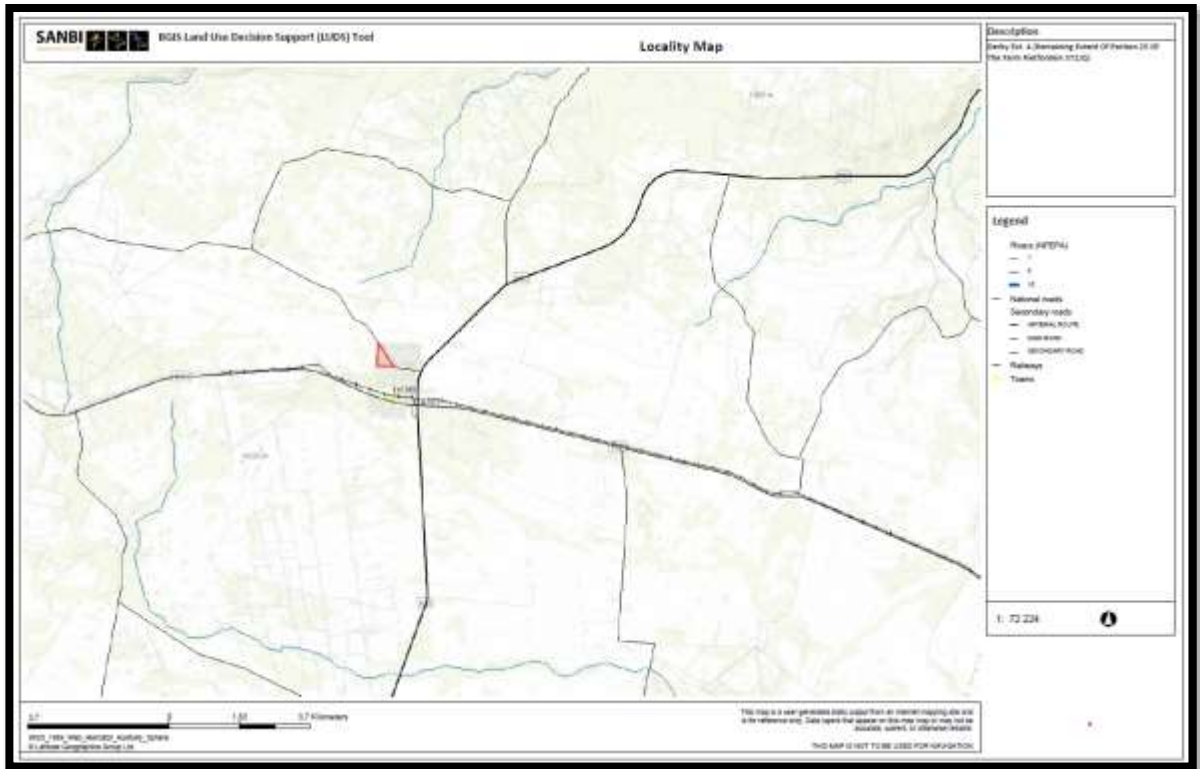


Figure 2: Locality Map

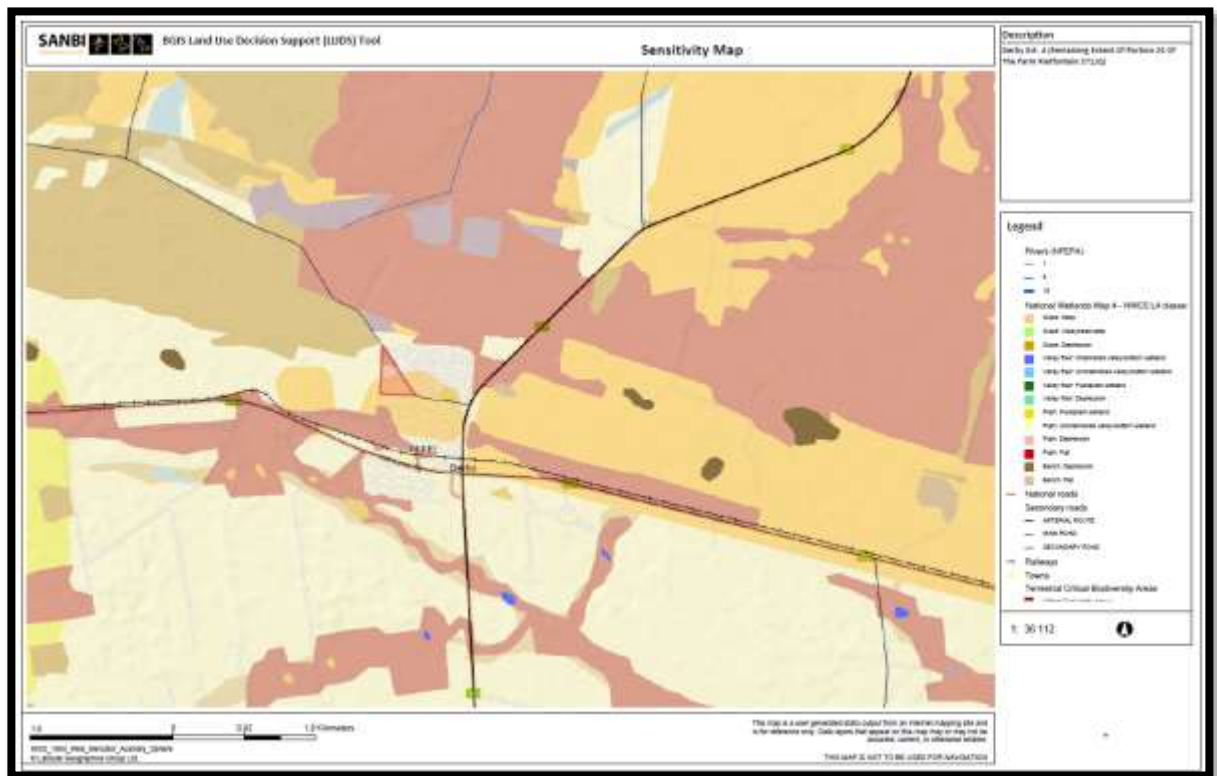


Figure 3: Sensitivity Map



Photograph 1: Informal housing at the site



Photograph 2: Informal dumping at the site



Photograph 3: Old diggings



Photograph 4: Tracks and informal dumping

The Surveyor-general 21-digit site reference number is:

T	0	J	Q	0	0	0	0	0	0	0	0	0	3	7	2	0	0	0	2	5
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Landowner:	Kgetlengrivier Local Municipality		
Contact person:			
Postal address:	PO Box 66, Koster		
Postal code:	0348	Cell:	na
Telephone:	014 543 2004	Fax:	014 5432 480
E-mail:	mogomotsir@kgetlengrivier.gov.za		

In instances where there is more than one landowner, please attach a list of landowners with their contact details to this application.

Local authority in whose jurisdiction the proposed activity will fall:	Kgetlengrivier Local Municipality
Municipal Ward No:	8
Nearest town or districts:	Derby
Contact person:	J. Mogale

Postal address:	PO Box 66, Koster		
Postal code:	0348	Cell:	na
Telephone:	014 543 2004	Fax:	014 5432 480
E-mail:	mogomotsir@kgetlengrivier.gov.za		

Site Co-ordinates

	Latitude (S):			Longitude (E):		
Alternative S1 (preferred or only site alternative)	25°	54'	12.44"	27°	2'	15.53"
Alternative S2 (if any)	o	'	"	o	'	"
Alternative S3 (if any)	o	'	"	o	'	"

5. LEGAL AND OTHER REQUIREMENTS

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Environmental Management Act No. 107 of 1998 as amended.	NEMA is the guiding legislation that has been considered during the Environmental Impact Assessment process and the compilation of this Scoping Report.	NW:DEDECT	27 November 1998
The Bill of Rights, Constitution of South Africa, Section 27 (1)(b)	<p>The Constitution of the Republic of South Africa is the legal source of all law, including environmental law, in South Africa. The Bill of Rights is fundamental to the Constitution of South Africa and in, section 24 of the Act, it is stated that:</p> <p>Everyone has the right (a) to an environment that is not harmful to their health or well-being; and (b) to have the environment protected, for the benefit of present and future generations through reasonable legislative and other measures that (i) prevent pollution and ecological degradation; (ii) promote conservation; and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.</p> <p>Given that environmental management is founded partly on the principles of public participation, Section 195 of the Constitution is of primary relevance:</p> <p>(1) Public administration must be governed by the democratic values and</p>	National Government	1994

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	<p>principles enshrined in the constitution, including the following principles: (a) (b) (c) (d) (e) Peoples needs must be responded to, and the public must be encouraged to participate in policymaking. (f) Public administration must be accountable. (g) Transparency must be fostered by providing the public with timely, accessible and accurate information (Government Gazette, 1996).</p>		
New Regulations 2014 in terms of NEMA	<p>Legislation consulted during the environmental impact assessment process to determine whether any listed activities would be triggered. The Regulations were also consulted to determine inter alia the requirements regarding the contents of Scoping reports and the public participation process that should be followed.</p>	NW: DEDECT	7 April 2017
National Water Act (36 OF 1998)	<p>National Water Act (NWA), 1998 (Act 36 of 1998) is the primary statute providing the legal basis for water management in South Africa and has to ensure ecological integrity, economic growth and social equity when managing and using water.</p> <p>The major objectives of the National Water Act are to:</p> <ul style="list-style-type: none"> •Aid in providing basic human needs; •Meet the growing demand of water in a sustainable manner; •Ensure equal access to water and use of water resources; •Protect the quality of water of natural resources; •Ensure integrated management of water resources; •Foster social and economic development; and •Conserve aquatic and related ecosystems. <p>Section 19 of the National Water Act states that the person responsible for land upon which any activity is or was performed which causes, has caused or is likely to cause, pollution of a water resource, must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring.</p>	Department of water and sanitation	1998
National Environmental Management: Biodiversity Act (NEMBA) (ACT NO. 10 OF 2004)	<p>The National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004), provides for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the fair</p>	NW: DEDECT	2004

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	<p>and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources; the establishment and functions of a South African National Biodiversity Institute; and for matters connected therewith.</p> <p>In terms of Chapter 4 of the Above Act:</p> <p>52. (1) (a) The Minister may, by notice in the Gazette, publish a national list of ecosystems that are threatened and in need of protection.</p> <p>(b) An MEC for environmental affairs in a province may, by notice in the Gazette, publish a provincial list of ecosystems in the province that are threatened and in need of protection.</p> <p>(2) The following categories of ecosystems may be listed in terms of subsection:</p> <p>(a) critically endangered ecosystems, being ecosystems that have undergone severe degradation of ecological structure, function or composition as a result of human intervention and are subject to an extremely high risk of irreversible transformation;</p> <p>(b) endangered ecosystems, being ecosystems that have undergone degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems;</p> <p>(c) vulnerable ecosystems, being ecosystems that have a high risk of undergoing significant degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems or endangered ecosystems; and</p> <p>(d) protected ecosystems, being ecosystems that are of high conservation value or of high national or provincial importance, although they are not listed in terms of paragraphs (a), (b) or (c).</p> <p>(3) A list referred to in subsection (1) must describe in sufficient detail the location of each ecosystem on the list.</p> <p>53 (1) The Minister may, by notice in the Gazette, identify any process or activity in</p>		

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	<p>a listed ecosystem as a threatening process.</p> <p>(2) A threatening process, identified in terms of subsection (1) must be regarded as a specified activity contemplated in section 24(2)(b) of the National Environmental Management Act (1998) and a listed ecosystem must be regarded as an area identified for the purpose of that section.</p>		
<p>National Environmental Management: Protected Areas Act (ACT NO. 57 OF 2003)</p>	<p>This Act aims to provide for a national system of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity. The Protected Areas Act tries to ensure the protection of the entire range of biodiversity, referring to natural landscapes and seascapes. The Act makes express reference to the need to move towards Community Based natural Resource Management (CBNRM) as its objectives include promoting the participation of local communities in the management of protected areas. The purpose of the Act is:</p> <ul style="list-style-type: none"> •To protect ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes and their ecological integrity. •To conserve biodiversity in those areas; •To protect South Africa's rare species; •To protect vulnerable or ecologically sensitive areas; •To assist in ensuring the sustained supply of environmental goods and services; •To provide for the sustainable use of natural and biological resources; •To create or augment destinations for nature-based tourism; •To manage the interrelationship between natural environmental biodiversity, human settlement and economic development; •To contribute to human, social, cultural, spiritual and economic development; •To rehabilitate and restore degraded ecosystems and promote the recovery of endangered and vulnerable species. <p>This Act further stipulates various criteria which must be met before an area can be declared as a special nature reserve, national park, nature reserve and protected environment. It also prescribes a range of procedures, including consultation and public participation procedures which must be followed</p>	<p>National Department of Environmental Affairs</p>	<p>2003</p>

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	before any of the kinds of protected areas are declared.		
National Heritage Resources Act, Act No. 25 of 1999	Legislation consulted during the impact assessment process, to determine the legal requirements relating to the management of heritage resources that are present in and around the site.	SAHRA	1999
National Environmental Management: Waste Act, Act No. 59 of 2008, DEDECT together with the List of Waste Activities that Have, or are Likely to Have, a Detrimental Effect on the Environment, GN No. 921 of 29 November 2013	Legislation consulted to determine whether a waste licence will have to be obtained for the development.	NW:DEDECT Waste Section	2008
<i>National Environmental Management: Air Quality Act (Act 39 of 2004)</i>	To protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social Development. Construction activities may cause some air pollution.	Department of Environmental Affairs: Directorate Air quality management	2004
<i>The Conservation of Agricultural Resources Act (Act 43 of 1983)</i>	This Act regulates the flow pattern of runoff water, control of weeds and invader plants.	NW: Department of Agriculture	1983
<i>National Veldt and Forest Fire Act (Act 101 of 1998)</i>	Chapter 4 places a duty on owners to prepare and maintain firebreaks.	Department of Agriculture, Forestry and Fisheries	1998
<i>National Forests Act, Act 84 of 1998 (NFA) DEDECT with GN1602 of December 2016.</i>	During the construction phase of the development certain protected trees may be affected. Licences will have to be obtained from the Minister before the affected trees may be cut, disturbed, damaged or destroyed. GN1602 of December 2016 contains the list of protected trees.	Department of Agriculture, Forestry and Fisheries	1998
<i>Occupational Health and Safety Act (Act 85 of 1993)</i>	To provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery and the protection of persons other than persons at work against hazards to health.	Department of Employment and labour	1993

5.2 (i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and

(ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments explanation of how the proposed development complies with and responds to the legislation and policy context

1. Is the activity permitted in terms of the property's existing land use rights?	YES	NO	Please explain
The application that will be submitted to the Local Municipality will be for the change of use from agricultural to mixed use residential, municipal and crèche			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES	NO	Please explain
<p>In terms of the North West Provincial Spatial Development Framework, 2009, the following spatial vision, aims and interpretation thereof were identified:</p> <ul style="list-style-type: none"> ▫ Develop economic sectors and spatial localities in accordance with people's need and potential; ▫ Deliver on the Constitutional obligation to provide basic services to all citizens; ▫ Address past and current social inequalities in specific areas by focusing on people and places; ▫ Offer the poor access to opportunities to exercise choices in improving their quality of life and work together towards a single and integrated economy in a dignified manner; and ▫ Protect the integrity of the natural resources base and use the natural resource base of the province in a sustainable manner. <p>The aim and interpretation in relation to "Housing" within the North West Provincial Spatial Development Framework are as follows:</p> <ul style="list-style-type: none"> ▫ To reduce the number of households living under unsustainable conditions with 10% per annum; ▫ The eradication of informal settlements by 2014; ▫ Promoting densification and integration; ▫ Enhance the location of new housing projects in line with recommendations of the NSDP principles; ▫ Supporting Urban Renewal and Inner City Regeneration programmes; ▫ Developing supporting social and economic infrastructure with all new housing projects 			
(b) Urban edge / Edge of Built environment for the area	YES	NO	Please explain
The area is located within the Urban edge of Derby.			
(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	YES	NO	Please explain
<p>The focus and definition of the existing urban nodes within the Kgetlengrivier Local Municipality must be viewed in relation to its function, locality and sphere of influence within the sub-region. The function and definition of the urban nodes of Koster/Reagile; Derby/Redirile and Rodeon/Borolelo is informed by the following:</p> <ul style="list-style-type: none"> • The Northwest Province Spatial Development Framework (2009) has identified the respective urban nodes of Kgetlengrivier Local Municipality as tertiary nodes which are the lowest in the hierarchical classification of the North 			

<p>West Province. Although these concentrations fulfil an important local function, it is not viewed as major sub regional or provincial nodal areas, which could have the implication that economic and other intervention from Provincial level within these nodes will be minimized. Priority will be given to primary-and secondary urban nodes.</p> <ul style="list-style-type: none"> • However there is still a need for formal housing in Derby and the development will address this need and also provide a crèche. 			
(d) Approved Structure Plan of the Municipality	YES	NO	Please explain
No Approved structure Plan in place.			
(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	YES	NO	Please explain
This area does not form part of an approved EMF adopted by the Department.			
(f) Any other Plans (e.g. Guide Plan)	YES	NO	Please explain
<p>The Spatial Planning and Land Use Management Act, Act 16 of 2013, (SPLUMA) came into operation on the 1st of July 2015 and has changed the Planning profession to such an extent that Planning can no longer be used as a tool to separate people and communities. The objectives are:</p> <ul style="list-style-type: none"> • <i>provide for a uniform, effective and comprehensive system of spatial planning and land use management for the Republic;</i> • <i>ensure that the system of spatial planning and land use management promotes social and economic inclusion;</i> • <i>provide for development principles and norms and standards;</i> • <i>provide for the sustainable and efficient use of land;</i> • <i>provide for cooperative government and intergovernmental relations amongst the national, provincial and local spheres of government; and</i> • <i>Redress the imbalances of the past and to ensure that there is equity in the application of spatial development planning and land use management systems.</i> <p>SPLUMA's desired outcomes:</p> <ul style="list-style-type: none"> ▪ Coherent regulatory framework; ▪ Constitutional synergy (clear delineation, distribution & allocation of powers among spheres); ▪ Predictable and transparent regulatory system; and ▪ Clear, rational and efficient inter-linkages of sectoral and intersphere planning tools and policies. 			

The following guidelines are given for Land Use Management:

- Land resources are used for a variety of purposes which interact and may compete with one another; therefore, it is desirable to plan and manage all uses in an integrated manner.
- Land use management examines all uses of land in an integrated manner, it makes it possible to minimize conflicts, to make the most efficient trade-offs and to link social and economic development with environmental protection and enhancement, thus helping to achieve the objectives of sustainable development.
- The essence of the integrated approach finds expression in the coordination of the sectoral planning and management activities concerned with the various aspects of land use and land resources.
- Integration should consider all environmental, social and economic factors.
- Integrated consideration facilitates appropriate choices and trade-offs, thus maximizing sustainable productivity and use.

The broad objective is to facilitate allocation of land to the uses that provide the greatest sustainable benefits and to promote the transition to a sustainable and integrated management of land resources.

3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?	YES	NO	Please explain
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The Integrated Development Plan consists mainly of broad strategies and projects guiding and integrating capital investment, focussed development in the areas of inter alia planning, environmental programmes, economic development, transport, waste management, and services, etc. The purpose of an Integrated Development Plan is to increase the municipal performance in terms of the pre-determined vision.

4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)	YES	NO	Please explain
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All three spheres of government to give priority to the needs of the poor in respect of housing development. In addition, all three spheres of government must ensure that housing development:

- Provides as wide a choice of housing and tenure options as is reasonably possible;
- Is economically, fiscally, socially and financially affordable and sustainable;
- Is based on integrated development planning; and
- Is administered in a transparent, accountable and equitable manner, and upholds the practice of good governance.

Policies for Kgetlengrivier specifically:

The following housing related issues present immediate challenges that require tailor-made policy intervention and the adoption of policies that will influence the Housing Sector Plan:

- Housing allocation policy for municipal rental accommodation and subsidized housing.
- Registration of all residents and properties including applicants for housing assistance into a computerized housing data base.
- Maximization of sources of housing finance to ameliorate the housing conditions of low – income areas.
- Management and control of the spread of informal settlements, land invasion and evictions from land.

<input type="checkbox"/> Promotion of integrated housing development. <input type="checkbox"/> Prevention of illegal letting and sale of subsidized houses.			
5. Is this project part of a national programme to address an issue of national concern or importance?	YES	NO	Please explain
<p>All three spheres of government to give priority to the needs of the poor in respect of housing development. In addition, all three spheres of government must ensure that housing development:</p> <input type="checkbox"/> Provides as wide a choice of housing and tenure options as is reasonably possible; <input type="checkbox"/> Is economically, fiscally, socially and financially affordable and sustainable; <input type="checkbox"/> Is based on integrated development planning; and <input type="checkbox"/> Is administered in a transparent, accountable and equitable manner, and upholds the practice of good governance.			
6. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)	YES	NO	Please explain
The respective farm portion which is proposed to be formalized for housing is directly adjacent from the primary urban concentration.			
7. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	YES	NO	Please explain
Not listed.			

8. What will the benefits be to society in general and to the local communities?	Please explain
<p>The proposed development will:</p> <ul style="list-style-type: none"> ● During the construction phase of the proposed development, employment opportunities will be created and thus decrease the unemployment rate of the area. Part of the adjudication process for the successful contractor to undertake the civil works will be the use of casual and unskilled labour to stimulate local job creation using labour intensive construction methods where possible. Specific tasks have been identified as being suited to labour intensive construction (e.g. excavation of sewer trenches, laying and back filling of pipes, steel fixing, construction of storm water trenches, re-instate vegetation programs etc.). Approved training will be provided to the contractor's staff where needed. ● The following housing related issues present immediate challenges that require tailor-made policy intervention and the adoption of policies that will influence the Housing Sector Plan of the Kgetlengrivier LM: <ul style="list-style-type: none"> ➤ Housing allocation policy for municipal rental accommodation and subsidized housing. ➤ Registration of all residents and properties including applicants for housing assistance into a computerized housing data base. ➤ Maximization of sources of housing finance to ameliorate the housing conditions of low – income areas. ➤ Management and control of the spread of informal settlements, land invasion and evictions from land. ➤ Promotion of integrated housing development. ➤ Prevention of illegal letting and sale of subsidized houses. ● The site is located within the Urban Edge of the Municipality and is situated in an area that is transitioning to a residential character. The proposed development will attribute to accelerate housing delivery within the context of sustainable human settlements as it aims to create viable residential stands within the urban edge of Derby. ● The proposed development will formalize an area which has already been highly disturbed on which informal settlement has already started taking place. The developmen will alleviate the housing shortage in the area as well as provide job opportunities during all phases and thus the unemployment rate of the area will be reduced ● During the operational phase of the proposed development, additional employment opportunities will be created. ● The tax base of the Kgetlengrivier Local Municipality will be broadened. 	
9. Any other need and desirability considerations related to the proposed activity?	Please explain
Nothing that has not already been addressed.	
10. How does the project fit into the National Development Plan for 2030?	Please explain
<p>The National Development Plan was compiled by the National Planning Commission in 2011. The vision of the plan is that South Africa will write a new story where the nation's energies are focused both on attacking poverty and expanding a robust, entrepreneurial and innovative economy. Over the next two decades and beyond, communities will need the resources and capabilities to become their own engines of development and government must support this. Government has to ensure that poor people have the environment, services and skills to improve their lives. At the same time, government must create the conditions and environment for higher levels of public and private investment to create jobs and ensure rising incomes.</p>	

The national development plan proposes to invigorate and expand the economic opportunity through investment in infrastructure, more innovation, private investment and entrepreneurialism. The economy will absorb more labour – especially of new work seekers – and wage moderation at all levels will contribute to rising employment. Broadening these opportunities requires faster, more inclusive economic growth and higher levels of investment.

The opinion is being held that the proposed development will not be in conflict with the principles contained within the fore-mentioned National Development Plan, 2030 and will assist in moving closer to a ... *“South Africa that is more inclusive, more dynamic and in which the fruits of growth are shared equitably. In 2030, the economy should be close to full employment, equip people with the skills they need, ensure that ownership of production is more diverse and able to grow rapidly, and provide the resources to pay for investment in human and physical capital.”*

11. Please describe how the general objectives of Integrated Environmental Management as set out in Section 23 of NEMA as amended have been taken into account.

The IEM guidelines encourage a pro-active approach to sourcing, collating and presenting information in a manner that can be interpreted at all levels. The basic principles underpinning IEM are that there be:

informed decision-making;

- accountability for information on which decisions are taken;
- accountability for decisions taken;
- a broad meaning given to the term environment (i.e. one that includes physical, biological, social, economic, cultural, historical and political components);
- an open, participatory approach in the planning of proposals;
- consultation with interested and affected parties;
- due consideration of alternative options;
- an attempt to mitigate negative impacts and enhance positive aspects of proposals;
- an attempt to ensure that the ‘social costs’ of development proposals (those borne by society, rather than the developers) be outweighed by the ‘social benefits’ (benefits to society as a results of the actions of the developers);
- democratic regard for individual rights and obligations;
- compliance with these principles during all stages of the planning, implementation and decommissioning of the proposals (i.e. from ‘cradle to grave’); and
- the opportunity for public and specialist input in the decision-making process.

The general objectives of Integrated Environmental Management have been taken into account in this Basic Assessment report by means of identifying, predicting and evaluating the actual and potential impacts on the environment, socio-economic conditions and cultural considerations and cultural heritage component. The risks, consequences, alternatives as well as options for mitigation of activities have also been considered with a view to minimise negative impacts, enhance benefits and promote compliance within the principles of environmental management.

Additionally the Basic Assessment process will be undertaken to ensure I&APs have been afforded the opportunity to comment on the proposed activity and that their comments/inputs/concerns will be taken into consideration during the assessment process.

12. Please describe how the principles of environmental management as set out in Section 2 of NEMA as amended have been taken into account.

The principles of NEMA have been considered in this assessment through compliance with the requirements of the relevant legislation in undertaking the assessment of potential impacts, as well as through the implementation of the principle of sustainable development. In addition, the successful implementation and appropriate management of this project will ensure socio-economic upliftment.

This process will be undertaken in a transparent manner and all efforts will be made to involve interested and affected parties, stakeholders and relevant Organs of State such that an informed decision can be made by the Regulating Authority.

The study is conducted in such a way as to comply with the instructions regarding such studies and reports (as contained within the above-mentioned documents).

The following aspects have been dealt with:

SCHEDULE

Actions	Timeframe
1 Communication with authorities and source and analyse relevant baseline information and undertake site inspections	3 days
2 Compile Environmental Application Form for the project	2 days
3 Compile an <i>information requirements list</i> to be distributed to the project team. The Information required would assist with completion of the BAR.	2 days
4 Identify key interested and affected parties (I&APs)	1 day
5 Compilation of terms of reference for specialist studies	2 days
6 Commission specialist studies	1 day
7 Compile draft BAR and make available to the public for a 30 day commenting period and submit the application form to the competent authority. NB: According to the new Regulations a BAR must be submitted 90 days after the application has been submitted. The implication is that all information must be available within 80 days after submitting the Application.	3 days for compilation and 30 days for commenting period (The competent authority has 90 days to request additional information or to refuse the application, from the date of submission)
8 Prepare an Information Sheet (summary of the draft BAR) and distribute to I&APs	1 day
9 Compile and publish media notices (for the BAR) in relevant newspapers	7 – 10 days depending on the day the newspaper is published
10 Compile and place poster/s along the boundary of the site	1 day
11 Hold a public meeting / Open House / focus meeting with I&APs	1 day

12 Receive and address first round of comments from public	3 days
13 Should the draft BAR require substantial changes, these changes will be incorporated into the draft BAR and distributed	Included above (allow an additional 50 days to include #14 below)
14 Allow the identified public to provide comment within a 30 day period on above report.	3 days for compilation and 30 days for commenting period (Competent authority has an additional 50 days)
15 Address comments received on the draft BAR, Finalise BAR and update comments and response table; finalise Basic Assessment Report and submit to authorities	5 days
16 Submit final BAR to authorities for a final decision	1 day, The department has 107 days from the date of receipt to review and come to a final decision.
17 Once the decision is issued, all I&Ps must be formally informed of the decision	20 days
TOTAL AMOUNT OF DAYS:	197 days

6. NEED AND DESIRIBILITY

Section 2 of the Housing Act, No. 107 of 1997, compels **all three spheres of government** to give priority to the needs of the poor in respect of housing development. In addition, all three spheres of government must ensure that housing development:

- Provides as wide a choice of housing and tenure options as is reasonably possible;
- Is economically, fiscally, socially and financially affordable and sustainable;
- Is based on integrated development planning; and
- Is administered in a transparent, accountable and equitable manner, and upholds the practice of good governance.

The following housing related issues present immediate challenges that require tailor-made policy intervention and the adoption of policies that will influence the Housing Sector Plan of the Kgetlengrivier LM:

- Housing allocation policy for municipal rental accommodation and subsidized housing.
- Registration of all residents and properties including applicants for housing assistance into a computerized housing data base.
- Maximization of sources of housing finance to ameliorate the housing conditions of low – income areas.
- Management and control of the spread of informal settlements, land invasion and evictions from land.
- Promotion of integrated housing development.
- Prevention of illegal letting and sale of subsidized houses.

The site is located within the Urban Edge of the Municipality and is situated in an area that is transitioning to a residential character. The proposed development will attribute to accelerate housing delivery within the context of sustainable human settlements as it aims to create viable residential stands within the urban edge of Derby.

The proposed development will formalize an area which has already been highly disturbed on which informal settlement has already started taking place. The developmen will alleviate the housing shortage in the area as well as provide job opportunities during all phases and thus the unemployment rate of the area will be reduced.

7. ALTERNATIVES

One of the objectives of a BA is to investigate alternatives to the proposed project. The IEM procedure stipulates that the environmental investigation needs to consider feasible alternatives for any proposed development. Therefore, a number of possible proposals or alternatives for accomplishing the same objectives should be identified and investigated. In order to ensure that the proposed development enables sustainable development, *feasible* alternatives must be explored (S. Cliff, 2015).

The identification, description, evaluation and comparison of alternatives are important for ensuring a sound environmental scoping process. Alternatives should be considered as a *norm* within the Environmental Process (S. Cliff, 2015).

Alternatives have been considered in terms of EIA Regulation, 2014 Appendix 1(h). Alternatives considered includes a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative have also been included to act as a baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes, etc.) or both is appropriate have been informed by the specific circumstances of the activity and its environment.

7.1 FEASIBLE AND REASONABLE ALTERNATIVES

“alternatives”, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

- (a) the property on which or location where it is proposed to undertake the activity;**
- (b) the type of activity to be undertaken;**
- (c) the design or layout of the activity;**
- (d) the technology to be used in the activity;**
- (e) the operational aspects of the activity; and**
- (f) the option of not implementing the activity.**

a) **Site alternatives**

List alternative sites, if applicable.

Site Alternatives	Description
Alternative Site 1 (preferred or only site alternative)	Proposed clearance of 6 ha of indigenous vegetation, of which 5ha is located within a critical biodiversity area for the proposed establishment of a mixed use township development with associated services on a Portion Of The Remaining Extent Of Portion 25 Of The Farm Rietfontein 372JQ; Kgetlengrivier Local Municipality; Derby, Northwest Province. (Only site alternative)
Alternative Site 2	

d) **Activity alternatives**

Alternatives	Description
Alternative 1 (preferred or only alternative)	Establishment of a mixed use development (6ha) with associated services on a Portion Of The Remaining Extent Of Portion 25 Of The Farm Rietfontein 372JQ; Kgetlengrivier Local Municipality; Derby.
Activity Alternative 2	Establishment of an Industrial development (6ha) with associated services on a Portion Of The Remaining Extent Of Portion 25 Of The Farm Rietfontein 372JQ; Kgetlengrivier Local Municipality; Derby

e) **No-go alternative**

Should this option be implemented, the “*status-quo*” will prevail and none of the advantages listed below will realize.

f) **Please motivate for preferred site, activity and technology alternative**

Alternative 1: Establishment of a mixed use development (6ha) with associated services on a Portion Of The Remaining Extent Of Portion 25 Of The Farm Rietfontein 372JQ; Kgetlengrivier Local Municipality; Derby.

Section 2 of the Housing Act, No. 107 of 1997, compels **all three spheres of government** to give priority to the needs of the poor in respect of housing development. In addition, all three spheres of government must ensure that housing development:

- Provides as wide a choice of housing and tenure options as is reasonably possible;
- Is economically, fiscally, socially and financially affordable and sustainable;
- Is based on integrated development planning; and
- Is administered in a transparent, accountable and equitable manner, and upholds the practice of good governance.

The following housing related issues present immediate challenges that require tailor-made policy intervention and the adoption of policies that will influence the Housing Sector Plan of the Kgetlengrivier LM:

- ▣ Housing allocation policy for municipal rental accommodation and subsidized housing.
- ▣ Registration of all residents and properties including applicants for housing assistance into a computerized housing data base.
- ▣ Maximization of sources of housing finance to ameliorate the housing conditions of low – income areas.
- ▣ Management and control of the spread of informal settlements, land invasion and evictions from land.
- ▣ Promotion of integrated housing development.
- ▣ Prevention of illegal letting and sale of subsidized houses.

The site is located within the Urban Edge of the Municipality and is situated in an area that is transitioning to a residential character. The proposed development will attribute to accelerate housing delivery within the context of sustainable human settlements as it aims to create viable residential stands within the urban edge of Derby.

The proposed development will formalize an area which has already been highly disturbed on which informal settlement has already started taking place. The developmen will alleviate the housing shortage in the area as well as provide job opportunities during all phases and thus the unemployment rate of the area will be reduced.

The proposed development will also promote integration of areas and infill development as the development will be integrated within the remits of Derby following development and effectively uses the land in the urban edge for infill planning and development.

The proposed development will also ensure that:

- The housing shortage of the area will be partially addressed.
- During the construction phase of the proposed development, employment opportunities will be created and thus decrease the unemployment rate of the area.
- During the operational phase of the proposed development, additional employment opportunities will be created.

The tax base of the Local Municipality will be broadened.

Alternative 2: Establishment of an Industrial development (6ha) with associated services on a Portion Of The Remaining Extent Of Portion 25 Of The Farm Rietfontein 372JQ; Kgetlengrivier Local Municipality; Derby

This alternative will not be acceptable as the area is located within an area that has a residential character. The increased noise and possible emissions associated with this alternative has rendered it unfeasible and therefore it is recommended that Alternative 1 be implemented.

Alternative 3: The “no-go” option.

The no-go alternative will entail that the status quo will remain.

The influx of people to Derby implies that the demand for housing is increasing. Should the no-go option be implemented, this demand will not be partially addressed in Derby.

8. DESCRIPTION OF THE ENVIRONMENT THAT MAY BE AFFECTED BY THE PROJECT

8.1 BIO-PHYSICAL ASPECTS

8.1.1 GEOLOGY & SOILS

The site is underlain by Pretoria Group sediment comprising the typical slastone or iron rich shale or slate of the Strubenkop formation, Pretoria Group, Transvaal Supergroup, underlain by Hekpoort formation andesitic lava. Surficial deposits include the colluvium covering the lithology.

No dolomite occurs in the area and no stability investigation is required.

The laboratory tests indicated a highly collapse potential and compressibility of the colluvium, with a medium to very high heave potential of the material towards the drainage channel (according to the method of Van der Merwe, 1964). Clay percentages ranged from 4 to 20% for the aeolian sand and up to 37% for the clayey material associated with the drainage channel, with plasticity indexes up to 38 and linear shrinkage percentages of up to 15,5%.

8.1.2 TOPOGRAPHY

The site is located on a shallow slope towards the north, with a large quarry or waste dump presented in the centre portion of the site.

8.1.3 CLIMATE

The area is characterized by summer rainfall with thunderstorms, with annual rainfall figures of 685 mm (Rustenburg Agriculture) and 703 mm (Buffelspoort) recorded at the closest weather stations to the site. Winters are dry with frost common. The warmest months are normally December and January and the coldest months are June and July. Extreme climatic events may have an influence on the project during the construction and operation phase and will have to be considered.

Month	Rainfall (mm)	Min temp (°C)	Max temp (°C)	Average frost dates
Jan	109.9	16.6	29.8	Start date: 24/05 End date: 38/8 Days with frost: 32 Heat units (hrs > 10°C) Summer (Oct-Mar): 2213 Winter (Apr-Sept): 796
Feb	89.7	16.3	29.2	
Mar	76.6	14.5	28.2	
Apr	40.2	10.7	25.7	
May	18.0	5.6	23.0	
Jun	6.5	2.0	20.4	
Jul	6.2	1.8	20.8	
Aug	6.5	4.0	23.6	
Sep	14.2	8.6	27.0	
Oct	51.9	12.7	28.8	
Nov	97.1	14.6	28.7	
Dec	102.2	15.8	29.4	
Year	619.0 mm	18.2°C (Average)		

Table 1: Climate Data

The variability of rainfall as well as high intensity events can influence the project. Prolonged wet spells may affect the proposed development as excess water may accumulate on uneven portions. During extremely dry spells, the possibility of dust generation, as well as the detrimental effects on vegetation, will have to be taken into consideration. Droughts occur as part of the long-term climatic cycles throughout the country.

The influence of temperature on the project is considered as very low and of very little significance, whilst the project cannot influence this variable. This variable will only play a minor role during the different phases of the project. Because extremely high temperatures may occur, (mostly during dry spells) the adverse effects due to temperature will be negative in relation to the project; however, the general nature of the average conditions will on the other hand be positive. The impacts should therefore be considered as “variable”. It is important to ensure proper management steps are taken in the different phases of the project. The influence of the environment on the project during these phases is considered positive, as extreme events are rare.

Wind

The average wind direction for the area during the summer months is from the north-to-north-easterly quadrant, while during the early spring the direction is more north-westerly. Southerly winds may occur during the winter, but are not frequent. Normally very little wind is experienced during the winter due to the presence of the high-pressure cell situated over the central part of the country during that time of the year.

The wind speeds are normally fairly low, but high wind speeds may occur during early spring and during the passing of thundershowers.

Climate Change

According to: WIREs Clim Change 2014, 5605-620. Doi:10.1002/wcc.295: “Climate change is a key concern within South Africa. Mean annual temperatures have increased by at least 1.5 times the observed global average of 0.65°C over the past five decades and extreme rainfall events have increased in frequency. These changes are likely to continue. Climate change

poses a significant threat to South Africa's water resources, food security, health, infrastructure, as well as its ecosystem services and biodiversity. Considering South Africa's high levels of poverty and inequality, these impacts pose critical challenges for national development. In relation to water, impact studies for the water resources sector have begun to look beyond changes in streamflow to changes in the timing of flows and the partitioning of streamflow into baseflows and stormflows, reservoir yields, and extreme hydrological events. Spatially the eastern seaboard and central interior of the country are likely to experience increases in water runoff. Higher frequencies of flooding and drought events are projected for the future. Complexities of the hydrological cycle, influences of land use and management and the linkages to society, health, and the economy indicate far higher levels of complexity in the water resources sector than in other sectors. What has emerged is that land uses that currently have significant impacts on catchment water resources will place proportionally greater demands on the catchment's water resources if the climate were to become drier. The influence of climate change on water quality is an emerging research field in South Africa, with assessments limited to water temperature and non-point source nitrogen and phosphorus movement. A critical interaction that has not been explored is between changes in water quality and quantity and the combined impacts, such changes might have impact on various types of water use, e.g., irrigation, domestic consumption, or aquatic ecosystems support".

8.1.4 SURFACE DRAINAGE

The site is located on a moderate to shallow slope towards the north. Plate flow is the dominant drainage pattern on site, and no drainage channel intersects the site. Drainage occurs in a northerly direction towards the Selons River and later the Elands River

Absence of wetlands

Wetlands such as floodplain wetlands, channelled valley-bottom wetlands, unchannelled valley-bottom wetlands, depressions, seeps and wetland flats appear to be absent at the site. In conclusion no wetlands are found at the site.

Erosion by sheet flow may occur in disturbed areas. Storm water drainage will have to be considered during the planning phase of the development and will have to be incorporated into the final layout plan. Special care must be taken to ensure adequate surface drainage to prevent the accumulation of water next to structures. Storm water diversion measures such as ponding pools are recommended to control peak flows during thunderstorms. All embankments must be adequately compacted and planted with grass to stop any excessive erosion and scouring of the landscape.

8.1.6 GROUND WATER

No seepage but the presence of perennial fluctuations of ground water were encountered on site, proving that a seasonal perched water table may exist. A ferruginised profile indicates that some perennial water level fluctuations occur.

Possible infiltration into the groundwater must be taken into account. During the construction phase, no spills of lubricants or construction worker sewage should be allowed to pollute the ground water. These aspects are addressed in the EMP.

8.1.7 FLORA

The study area is at the north-western parts of Derby, North West Province, South Africa. The study site is situated at the Grassland Biome which is represented by the Rand Highveld Grassland vegetation type (Mucina &

Rutherford, 2006). A brief overview of the vegetation type, which serves as an outline of the ecological context of the site, follows.

Gm11 Rand Highveld Grassland

Distribution: In South Africa the Rand Highveld Grassland (Gm 11) is found in areas between rocky ridges in the Gauteng, North-West, Free State and Mpumalanga Provinces. Altitude 1300-1635 m, but reaches 1760 m at places (Mucina & Rutherford 2006).

Vegetation and landscape features: Highly variable landscape with extensive sloping plains and a series of ridges slightly elevated over undulating surrounding plains. The vegetation is species-rich, wiry, sour grassland alternating with low, sour shrubland on rocky outcrops and steeper slopes (Mucina & Rutherford 2006). Most common grasses on the plains belong to the genera *Themeda*, *Eragrostis*, *Heteropogon* and *Elionurus*. High diversity of herbs, many of which belong to the Asteraceae, is also a typical feature. Rocky hills and ridges carry sparse (savannoid) woodlands with *Protea caffra* subsp. *caffra*, *Protea welwitschii*, *Acacia caffra* and *Celtis africana*, accompanied by a rich suite of shrubs among which the genus *Searsia* (especially *Searsia magalismontana*) is most prominent (Mucina & Rutherford 2006).

Important taxa of the Rand Highveld Grassland listed by Mucina & Rutherford (2006): Graminoids: *Ctenium concinnum*, *Cynodon dactylon*, *Digitaria monodactyla*, *Diheteropogon amplexans*, *Eragrostis chloromelas*, *Heteropogon contortus*, *Loudetia simplex*, *Monocymbium cerasiiforme*, *Panicum natalense*, *Schizachyrium sanguineum*, *Setaria sphacelata*, *Themeda triandra*, *Trachypogon spicatus*, *Tristachya biseriata*, *Tristachya rehmannii*, *Andropogon schirensis*, *Aristida aequiglumis*, *Aristida congesta*, *Aristida junciformis* subsp. *galpinii*, *Bewsia biflora*, *Brachiaria nigropedata*, *Brachiaria serrata*, *Bulbostylis burchellii*, *Cymbopogon caesius*, *Digitaria tricholaenoides*, *Elionurus muticus*, *Eragrostis capensis*, *Eragrostis curvula*, *Eragrostis gummiflua*, *Eragrostis plana*, *Eragrostis racemosa*, *Hyparrhenia hirta*, *Melinis nerviglumis*, *Melinis repens* subsp. *repens*, *Microchloa caffra*, *Setaria nigrirostris*, *Sporobolus pectinatus*, *Trichoneura grandiglumis*, *Urelytrum agropyroides*. Herbs: *Acanthospermum australe*, *Justicia anagaloides*, *Pollichia campestris*, *Acalypha angustata*, *Chamaecrista mimosoides*, *Dicoma anomala*, *Helichrysum caespititium*, *Helichrysum nudifolium* var. *nudifolium*, *Helichrysum rugulosum*, *Ipomoea crassipes*, *Kohautia amatymbica*, *Lactuca inermis*, *Macledium zeyheri* subsp. *zeyheri*, *Nidorella hottentotica*, *Oldenlandia herbacea*, *Rothea hirsuta*, *Selago densiflora*, *Senecio coronatus*, *Sonchus dregeanus*, *Vernonia oligocephala*, *Xerophyta retinervis*. Geophytic Herbs: *Boophone disticha*, *Cheilanthes hirta*, *Haemanthus humilis* subsp. *humilis*, *Hypoxis rigidula* var. *pilosissima*, *Ledebouria ovatifolia*, *Oxalis corniculata*. Succulent Herb: *Aloe greatheadii* var. *davyana*. Low Shrubs: *Anthospermum rigidum* subsp. *pumilum*, *Indigofera comosa*, *Searsia magalismontana*, *Seriphium plumosum*. Succulent Shrub: *Lopholaena coriifolia*. Geoxylic Suffrutex: *Elephantorrhiza elephantina*.

Note: The plant species listed above serve as an ecological context for the larger study area and most of these plant species are, in the case of this site, absent at the site.

The Ecological Specialist concluded the following in relation to the site: "Indigenous grass species, forbs and a few shrubs or small trees remain at some isolated patches at the site. Indigenous grass species include *Aristida congesta*, *Cynodon dactylon*, *Aristida congesta*, *Eragrostis curvula*, *Eragrostis chloromelas*, *Eragrostis superba*, and *Melinis repens*. Indigenous forbs include *Polydora poskeana*, *Ursinia nana*, *Bulbine narcissifolia*, *Acalypha angustata*, *Gazania krebsiana*, *Felicia muricata*, *Chamaecrista mimosoides*, *Chamaesyce inaequilatera*, *Conyza podocephala* and *Hilliardiella oligocephala*. Indigenous shrubs such as *Asparagus laricinus* and *Seriphium plumosum* are present. The herbaceous shrub *Gomphocarpus fruticosus* is also found at many parts of the site.

The alien invasive tree species *Acacia decurrens* and the alien invasive reed species, *Arundo donax* are present at the site. Conspicuous alien invasive herbaceous weeds at the site are *Flaveria bidentis*, *Alternanthera pungens*, *Gomphrena celosioides*, *Argemone ochroleuca*, *Schkuhria pinnata*, *Sonchus oleraceus*, *Chenopodium album*, *Tagetes minuta*, *Bidens pilosa*, *Bidens bipinnata*, *Coryza bonariensis*, *Datura ferox*, *Plantago lanceolata*, *Malva parviflora* and *Amaranthus hybridus*.

Vegetation at the site appears to be extensively degraded, modified and transformed at the site. Alien invasive weeds are common at the site. Threatened species appear to be absent. The scope for the site to be a corridor of particular conservation importance is small. The scope for the vegetation at the site to be restored and conserved is small. Ecological sensitivity at the site is Low (Figure 2)".

8.1.8 FAUNA

The fauna of the area is highly disturbed by the people living in the adjoining suburbs. The likelihood of the presence of larger mammals is doubtful. No listed species were identified during the fieldwork phase.

Vertebrates

Mammals

Since the site falls outside reserves, threatened species such as the black rhinoceros (*Diceros bicornis*) and the African wild dog (*Lycaon pictus*) are obviously not present. No smaller mammals of particular high conservation significance are likely to be found on the site as well.

Birds

With bird species which often have a large distributional range, their presence does not imply that they are particularly dependent on a site as breeding location. Literature sources that were mainly consulted are Barnes (2000), Hockey, Dean & Ryan, P.G. (2005) and Chittenden (2007). No threat to any threatened bird species or any bird species of particular conservation importance are foreseen.

Reptiles

The Southern African Reptile Conservation Assessment (SARCA) was launched in May 2005 (Branch, Tolley, Cunningham, Bauer, Alexander, Harrison, Turner & Bates, 2006). Its primary aim is to produce a conservation assessment for reptiles of South Africa, Lesotho and Swaziland within a four year period, ending 2009 (Branch *et al.*, 2006). Therefore a full up-dated conservation assessment of reptiles, taking into account the recent IUCN (2001) criteria, will only be available in the near future. While the conservation statuses of reptile species are under revision Alexander & Marais (2007) as well as Tolley & Burger 2007) give useful indications of possible red listings in the near future. There appears to be no threat to any reptile species of particular high conservation importance if the site is developed.

Amphibians

No frog species that occur in the North West are listed as Threatened species (Vulnerable, Endangered or Critically Endangered) or Near Threatened species according to IUCN Amphibian Specialist Group (2013). Table 4.17 lists *Pyxicephalus adspersus* (Giant Bullfrog) as Least Concern globally. Suitable habitat for Giant Bullfrog at site appears to be absent.

Invertebrates

Butterflies

Studies about the vegetation and habitat of threatened butterfly species in South Africa showed that ecosystems with a unique combination of features are selected by these often localised threatened butterfly species (Deutschländer and Bredenkamp 1999; Edge 2002, 2005; Terblanche, Morgenthal & Cilliers 2003; Lubke, Hoare, Victor & Ketelaar 2003; Edge, Cilliers & Terblanche, 2008). Threatened butterfly species in South Africa can then be regarded as bio-indicators of rare ecosystems.

Four species of butterfly in Gauteng Province and North West Province combined are listed as threatened in the recent butterfly conservation assessment of South Africa (Mecenero *et al.*, 2013). The expected presence or not of these threatened butterfly species as well as species of high conservation priority that are not threatened, at the site.

Assessment of threatened butterfly species

***Aloeides dentatis dentatis* (Roodepoort Copper)**

The proposed global red list status for *Aloeides dentatis dentatis* according to the most recent IUCN criteria and categories is Endangered (Mecenero *et al.*, 2013). *Aloeides dentatis dentatis* colonies are found where one of its host plants *Hermannia depressa* or *Lotononis eriantha* is present. Larval ant association is with *Lepisiota capensis* (S.F. Henning 1983; S.F. Henning & G.A. Henning 1989). The habitat requirements of *Aloeides dentatis dentatis* are complex and not fully understood yet. See Deutschländer and Bredenkamp (1999) for the description of the vegetation and habitat characteristics of one locality of *Aloeides dentatis* subsp. *dentatis* at Ruimsig, Roodepoort, Gauteng Province. There is not an ideal habitat of *Aloeides dentatis* subsp. *dentatis* on the site and it is unlikely that the butterfly is present at the site.

***Chrysochrysis aureus* (Golden Opal/ Heidelberg Copper)**

The proposed global red list status for *Chrysochrysis aureus* according to the most recent IUCN criteria and categories is Endangered (Mecenero *et al.*, 2013) *Chrysochrysis aureus* (Golden Opal/ Heidelberg Copper) is a resident where the larval host plant, *Clusia pulchella* is present. However, the distribution of the butterfly is much more restricted than that of the larval host plant (S.F. Henning 1983; Terblanche, Morgenthal & Cilliers 2003). One of the reasons for the localised distribution of *Chrysochrysis aureus* is that a specific host ant *Crematogaster liengmei* must also be present at the habitat. Fire appears to be an essential factor for the maintenance of suitable habitat (Terblanche, Morgenthal & Cilliers 2003). Research revealed that *Chrysochrysis aureus* (Golden Opal/ Heidelberg Copper) has very specific habitat requirements, which include rocky ridges with a steep slope and a southern aspect (Terblanche, Morgenthal & Cilliers 2003). Owing to a lack of habitat requirements and ideal habitat the presence of the taxon is highly unlikely.

***Lepidochrysis praeterita* (Highveld Blue)**

The proposed global red list status for *Lepidochrysis praeterita* according to the most recent IUCN criteria and categories is Endangered (G.A. Henning, Terblanche & Ball, 2009; Mecenero *et al.*, 2013). *Lepidochrysis praeterita* is a butterfly that occurs where the larval host plant *Ocimum obovatum* (= *Becium obovatum*) is present (Pringle, G.A. Henning & Ball, 1994), but the distribution of the butterfly is much more restricted than the distribution of the host plant. *Lepidochrysis praeterita* is found on selected rocky ridges and rocky hillsides in parts of Gauteng, the extreme northern Free State and the south-eastern Gauteng Province. No ideal habitat appears to be present for the butterfly on the site. It is unlikely that *Lepidochrysis praeterita* would be present on the site and at the footprint proposed for the development.

***Orachrysis mijburghii* (Mijburgh's Blue)**

The proposed global red status for *Orachrysis mijburghii* according to the most recent IUCN criteria and categories is Endangered (Mecenero *et al.*, 2013). *Orachrysis mijburghii* favours grassland depressions where specific *Indigofera* plant species occur (Terblanche & Edge 2007). The Heilbron population of *Orachrysis mijburghii* in the Free State uses

Indigofera evansiana as a larval host plant (Edge, 2005) while the Suikerbosrand population in Gauteng uses *Indigofera dimidiata* as a larval host plant (Terblanche & Edge 2007). There is no suitable habitat for *Orachrysops mijburghi* on the site and it is unlikely that *Orachrysops mijburghi* would be present on the site.

Conclusion on threatened butterfly species

There appears to be no threat to any threatened butterfly species if the site is developed.

Assessment of butterfly species that are not threatened but also of high conservation priority

***Colotis celimene amina* (Lilac tip)**

Colotis celimene amina is listed as Rare (Low density) by Mecenero *et al.* (2013). In South Africa *Colotis celimene amina* is present from Pietermaritzburg in the south and northwards into parts of Kwa-Zulu Natal, Gauteng, Limpopo, Mpumalanga and the North West Provinces (Mecenero *et al.* In press.). Reasons for its rarity are poorly understood. It is highly unlikely that *Colotis celimene amina* would be resident at the site.

***Lepidochrysops procera* (Savanna Blue)**

Lepidochrysops procera is listed as Rare (Habitat specialist) by Mecenero *et al.* (2013). *Lepidochrysops procera* is endemic to South Africa and found in Gauteng, KwaZulu-Natal, Mpumalanga and North West (Mecenero *et al.*, 2013). Owing to a lack of habitat requirements and ideal habitat the presence of the taxon at the site is highly unlikely.

***Metisella meninx* (Marsh Sylph)**

Henning and Henning (1989) in the first South African Red Data Book of Butterflies, listed *Metisella meninx* as threatened under the former IUCN category Indeterminate. Even earlier in the 20th century Swanepoel (1953) raised concern about vanishing wetlands leading to habitat loss and loss of populations of *Metisella meninx*. According to the second South African Red Data Book of butterflies (Henning, Terblanche & Ball, 2009) the proposed global red list status of *Metisella meninx* has been Vulnerable. During a recent large scale atlasing project the *Conservation Assessment of Butterflies of South Africa, Lesotho and Swaziland: Red List and Atlas* (Mecenero *et al.*, 2013) it was found that more *Metisella meninx* populations are present than thought before. Based on this valid new information, the conservation status of *Metisella meninx* is now regarded as Rare (Habitat specialist) (Mecenero *et al.*, 2013). Though *Metisella meninx* is more widespread and less threatened than perceived before, it should be regarded as a localised rare habitat specialist of conservation priority, which is dependent on wetlands with suitable patches of grass at wetlands (Terblanche In prep.). Another important factor to keep in mind for the conservation of *Metisella meninx* is that based on very recent discoveries of new taxa in the group the present *Metisella meninx* is species complex consisting of at least three taxa (Terblanche In prep., Terblanche & Henning In prep.). The ideal habitat of *Metisella meninx* is treeless marshy areas where *Leersia hexandra* (rice grass) is abundant (Terblanche In prep.). The larval host plant of *Metisella meninx* is wild rice grass, *Leersia hexandra* (G.A. Henning & Roos, 2001). Owing to a lack of habitat requirements and ideal habitat the presence of the taxon at the site is highly unlikely.

***Platylesches dolomitica* (Hilltop Hopper)**

Platylesches dolomitica is listed as Rare (Low density) by Mecenero *et al.* (2013). Historically the conservation status of *Platylesches dolomitica* was proposed to be Vulnerable (Henning, Terblanche & Ball 2009). However this butterfly which is easily overlooked and has a wider distribution than perceived before. *Platylesches dolomitica* has a patchy distribution and is found on rocky ledges where *Parinari capensis* occurs, between 1300 m and 1800m (Mecenero *et al.* 2013, Dobson Pers comm.). Owing to a lack of habitat requirements and ideal habitat the presence of the taxon at the site is highly unlikely.

Fruit chafer beetles

No *Ichnestoma stobbiai* or *Trichocephala brincki* were found during the surveys. There appears to be no suitable habitat for *Ichnestoma stobbiai* or *Trichocephala brincki* at the site. There appears to be no threat to any of the fruit chafer beetles of particular high conservation priority if the site were developed.

Scorpions

None of these rock scorpions have been found at the site and the habitat does not appear to be optimal.

8.1.9 AIR QUALITY

“The extent and toxicity of emissions is not necessarily a concise indicator of contributions to ground-level air pollution concentrations or of risks to health and the environment. Such contributions are also a function of the height of emission, temporal variations in the release of pollutants, and the proximity of the source to the people or the environment affected by exposure to the pollutant (such as, for instance, children, or the elderly, or people who are ill, or others who may be particularly sensitive receptors to a specific pollutant above a certain concentration). If an industry is operating close to a school or hospital or centre for the elderly, the potential exposure (in combination with the other contributing factors) is high.

The significance of vehicle emissions as contributors to air-pollutant concentrations and health risks is similarly increased by the low level (close to the ground) of the emissions, and their proximity to highly populated areas – on highways, for example, with emissions being particularly high when traffic is congested. Vehicle emissions tend to peak early in the morning and in the evenings, when the potential for atmospheric dispersion is reduced (for example, wind speeds are generally low in the early mornings and evenings, reducing their potential for dispersing pollution).

Ranking the significance of different sources of pollution on the basis of the total emissions for which each source is responsible would, for example, place industrial emissions above household fuel-burning. If the aim is to reduce impacts on human health, however, then household fuel-burning would need to be targeted as a top priority (Scorgie et al., 2004d).

Historically, air pollution control in South Africa has primarily emphasized the implementation of ‘command and control’ measures in the industrial sector. The shift from source-based control, to the management of the air that people breathe, emphasizes the importance of targeting a wider range of sources and using more flexible and varied approaches. It means paying greater attention to ambient air quality, as it is more important (and more cost-effective, in many cases) to make sure that the ambient air complies with air quality standards. This approach ensures that human and environmental health is protected and that the cumulative impact of pollution from a number of sources is addressed.

Approaches adopted or considered for future implementation have included: regulation (for example, the use of Atmospheric Emission Licences for Listed Activities); market instruments (such as atmospheric user-charges and pollution taxes); the potential for voluntary agreements, education and awareness raising; and emissions trading. International experience shows that adopting a mix of instruments and interventions is more effective than using a single instrument to improve air quality across various types of source. Although direct regulation remains important in controlling industrial sources, there is evidence that specifying emission limits is more effective than specifying the use of particular technologies, so as to give companies flexibility in selecting the method of achieving success that suits

them best. This approach is advocated as being more cost-effective and more likely to stimulate technological advances in pollution control methods and production processes.

For large point sources (that is, sources of pollution that are concentrated on one site, but that have large, constant volumes of many types of pollution) that are few in number, instruments such as emissions trading have been advocated as an effective way to manage pollutant emissions and reduce the costs of compliance.

Implementing an efficient social protection system to alleviate poverty is central to maintaining conditions that facilitate not only economic growth but also environmental sustainability. Many South African households – including those with access to electricity – use coal, wood, and paraffin, due to the relative cost-effectiveness of such fuels for heating (that is, space heating) and cooking purposes.

https://www.environment.gov.za/sites/default/files/docs/stateofair_airqualityand_sustainable_development.pdf Date visited: 17/03/2020.

The proposed development is planned and will eventually be developed with the above mentioned in mind. The alleviation of poverty (Jobs that will be created) and the provision of proper accommodation facilities (Which has been designed to be as energy efficient as possible) will contribute towards lessening air pollution in the area.

In addition to the above, it should be noted that the project will however create a certain amount of dust during the construction phase. If proper dust suppression measures are implemented this variable will have very little impact (low in intensity and significance during the construction phase)

8.1.10 NOISE

It is a fact that a certain amount of noise will be generated during the construction phase of the project. Noise levels should however rarely exceed the allowable limits. It is unlikely that the project will create any more noise during the operational phase than that already experienced on site. The (crèche) may lead to additional noise in the operational phase.

8.1.11 ARCHAEOLOGY & CULTURAL SITES

According to the SAHRA Specialist: “A number of known cultural heritage sites (archaeological and/or historical) exist in the larger geographical area within which the study area falls. No sites, features or material of cultural heritage (archaeological and/or historical) origin or significance were identified in the study area during the assessment. The area has been nearly completely transformed from its original landscape in recent years through both informal and more formal settlement activities. Earlier agricultural activities, as well as evident quarrying have also impacted on the area.

Aerial images (Google Earth) of the study area indicates that in 2004 there was still traces of earlier farming, as well as quarrying activities and that residential settlement had not yet encroached into the area. Between 2004 and 2017 this situation stayed fairly similar, but by 2017 the informal settlement of the land had commenced.

If any cultural heritage sites did occur here in the past it would have been extensively disturbed or destroyed as a result of the activities mentioned above.

Finally, it should be noted that although all efforts are made to locate, identify and record all possible cultural heritage sites and features (including archaeological remains) there is always a possibility that some might have been missed as a result of grass cover and other factors. The subterranean nature of these resources (including low stone-packed or unmarked graves)

should also be taken into consideration. Should any previously unknown or invisible sites, features or material be uncovered during any development actions then an expert should be contacted to investigate and provide recommendations on the way forward.

From a cultural heritage point of view the proposed Derby Extension 4 Township Development should therefore be allowed continue, taking cognizance of the above recommendations”.

8.2 SOCIO ECONOMIC FACTORS

8.2.1 AESTHETICS

Visual Intrusion is defined as the level of compatibility or congruence of the project with the particular qualities of the area, or its 'sense of place'. This is related to the idea of context and maintaining the integrity of the landscape or townscape.

High visual intrusion – results in a noticeable change or is discordant with the surroundings;

Moderate visual intrusion – partially fits into the surroundings, but clearly noticeable;

Low visual intrusion – minimal change or blends in well with the surroundings.

The proposed development will change the scenic resources of the local area from an undeveloped area to a formal residential area. The visual intrusion is considered to be moderate as the proposed development will have minimal change and blends in well with the surroundings.

The proposed development will require additional lighting on and in buildings and along roads. This will change the night landscape from unlit to lit.

During the construction and operational phases of the proposed development, jobs will be created and thus the unemployment rate of the area will be reduced

9. ENVIRONMENTAL IMPACT ASSESSMENT

1. 9.1 ASSESSMENT CRITERIA

Impacts were rated using the following methodology:

Nature of the potential impact		Description of the effect, and the affected aspect of the environment
Duration (time scale)	Short term	Up to 5 years
	Medium term	6 – 15 years
	Long term	More than 15 years
Extent (area)	Local	Confined to study area and its immediate surroundings

Nature of the potential impact		Description of the effect, and the affected aspect of the environment
	Regional	Region (cadastral, catchment, topographic)
	National	Nationally (The country)
	International	Neighboring countries and the rest of the world.
Magnitude (Intensity)	Low	Site-specific and wider natural and/or social functions and processes are negligibly altered. ((A low intensity impact will not affect the natural, cultural, or social functions of the environment).
	Medium	Site-specific and wider natural and/or social functions and processes continue albeit in a modified way. (Medium scale impact will alter the different functions slightly).
	High	Site-specific and wider natural and/or social functions and processes are severely altered. (A High intensity impact will influence these functions to such an extent that it will temporarily or permanently cease to exist).
Probability	Improbable	Possibility of occurrence is very low. (Such an impact will have a very slight possibility to materialise, because of design or experience).
	Possible	There is a possibility that the impact will occur
	Probable	It is most likely that the impact will occur
	Definite	The impact will definitely occur
Significance	Insignificant	Impact is negligible and will not have an influence on the decision regarding the proposed activity (No mitigation is necessary)
	Very Low	Impact is very small and should not have any meaningful influence on the decision regarding the proposed activity (No mitigation is necessary)
	Low	The impact may not have a meaningful influence on the decision regarding the proposed activity (No mitigation is necessary)
	Medium	The impact should influence the decision regarding the proposed activity (The project can only be carried through if certain mitigatory steps are taken)
	High	The impact will influence the decision regarding the proposed activity
	Very High	The proposed activity should only be approved under special circumstances
Reversibility	Low	There is little chance of correcting the adverse impact
	Medium	There is a moderate chance of correcting the adverse impact
	High	There is a high chance in correcting the adverse impact
Risk	Low	Assessing a risk involves an analysis of the consequences and likelihood of a hazard being realized. In decision-making, low-consequence / low-probability risks

Nature of the potential impact		Description of the effect, and the affected aspect of the environment
		(green) are typically perceived as acceptable and therefore only require monitoring.
	Medium	Other risks (amber) may require structured risk assessment to better understand the features that contribute most to the risk. These features may be candidates for management
	High	High-consequence / high-probability risks (red) are perceived as unacceptable and a strategy is required to manage the risk.

Attributes associated with the alternatives were assessed and is outlined below:

Geographical attributes

The Geographical attributes of an area relates to the characteristics of a particular region, area or place. It influences the determination of site alternatives as it relates to the location of a site in relation to relevant features in the area.

Physical attributes

Physical attributes of an area relates to the processes and patterns in the natural environment. For the purpose of this assessment, the following processes and patterns have been investigated. Geology, soil, topography and landforms, climate and meteorology, surface water and ground water.

Biological attributes

Biological attributes for the purpose of this study includes the distribution of species and ecosystems in geographic space and through geological time. Organisms and biological communities often vary in a regular fashion along geographic gradients of latitude, elevation, isolation and habitat area. The two main branches assessed will be:

Phytogeography is the branch of biogeography that studies the distribution of plants.

Zoogeography is the branch that studies distribution of animals.

Social attributes

Social attributes is closely related to social theory in general and sociology in particular, dealing with the relation of social phenomena and its spatial components.

Economic attributes

Economic attributes includes the location, distribution and spatial organization of economic activities and also takes into account social, cultural, and institutional factors in the spatial economy of the development.

Heritage attributes

The broad generic term Cultural Heritage Resources refers to any physical and spiritual property associated with past and present human use or occupation of the environment, cultural activities and history. The term includes sites, structures, places, natural features and material of paleontological, archaeological, historical, aesthetic, scientific, architectural, religious, symbolic or traditional importance to specific individuals or groups, traditional systems of cultural practice, belief or social interaction.

Cultural attributes

Cultural attributes relates to the specific characteristics such as language, religion, ethnic and racial identity, and cultural history & traditions of people. These attributes influences family life, education, economic and political structures, and, of course, business practices.

It should be noted that the above mentioned attributes do not occur in isolation and it is not uncommon for an identified impact to overlap with two or more of these attributes. Also note, not all risks require comprehensive and detailed assessment. Solid problem formulation should allow decision-makers to evaluate the extent of subsequent analysis required. The level of effort put into assessing each risk should be proportionate to its significance and priority in relation to other risks, as well as its complexity, by reference to the likely impacts. Consideration should be given to stakeholders’ perceptions of the nature of the risk.

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)

ALTERNATIVE 1: Mixed use development (Preferred Alternative)

Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
DIRECT IMPACTS:					
Geographical Physical Social Economic	6 hectares of indigenous vegetation will be eradicated in order to establish the development.	Duration	Long term	Obtain the necessary environmental authorization for the development. Implement the mitigation measures as described in the Environmental Management Plan.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Medium		Medium
	Plan for the provision of services for the development.	Duration	Long term	Appoint a Civil Engineer to assess the availability and design of services to ensure a sustainable development.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Medium		Medium
	Plan to rehabilitate disturbed surfaces which can lead to erosion and dust pollution. Prepare method statements to this effect.	Duration	Short term	Start the rehabilitation of disturbed surfaces as soon as possible. Spray bare surfaces with water to prevent dust pollution.	Medium term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan for the eradication of foreign and invader plant species which are likely to invade disturbed areas.	Duration	Short term	Start the extermination of any invasive species as soon as possible and maintain the eradication programme.	Medium term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
Plan for the provision and maintenance of ablution facilities for construction workers to prevent pollution of surface and underground water.	Duration	Short term	Provide portable ablution facilities that will not cause pollution during the construction phase.	Short term	
	Extent	Local		Local	
	Magnitude (Intensity)	Medium		Medium	
	Probability	Definite		Definite	
	Significance	Medium		Medium	
	Reversibility	High		High	
	Risk	Low		Medium	
Plan to manage possible impacts that the project can have on the soil and geology.	Duration	Long term	Properly plan the construction phase in such a manner that impacts on the soil and geology of the area can be minimised. The findings of a Geotechnical Engineer must be incorporated into the design of the project.	Long term	
	Extent	Local		Local	
	Magnitude (Intensity)	Low		Medium	
	Probability	Definite		Definite	
	Significance	Medium		Medium	
	Reversibility	High		High	
	Risk	Low		Medium	

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)

ALTERNATIVE 1: Mixed use development (Preferred Alternative)

Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
				Plan to prevent spills of lubricants/oils that can take place on bare soil. This will include the use of drip trays for vehicles that are standing for more than 24 hours.	
	Plan for the removal of vegetation (which will lead to the destruction of faunal and floral habitats) during the construction phase.	Duration	Short term	Start with the rehabilitation of vegetation to minimize the negative effects of the removal of plants.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite	The rule must be to minimize the disturbance of animal life by keeping the footprint as small as possible.	Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan to safeguard open trenches in order to alleviate the danger of collapse on people or on equipment and people- especially small children who may fall into it.	Duration	Short term	Ensure that the trenches are dug according to specifications as prescribed by the Civil Engineer.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite	Ensure that the trenches stay open for as short a time as possible.	Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
Indirect impacts:					
Geographical Physical Social Economic	Plan to control dust generation from the proposed project which could impact on the surrounding area.	Duration	Short term	Spray water on open surfaces to ensure that dust does not cause air pollution during construction.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable	Start the rehabilitation of disturbed surfaces as soon as possible	Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan and compile method statements to implement measures for the prevention and or handling of spills of lubricants / oils that can take place on bare soil.	Extent	Local	Prevent spills of lubricants/oils that can take place on bare soil. This will include the use of drip trays for vehicles that are standing for more than 24 hours.	Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium	Ensure that all construction vehicles are in good working order and not leaking oil and or fuel. No vehicles may be serviced on site.	Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan to provide method statements on the handling of waste materials such as glass, plastic, metal or paper which may present a possible pollution hazard	Extent	Local	Implement the management plan to ensure that:	Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium	All construction rubble is disposed of in a safe and environmentally acceptable manner. NO concrete, gravel or other rubbish will be allowed to remain on site after the construction phase.	Medium
		Reversibility	High		High
		Risk	Low		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)

ALTERNATIVE 1: Mixed use development (Preferred Alternative)

Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
				All cement is housed as to prevent spills (due to rain and or handling errors). NO glass, plastic, metal, or paper shall be allowed to pollute the area.	
	Plan to ensure all involved is aware of the possible social and environmental problems that may be experienced as a result of non-compliance to the relevant legislation.	Extent	Local	Ensure that contractors (construction phase) abide by all the requirements of the Occupational Health and Safety Act. Ensure that all contractors are aware of the consequences of non-compliance to the relevant legislation regarding the above-mentioned act as well as with regard to the environment (acts, regulations, and special guidelines).	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan to create new employment opportunities. Plan to use local labour to ensure local skills development will take place.	Extent	Local	No mitigation measures needed apart from the fact that contractors will have to ensure that they abide to the requirements of the Occupational Health and Safety Act and the Employment Equity Act.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
		Risk	Low		Medium
Cumulative impacts:					
Geographical Physical Social Economic	Plan the development to ensure the social well-being of the community for which the development is intended	Extent	Local	Ensure that the development is constructed as planned. The demand for housing will be partially addressed in the area.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
		Risk	Low		Medium
	Plan to ensure that the services (Solid waste, bulk water supply water, sewage, electricity and storm water) are designed and constructed in such a manner that it will not cause Environmental degradation.	Extent	Local	Appoint a Civil Engineer to assess the availability and design of services to ensure a sustainable development. Ensure that the development is constructed as planned.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Low		Medium
	Plan for the increase in traffic volumes that will result from the proposed development	Extent	Local	The Town and Regional Planner will have to design the layout of the development in such a way that accessibility will not become a problem.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		High
		Reversibility	Low		Low
		Risk	Medium		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 2: Industrial Development					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
DIRECT IMPACTS:					
Geographical Physical Social Economic	6 hectares of indigenous vegetation will be eradicated in order to establish the development.	Duration	Long term	Obtain the necessary environmental authorization for the development. Implement the mitigation measures as described in the Environmental Management Plan.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Medium		Medium
	Plan to rehabilitate disturbed surfaces which can lead to erosion and dust pollution. Prepare method statements to this effect.	Duration	Short term	Start the rehabilitation of disturbed surfaces as soon as possible. Spray bare surfaces with water to prevent dust pollution.	Medium term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan for the eradication of foreign and invader plant species which are likely to invade disturbed areas.	Duration	Short term	Start the extermination of any invasive species as soon as possible and maintain the eradication programme.	Medium term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan for the provision and maintenance of ablution facilities for construction workers to prevent pollution of surface and underground water.	Duration	Short term	Provide portable ablution facilities that will not cause pollution during the construction phase.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
Plan to manage possible impacts that the project can have on the soil and geology.	Duration	Long term	Properly plan the construction phase in such a manner that impacts on the soil and geology of the area can be minimised. The findings of a Geotechnical Engineer must be incorporated into the design of the project. Plan to prevent spills of lubricants/oils that can take place on bare soil. This will include the use of drip trays for vehicles that are standing for more than 24 hours.	Long term	
	Extent	Local		Local	
	Magnitude (Intensity)	Low		Medium	
	Probability	Definite		Definite	
	Significance	Medium		Medium	
	Reversibility	High		High	
	Risk	Low		Medium	
Plan for the removal of vegetation (which will lead to	Duration	Short term		Short term	
	Extent	Local		Local	

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)						
ALTERNATIVE 2: Industrial Development						
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)	
	the destruction of faunal and floral habitats) during the construction phase.	Magnitude (Intensity)	Medium	Start with the rehabilitation of vegetation to minimize the negative effects of the removal of plants. The rule must be to minimize the disturbance of animal life by keeping the footprint as small as possible. No snares may be set.	Medium	
		Probability	Definite		Definite	
		Significance	Medium		Medium	
		Reversibility	High		High	
		Risk	Low		Medium	
	Plan to safeguard open trenches in order to alleviate the danger of collapse on people or on equipment and people- especially small children who may fall into it.	Duration	Short term	Ensure that the trenches are dug according to specifications as prescribed by the Civil Engineer. Ensure that the trenches stay open for as short a time as possible. Ensure that open trenches are demarcated as required by the Occupational Health and Safety Act.	Short term	
		Extent	Local		Local	
		Magnitude (Intensity)	Medium		Medium	
		Probability	Definite		Definite	
		Significance	Medium		Medium	
		Reversibility	High		High	
		Risk	Low		Medium	
	Indirect impacts:					
	Geographical Physical Social Economic	Plan to control dust generation from the proposed project which could impact on the surrounding area.	Duration	Short term	Spray water on open surfaces to ensure that dust does not cause air pollution during construction. Start the rehabilitation of disturbed surfaces as soon as possible	Short term
Extent			Local	Local		
Magnitude (Intensity)			Low	Low		
Probability			Probable	Probable		
Significance			Medium	Medium		
Reversibility			High	High		
Risk			Low	Medium		
Plan and compile method statements to implement measures for the prevention and or handling of spills of lubricants / oils that can take place on bare soil.		Extent	Local	Prevent spills of lubricants/oils that can take place on bare soil. This will include the use of drip trays for vehicles that are standing for more than 24 hours. Ensure that all construction vehicles are in good working order and not leaking oil and or fuel. No vehicles may be serviced on site.	Local	
		Magnitude (Intensity)	Low		Low	
		Probability	Probable		Probable	
		Significance	Medium		Medium	
		Risk	Low		Medium	
Plan to provide method statements on the handling of waste materials such as glass, plastic, metal or paper which may present a possible pollution hazard		Extent	Local	Implement the management plan to ensure that: All construction rubble is disposed of in a safe and environmentally acceptable manner. NO concrete, gravel or other rubbish will be allowed to remain on site after the construction phase. All cement is housed to prevent spills (due to rain and or handling errors). NO glass, plastic, metal, or paper shall be allowed to pollute the area.	Local	
		Magnitude (Intensity)	Low		Low	
		Probability	Probable		Probable	
		Significance	Medium		Medium	
		Reversibility	High		High	
		Risk	Low		Medium	
		Extent	Local		Local	

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)						
ALTERNATIVE 2: Industrial Development						
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)	
	Plan to ensure all involved is aware of the possible social and environmental problems that may be experienced as a result of non-compliance to the relevant legislation.	Magnitude (Intensity)	Medium	Ensure that contractors (construction phase) abide by all the requirements of the Occupational Health and Safety Act. Ensure that all contractors are aware of the consequences of non-compliance to the relevant legislation regarding the above-mentioned act as well as with regard to the environment (acts, regulations, and special guidelines).	Medium	
		Probability	Probable		Probable	
		Significance	Medium		Medium	
		Reversibility	High		High	
		Risk	Low		Medium	
	Plan to create new employment opportunities. Plan to use local labour to ensure local skills development will take place.	Extent	Local	No mitigation measures needed apart from the fact that contractors will have to ensure that they abide to the requirements of the Occupational Health and Safety Act and the Employment Equity Act.	Local	
		Magnitude (Intensity)	Medium		Medium	
		Probability	Definite		Definite	
		Significance	Medium		Medium	
		Reversibility	Medium		Medium	
	Risk	Low	Medium			
	Cumulative impacts:					
	Geographical Physical Social Economic	Plan the development to ensure the social well-being of the community for which the development is intended	Extent	Local	Ensure that the development is constructed as planned.	Local
			Magnitude (Intensity)	Medium		Medium
Probability			Definite	Definite		
Significance			Medium	Medium		
Reversibility			Medium	Medium		
Risk		Low	Medium			
Plan to ensure that the services (Solid waste, bulk water supply water, sewage, electricity and storm water) are designed and constructed in such a manner that it will not cause Environmental degradation.		Extent	Local	Appoint a Civil Engineer to assess the availability and design of services to ensure a sustainable development. Ensure that the development is constructed as planned.	Local	
		Magnitude (Intensity)	Medium		Medium	
		Probability	Definite		Definite	
		Significance	High		High	
		Reversibility	High		High	
Risk		Low	Medium			
Plan for the increase in traffic volumes that will result from the proposed development		Extent	Local	The Town and Regional Planner will have to design the layout of the development in such a way that accessibility will not become a problem.	Local	
		Magnitude (Intensity)	Medium		Medium	
		Probability	Definite		Definite	
		Significance	Medium		High	
		Reversibility	Low		Low	
Risk		Medium	Medium			
Loss of agricultural land		Extent	Local	No mitigation measures possible.	Local	
		Magnitude (Intensity)	Medium		Medium	
	Probability	Definite	Definite			
	Significance	High	High			
	Reversibility	Low	Low			
Risk	Medium	Medium				

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 3: (No-Go Option)					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
DIRECT IMPACTS:					
Geographical Physical Social Economic Cultural	No indigenous vegetation will be removed.	Duration	Long term	No mitigation measures required.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	Low		Low
		Risk	Medium		Medium
Indirect impacts:					
Geographical Physical Social Economic Cultural	No new employment opportunities will be created during the planning and design phase. No skills enhancement will take place If this option is implemented, the projected boost to the local and regional economy will not take place.	Extent	Local	Ensure that the development is constructed and operated as planned.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
		Risk	High		High
Cumulative impacts:					
Geographical Physical Social Economic Cultural	If this option is implemented, the projected boost to the local and regional economy will not take place. No new employment opportunities will be created. No improvement to local skills development will take place. No broadened Tax base for the Kgetlengrivier Local Municipality.	Extent	Local	Ensure that the development is constructed and operated as planned.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Medium		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)					
ALTERNATIVE 1: Mixed Use development (Preferred Alternative)					
Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute
DIRECT IMPACTS:					
Geographical Physical Social Economic	6 hectares of indigenous vegetation will be eradicated in order to establish the development.	Duration	Long term	Obtain the necessary environmental authorization for the development. Implement the mitigation measures as described in the Environmental Management Plan.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Medium		Medium
		Duration	Short term	Start the rehabilitation of disturbed surfaces as soon as possible.	Medium term
		Extent	Local		Local

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)

ALTERNATIVE 1: Mixed Use development (Preferred Alternative)

Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute
	Un-rehabilitated, disturbed surfaces can lead to erosion and dust pollution.	Magnitude (Intensity)	Low	Spray bare surfaces with water to prevent dust pollution.	Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Foreign plant species are likely to invade disturbed areas.	Duration	Short term	Start the extermination of any invasive species as soon as possible and maintain the eradication programme.	Medium term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Poorly planned ablution facilities for construction workers may cause pollution of surface and underground water.	Duration	Short term	Provide portable ablution facilities that will not cause pollution during the construction phase.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	The proposed project can impact on the soil and geology.	Duration	Long term	The findings of a Geo-Technical Engineer must be incorporated into the design of the project. Prevent spills of lubricants/oils that can take place on bare soil. This will include the use of drip trays for vehicles that are standing for more than 24 hours.	Long term
Extent		Local	Local		
Magnitude (Intensity)		Low	Medium		
Probability		Definite	Definite		
Significance		Medium	Medium		
Reversibility		High	High		
Risk		Low	Medium		
The vegetation of the area will be removed during the construction phase, which will destroy floral and faunal habitats.	Duration	Short term	Start with the rehabilitation of vegetation to minimize the negative effects of the removal of plants. The rule must be to minimize the disturbance of animal life by keeping the footprint as small as possible. No snares may be set.	Short term	
	Extent	Local		Local	
	Magnitude (Intensity)	Medium		Medium	
	Probability	Definite		Definite	
	Significance	Medium		Medium	
	Reversibility	High		High	
	Risk	Low		Medium	
Open trenches can be dangerous as they can either collapse on people or on equipment and people- especially small children, can fall into them.	Duration	Short term	Ensure that the trenches are dug according to specifications as prescribed by the Civil Engineer. Ensure that the trenches stay open for as short a time as possible. Ensure that open trenches are demarcated as required by the Occupational Health and Safety Act.	Short term	
	Extent	Local		Local	
	Magnitude (Intensity)	Medium		Medium	
	Probability	Definite		Definite	
	Significance	Medium		Medium	
	Reversibility	High		High	
	Risk	Low		Medium	
Indirect impacts:					
Geographical Physical		Duration	Short term		Short term
		Extent	Local		Local

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)

ALTERNATIVE 1: Mixed Use development (Preferred Alternative)

Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute
Social Economic	Dust generation from the proposed project could impact on the surrounding area.	Magnitude (Intensity)	Low	Spray water on open surfaces to ensure that dust does not cause air pollution during construction.	Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Spills of lubricants / oils can take place on bare soil.	Extent	Local	Prevent spills of lubricants/oils that can take place on bare soil. This will include the use of drip trays for vehicles that are standing for more than 24 hours.	Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
	Waste materials such as glass, plastic, metal or paper present a possible pollution hazard	Extent	Local	Implement the management plan to ensure that: All construction rubble is disposed of in a safe and environmentally acceptable manner. NO concrete, gravel or other rubbish will be allowed to remain on site after the construction phase. All cement is housed as to prevent spills (due to rain and or handling errors). NO glass, plastic, metal, or paper shall be allowed to pollute the area.	Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
	Non-compliance to the relevant legislation may cause social and environmental problems.	Extent	Local	Ensure that contractors (construction phase) abide by all the requirements of the Occupational Health and Safety Act. Ensure that all contractors are aware of the consequences of non-compliance to the relevant legislation regarding the above-mentioned act as well as with regard to the environment (acts, regulations, and special guidelines).	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
	New employment opportunities will be created. Local skills development will take place.	Extent	Local	No mitigation measures needed apart from the fact that contractors will have to ensure that they abide to the requirements of the Occupational Health and Safety Act and the Employment Equity Act.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
Reversibility		Medium	Medium		
Cumulative impacts:					
Geographical Physical Social	Enhancement of the social well-being of the local	Extent	Local	Ensure that the development is constructed as planned.	Local
		Magnitude (Intensity)	Medium		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)					
ALTERNATIVE 1: Mixed Use development (Preferred Alternative)					
Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute
Economic	communities for which the development is intended	Probability	Definite	The demand for housing will be partially addressed in the area.	Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
		Risk	Low		Medium
	<u>Solid waste:</u> The proposed development will add additional solid waste into the existing waste stream of the Kgetlengrivier Local Municipality. <u>Sewage:</u> The proposed development will add additional sewage into the existing sewage stream. <u>Water supply:</u> The proposed development will add pressure to the water supply of Kgetlengrivier Local Municipality's Water.	Extent	Local	Ensure that the development is constructed as planned by the Civil Engineer.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Low		Medium
	<u>Traffic:</u> The proposed development will result in an increase in traffic in the immediate surroundings of the proposed development.	Extent	Local	Ensure that the development is constructed as planned by the Town and Regional Planner	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		High
		Reversibility	Low		Low
		Risk	Medium		Medium
	Indigenous vegetation will be removed.	Extent	Local	No mitigation measures possible.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
Reversibility		Low	Low		
Risk		Medium	Medium		
		Extent	Local		Local

ENVIRONMENTAL IMPACT ASSESSMENT (Operational Phase)					
ALTERNATIVE 1: Mixed use development (Preferred Alternative)					
Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute
DIRECT IMPACTS:					
Geographical Physical Social Economic Cultural	Poorly maintained and serviced infrastructure may cause environmental problems.	Extent	Local	It will be the responsibility of the Local Municipality to maintain the infrastructure.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium- high		High
		Reversibility	High		Medium
		Risk	High		High

ENVIRONMENTAL IMPACT ASSESSMENT (Operational Phase)					
ALTERNATIVE 1: Mixed use development (Preferred Alternative)					
Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute
<i>Indirect impacts:</i>					
Geographical Physical Social Economic Cultural	Lack of rehabilitation may cause problems	Extent	Local	It will be the responsibility of the Local Municipality to ensure that the rehabilitation plan is implemented	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium- high		High
		Reversibility	High		Medium
		Risk	High		High
<i>Cumulative impacts:</i>					
Geographical Physical Social Economic Cultural	Enhancement of the social well-being of the local communities for which the development is intended	Extent	Local	No mitigation measures required.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Medium		Medium
Geographical Physical Social Economic Cultural	<u>Broadened tax base:</u> The proposed development will generate more income for the Kgetlengrivier Local Municipality.	Extent	Local	No mitigation measures required.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Medium		Medium

10. PUBLIC PARTICIPATION.

ADVERTISEMENT AND NOTICE

Publication name	Rustenburg Herald	
Date published	12/03/2021	
Site notice 1 position	Latitude	Longitude
	25°54'15.08"S	27° 2'24.37"E
Date placed	12/03/2021	

PROOF OF SITE NOTICE AFFIXED IN LINE WITH COVID-19 PROTOCOL: PROTECTIVE GEAR (MASK & GLOVES) AND SANITIZATION IN PLACE: 11/03/2021 (SEE BELOW)



NOTICE. ENVIRONMENTAL IMPACT ASSESSMENT PROCESS NWP/EIA/77/2020 Notice is hereby given of an Environmental Impact Assessment Process to be conducted. This process will be undertaken in terms of Section 24(M) and 44 made under section 24(5) of the National Environmental Management Act (Act No. 107 of 1998) (Amended Regulations promulgated on 07 April 2017). The proposed project is classified as, and will be conducted - in terms of Government Notice No. R.326 of 2017 (Government Notice No. R.327 Listing Notice 1; Activity no. 27) and (Government Notice No. R.324 Listing Notice 3; Activity no 12(h)(iv)). This advertisement complies with the instructions regarding such notices, National Environmental Management Act (Act No. 107 of 1998, as amended) (Amended Regulations promulgated on 17 April 2017) (Government Notice No. R.326 of 2017) (Regulation 41(2)(c)(d)). The competent authority is the North West Department Economic Development, Environment, Conservation and Tourism. The Responsible officer is: Ms. Tshogofatso Nkone: Tel: 014 597 3597; tshogolekgari@nwpg.gov.za **PROJECT NAME:** Environmental Impact Assessment for the proposed clearance of 6ha of indigenous vegetation, of which 5ha is located within a critical biodiversity area for the proposed establishment of a mixed use township development with associated services on a Portion Of The Remaining Extent Of Portion 25 Of The Farm Rietfontein 372JQ; Kgetlengrivier Local Municipality; Derby, Northwest Province. **PROJECT DESCRIPTION:** Proposed establishment of a mixed use township (consisting of 112 Residential Erven, a crèche and a municipal erf) with associated services which entails the clearance of 6 ha of indigenous vegetation, of which 5ha is located within a critical biodiversity area **CLIENT:** Kgetlengrivier Local Municipality **CONSULTANT AND CONTACT PERSON:** Mr. J.P. De Villiers of AB Enviro Consult, 7 Louis Leipoldt Street, Potchefstroom, 2531, Tel: 083 5488 105, Fax: 018 293 0671, E-mail: jp@abenviro.co.za **DATE OF THIS ADVERTISEMENT:** A copy of the Draft Basic Assessment Report is available and interested and/or affected parties may request a copy from the address above. Parties wishing to formally object to and/or comment on the proposed development are requested to forward their objections and comments (with reasons) in writing within 30 days of the date of this notice to: AB Enviro Consult.

—YD105446 (K5 W11)

2. DETERMINATION OF APPROPRIATE MEASURES

Details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN R.982.

Key stakeholders (other than organs of state) identified in terms of Regulation 40(2)(d) of GN R.982:

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
N/A	Neighbours	See proof of Letter drop

PROOF OF COVID-19 APPROVED PUBLIC PARTICIPATION PROTOCOLS AS WELL AS PROOF OF LETTER DROP















10.3 AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders. Key stakeholders identified in terms of Regulation 7(1) and (2) and Regulation 40(2) (a)-(c) of GN R.982:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
Department of Water and Sanitation	Mr C Lobakeng	(018) 387 9547	NA	LobakengC@dwa.gov.za	Chief Director: North West Dept. of Water and Sanitation Private Bag X5 MMABATHO 2735
Head of Department: North-West Department of Agriculture and Rural Development	Ms Lebo Diale	018-3895723	018-389 5090	pmokaila@nwpg.gov.za	Private Bag X2039 Mmabatho 2735
North West Department of Biodiversity	MJ Denga	018 389 5719/ 5431/ 5688	018 392 4377		Private Bag X2039 Mmabatho 2735
Bojanala District Municipality	The District Municipal Manager	(+27) 14 590 4500	(+27) 14 592 6085		Bojanala District Municipality PO Box 1993 Rustenburg 0300
Kgetlengriver local municipality	The Municipal Manager	014 543 2004	014 543 2480		PO Box 66 Koster 0348
Councillor Ward 8 Kgetlengriver local municipality	Ward 8	014 543 2004	014 543 2480		PO Box 66 Koster 0348
Eskom	Mr. M Dala	083 735 9327		DalaME@eskom.co.za	
SAHRA	SAHRIS			SAHRIS	

PLEASE SEE PROOF BELOW

List of REGISTERED LETTERS
Lys van GEREGISTREERDE BRIEWE
(with an insurance option/met 'n versekeringsopsie)



Post Office

Full tracking and tracing/Volledige volg en spoor

Name and address of sender:
 Naam en adres van afsender: **AB ENVIRO CONSULT**
7 LOUIS LEIPOLDT STREET
POTCHEFSTROOM
2531

Enquiries/Navrae
 Sharecall
 number/nommer
0860 111 502
 www.postoffice.co.za

No	Name and address of addressee Naam en adres van geadreseerde	Insured amount Versekerde bedrag	Insurance fee Versekeringsgeld	Postage Posgeld	Service fee Diensgeld	Affix Track and Trace customer copy Plak Volg-en-Spoor-Kliëntafskrif
1	Ms Leo Diale Department Agriculture and Rural development Private Bag x2039 Mmabatho 2735					REGISTERED LETTER ShareCall 0860 111 502 www.postoffice.co.za RC467560365ZA CUSTOMER COPY 301028R
2	The district Municipal Manager Bopane District Municipality PO Box 1993 Rustenburg 0300					REGISTERED LETTER ShareCall 0860 111 502 www.postoffice.co.za RC467560351ZA CUSTOMER COPY 301028R
3	The Municipal manager Kgatlengrivier Local Municipality PO Box 66 Koster 0348					REGISTERED LETTER ShareCall 0860 111 502 www.postoffice.co.za RC467560382ZA CUSTOMER COPY 301028R
4	The councillor Narel S Kgatlengrivier Local Municipality PO Box 66 Koster 0348					REGISTERED LETTER ShareCall 0860 111 502 www.postoffice.co.za RC467560379ZA CUSTOMER COPY 301028R
5	Mr NJ Denga Directorate Biodiversity Management and conservation Private Bag x2039 Mmabatho 2735					REGISTERED LETTER ShareCall 0860 111 502 www.postoffice.co.za RC467560405ZA CUSTOMER COPY 301028R
6						
7						
8						
9						
10						

Number of letters posted
 Getal briewe gepos **S / FIVE** Total
 Totaal R R R R

Signature of client
 Handtekening van kliënt.....

Signature of accepting officer
 Handtekening van aanneembeampte.....



The value of the contents of these letters is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100.00. No compensation is payable without documentary proof. Optional insurance of up to R200.00 is available and applies to domestic registered letters only.

Die waarde van die inhoud van hierdie briewe is soos aangedui en vergoeding sal nie betaal word vir 'n brief



7 Louis Leipoldt Street,
Potchefstroom, 2531
Tel: + 27 (0) 5488 105
Fax: + 27 (18) 293 0671
E-mail:
info@abenviro.co.za

AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

Ms Lebo Diale
Department: Agriculture and Rural Development
Private Bag X2039
Mmabatho
2735

12/03/2021

Dear Sir / Madam

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CLEARANCE OF 6HA OF INDIGENOUS VEGETATION, OF WHICH 5HA IS LOCATED WITHIN A CRITICAL BIODIVERSITY AREA FOR THE PROPOSED ESTABLISHMENT OF A MIXED USE TOWNSHIP DEVELOPMENT WITH ASSOCIATED SERVICES ON A PORTION OF THE REMAINING EXTENT OF PORTION 25 OF THE FARM RIETFONTEIN 372JQ; KGETLENGRIVIER LOCAL MUNICIPALITY; DERBY, NORTHWEST PROVINCE.

AB ENVIRO CONSULT was appointed by Kgetlengrivier Local Municipality to submit an application to the North West Department Economic Development, Environment, Conservation and Tourism for the above mentioned proposed development. Attached please find a notification and an electronic copy of the Draft Basic Assessment Report of the proposed development for your comments. In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application.

If no response is however received from your Department/organisation within 30 days of the date of this letter, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further.

Please do not hesitate to contact us should any further information or clarification be required.

Yours sincerely,

PROF. A.B. DE VILLIERS

PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)
MR.J.P. DE VILLIERS (MSc, HED; EAP-EAPASA); MRS.J.E. DU FLOOY (M.E.M; EAP-EAPASA)



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AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

Mr M. J. Denga
Directorate: Biodiversity Management and Conservation
Private Bag X2039
Mmabatho
2735

12/03/2021

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MR.J.P. DE VILLIERS (MSc, HED; EAP-EAPASA); MRS.J.E. DU PLOOY (M.E.M; EAP-EAPASA)



7 Louis Leipoldt Street,
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Tel: + 27 (83) 5488 105
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E-mail:
jp@abenviron.co.za

AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

Mr C Lobakeng
Department of Water and Sanitation
Cnr Dr. James Moroka Drive and Sekame Road
Mega City Complex
Unit 99 Sekame Street
MMABATHO
2735

Tel: (018) 387 9500

12/03/2021

Dear Sir / Madam

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CLEARANCE OF 6HA OF INDIGENOUS VEGETATION, OF WHICH 5HA IS LOCATED WITHIN A CRITICAL BIODIVERSITY AREA FOR THE PROPOSED ESTABLISHMENT OF A MIXED USE TOWNSHIP DEVELOPMENT WITH ASSOCIATED SERVICES ON A PORTION OF THE REMAINING EXTENT OF PORTION 25 OF THE FARM RIETFONTEIN 372JQ; KGETLENGRIVIER LOCAL MUNICIPALITY; DERBY, NORTHWEST PROVINCE.

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Yours sincerely,

PROF. A.B. DE VILLIERS

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E-mail:
ja@abenviro.co.za

AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

The District Municipal Manager
Bojanala District Municipality
PO Box 1993
Rustenburg
0300

12/03/2021

Dear Sir / Madam

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CLEARANCE OF 6HA OF INDIGENOUS VEGETATION, OF WHICH 5HA IS LOCATED WITHIN A CRITICAL BIODIVERSITY AREA FOR THE PROPOSED ESTABLISHMENT OF A MIXED USE TOWNSHIP DEVELOPMENT WITH ASSOCIATED SERVICES ON A PORTION OF THE REMAINING EXTENT OF PORTION 25 OF THE FARM RIETFONTEIN 372JQ; KGETLENGRIVIER LOCAL MUNICIPALITY; DERBY, NORTHWEST PROVINCE.

AB ENVIRO CONSULT was appointed by Kgetlengrivier Local Municipality to submit an application to the North West Department Economic Development, Environment, Conservation and Tourism for the above mentioned proposed development. Attached please find a notification and an electronic copy of the Draft Basic Assessment Report of the proposed development for your comments. In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application.

If no response is however received from your Department/organisation within 30 days of the date of this letter, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further.

Please do not hesitate to contact us should any further information or clarification be required.

Yours sincerely,

PROF. A.B. DE VILLIERS

PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)
MR.J.P. DE VILLIERS (MSc, HED; EAP-EAPASA); MRS.J.E. DU FLOOY (M.E.M; EAP-EAPASA)



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ip@abenviro.co.za

AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

The Municipal Manager
Kgetlengrivier Local Municipality
PO Box 66
Koster
0348

12/03/2021

Dear Sir / Madam

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CLEARANCE OF 6HA OF INDIGENOUS VEGETATION, OF WHICH 5HA IS LOCATED WITHIN A CRITICAL BIODIVERSITY AREA FOR THE PROPOSED ESTABLISHMENT OF A MIXED USE TOWNSHIP DEVELOPMENT WITH ASSOCIATED SERVICES ON A PORTION OF THE REMAINING EXTENT OF PORTION 25 OF THE FARM RIETFONTEIN 372JQ; KGETLENGRIVIER LOCAL MUNICIPALITY; DERBY, NORTHWEST PROVINCE.

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The Councillor Ward 8
Kgetlengrivier Local Municipality
PO Box 66
Koster
0348

AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

12/03/2021

Dear Sir / Madam

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AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

12/03/2021

Mr. Dala
ESKOM
DalaME@eskom.co.za

Dear Sir / Madam

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CLEARANCE OF 6HA OF INDIGENOUS VEGETATION, OF WHICH 5HA IS LOCATED WITHIN A CRITICAL BIODIVERSITY AREA FOR THE PROPOSED ESTABLISHMENT OF A MIXED USE TOWNSHIP DEVELOPMENT WITH ASSOCIATED SERVICES ON A PORTION OF THE REMAINING EXTENT OF PORTION 25 OF THE FARM RIETFONTEIN 372JQ; KGETLENGRIVIER LOCAL MUNICIPALITY; DERBY, NORTHWEST PROVINCE.

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10.4 ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
To follow as part of Final BAR	NA

2. 10.5 COMMENTS AND RESPONSE REPORT

I&AP registered:	Comment received:	Response by the EAP:
To follow as part of Final BAR		

11. SUMMARY OF THE FINDINGS AND RECOMMENDATIONS OF SPECIALISTS

11.1 GEOTECHNICAL REPORT (See Appendix A for a copy of the Report.)

1. A site of approximately 12 hectares, Derby Extension 4, Derby, was investigated to determine the engineering geological properties that will influence township proclamation.
2. The site is underlain by Pretoria Group sediment comprising the typical slastone or iron rich shale or slate of the Strubenkop formation, Pretoria Group, Transvaal Supergroup
3. Severe problems are foreseen regarding the excavatability to 1,5m depth on portions of the site, and a large quarry in the centre portion must be rehabilitated before township development can be initiated.
4. Zoning of the site revealed zones with constraints regarding the **compressibility, collapse potential** as well as the **expansive potential** of the soil, as well as some **drainage** features. It was zoned as follows:

Modified Normal to Special Development:

Site Class C1H1/2A2C:

A medium collapsible and compressible soil, with low to marginally medium expansive properties, with a thickness up to 0,75m, and an expected range of up to 15mm of total soil movement measured at surface, underlain by a competent ferruginized pebble marker or hard rock ferruginized shale or quartzite form this zone. Foundations will therefore require modified normal to special foundation techniques such as stiffened strip footings, stiffened or cellular rafts, lightly reinforced strip footings or reinforced boxed steel in slightly widened strip foundations, the use of split construction techniques or articulation joints at all internal and external doors and openings with light reinforcement (brickforce) in masonry, or soil replacement by an engineered fill soil raft by removing all or part of the expansive horizon to 1,0m beyond the perimeter of the structure and replacing with inert backfill, compacted to 93%MOD ASSHTO density at or near optimum moisture content, where after normal strip footing foundations can be used. Site drainage, a concrete apron of 1,0m around all structures and plumbing and service precautions are advised. It is classified as C1H1 in terms of the NHBRC guidelines (1995) or the SAICE Code of practice (1995) and 2A2C as per the classification for urban development (Partridge, Wood & Brink).

Site Class PQ:

A large quarry where construction material was mined is now used as dumping site and development should be restricted to outside this area and it must be fenced off to prevent entrance of unauthorized persons and children. The rehabilitation of this area with material of G5 quality or better is advised before it can be used as development site, but this may prove to be uneconomic.

5. **Special construction** techniques must be used to enable proper development. This includes the use of **compaction techniques with steel reinforcement** or **soil rafts** as described.
6. These proposed mitigation measures will be sufficient to successfully address the anticipated geotechnical problems and to ensure the sustainable development as planned
7. **This investigation was done to reveal the geotechnical properties on site with the techniques as described to form our opinion. Although every possible factor during the investigation was dealt with, it is possible to encounter variable local conditions. This will require the inspection of foundations by a competent person to verify expected problems.**

11.2 CIVIL SERVICES REPORT (See Appendix B for a copy of this report)

According to the Civil Engineer's report Services will connect to municipal infrastructure and is proposed as follows:

Water:

Water source and bulk water infrastructure:

There is an existing municipal owned water reticulation system installed in Derby Extension 2, the system consists of elevated storage and reticulation pipes. The system is fed by boreholes. The proposed Derby Extension 4 development can connect directly to this system. Certain upgrades will have to be identified by the Kgetleng Rivier Local Municipality to accommodate the extra demand.

Water Demand

The water demand for the proposed development will be based on Table 9.11 and Table 9.14 of the "Guidelines for Human Settlement Planning and Design" – Red Book. Provision is made for full-flush sanitation and irrigation. The table below reflects the estimated water consumption from Table 9.11 and Table 9.14 to be applied once the development is approved:

Land Use	Units	Annual Average Daily Demand (AADD)	Water Demand (kℓ/d)
Residential 1 (Low Income)	112	800ℓ/day/unit	89.6
Creche	1	1400ℓ/day/unit	1.4
Municipal / Institutional	1	1200ℓ/day/unit	1.2
Total			92.2

Sewer:

Bulk Sewer

The existing sewerage reticulation in the area is partly non-functional. It is proposed to install a new packaged sewer treatment system for the proposed Derby Extension 4 development. Such system treats sewerage through biological process by manipulating oxygen levels in the sewerage. The plant is best situated along the northern extents of the proposed development to facilitate gravity flow towards the plant.

Sewerage Run-Off

The sewer flow for the proposed development will be estimated at 80% of the average daily water demand. Provision is made for full-flush sanitation.

The table below reflects the estimated sewer flow determined as indicated above.

Land Use	Units	Annual Average Daily Flow (AADF)	Sewerage Outflow (kℓ/d)
Residential 1 (Low Income)	112	640ℓ/day/unit	71.68
Creche	1	1120ℓ/day/unit	1.12
Municipal / Institutional	1	960ℓ/day/unit	0.96
Total			73.76

Internal Sewer Layout

The internal sewerage system will be designed to accommodate the average annual daily flow (AADF) and to service every unit and development structure within the development.

The topography found at the proposed development is of such a nature that all sewerage will be adequately transported via a gravity line to the proposed sewer treatment plant situated in the northern corner of the development.

Storm-water

There is no formal storm water system to connect to in the vicinity. It is proposed that new field inlets be constructed with energy breakers to discharge storm water from low points towards natural undeveloped areas along the eastern border of the proposed development.

Internal Layout

The natural drainage pattern of the terrain is towards north-east. The area drains via sheet flow.

The storm water design will be done in accordance with the "Guidelines for Human Settlement Planning and Design" compiled under the patronage of the Department of Housing by the CSIR, DWAF and design specifications of the Local Authority.

Run-off and peak flow rates will be calculated according to selected return periods and outflow points. The 1:50-year recurrence interval will be used for the major system design and the 1:5-year recurrence interval will be used for storm water design of the subsurface system. A formal drainage system of pipes or canals will be provided to convey storm water and to discharge this water into natural water courses or similar systems connecting to natural water courses near the proposed development.

Erosion protection will either be in the form of open drains and shallow side drains, or they could consist of standard municipal type kerbs or mountable kerbs. Energy dissipaters will be provided at the lower end of each watercourse and at sites where the drainage is diverted away from roads.

The drainage system will be designed to minimize the impact of the development on the storm water characteristics of the property and adjacent properties by utilizing:

- Surface drainage where possible.
- Sub-surface (underground) pipe systems to convey storm water from higher laying areas.
- Erosion protection, stabilisation of erodible materials, and sediment control.
- Retention where applicable.

Solid Waste

The solid waste that will be generated by the proposed development will be in the region of 2000kg of solid waste per week. The Kgetleng Rivier Local Municipality can collect the waste on a weekly basis.

Site Access:

The development will gain access from the existing road network.

11.3 ECOLOGICAL IMPACT ASSESSMENT (See Appendix C for a copy of this report)

- Informal developments, diggings and extensive informal dumping at large parts of the site have led to extensive transformation, modification and degradation of vegetation at the site.
- Indigenous grass species, forbs and a few shrubs or small trees remain at some isolated patches at the site. The alien invasive tree species *Acacia decurrens* and the alien invasive reed species, *Arundo donax* are present at the site. Alien invasive weeds are conspicuously abundant at the site.
- Wetlands and rocky ridges appear to be absent at the site.
- Vegetation type Rand Highveld Grassland (Gm 11) (Mucina & Rutherford 2006) is listed as a Threatened ecosystem, Vulnerable, by the National List of Threatened Ecosystems (2011). Owing to developments at some adjacent areas, the extensive degradation and transformation of vegetation at the site, the small scope for any restoration of the site to its former vegetation type, the overall scope for conservation of this vegetation type at the site, is small.

- No Threatened or Near Threatened plant or animal species appear to be resident at the site. No other plant or animal species of particular conservation concern appear to be present at the site.
- The scope for the site to be a corridor of particular conservation importance, is small.
- Ecological sensitivity at the site is low.
- Based on the present survey at the site and adjacent areas the ecological sensitivity of the area where informal developments took place would probably have been medium-low. There are no distinct indications that the area where the informal developments took place would have contained sensitive species.
- Following the mitigations which will be upheld and planned footprint for development all the impact risks listed above are low.
- If the development is approved a key issue would be continued monitoring and eradication of alien invasive plant species. It is in particular alien invasive species such as *Melia azedarach* (Syringa) and alien invasive Australian *Acacia* species which should not be allowed to establish.
- If the development is approved an opportunity presents itself to cultivate indigenous plant species which would benefit urban nature conservation.

11.4 HERITAGE IMPACT ASSESSMENT (HIA) (See Appendix D for a copy of this report)

A number of known cultural heritage sites (archaeological and/or historical) exist in the larger geographical area within which the study area falls. No sites, features or material of cultural heritage (archaeological and/or historical) origin or significance were identified in the study area during the assessment. The area has been nearly completely transformed from its original landscape in recent years through both informal and more formal settlement activities. Earlier agricultural activities, as well as evident quarrying have also impacted on the area.

Aerial images (Google Earth) of the study area indicates that in 2004 there was still traces of earlier farming, as well as quarrying activities and that residential settlement had not yet encroached into the area. Between 2004 and 2017 this situation stayed fairly similar, but by 2017 the informal settlement of the land had commenced.

If any cultural heritage sites did occur here in the past it would have been extensively disturbed or destroyed as a result of the activities mentioned above.

Finally, it should be noted that although all efforts are made to locate, identify and record all possible cultural heritage sites and features (including archaeological remains) there is always a possibility that some might have been missed as a result of grass cover and other factors. The subterranean nature of these resources (including low stone-packed or unmarked graves) should also be taken into consideration. Should any previously unknown or invisible sites, features or material be uncovered during any development actions then an expert should be contacted to investigate and provide recommendations on the way forward.

From a cultural heritage point of view the proposed Derby Extension 4 Township Development should therefore be allowed continue, taking cognizance of the above recommendations.

12. CONCLUSIONS AND RECOMMENDATIONS

The Kgetlengrivier Local Municipality has appointed **AB Enviro Consult CC**, an independent environmental consultancy, to undertake an Environmental Impact Assessment for the proposed clearance of 6ha of indigenous vegetation, of which 5ha is located within a critical biodiversity area for

the proposed establishment of a mixed use township development with associated services on a Portion Of The Remaining Extent Of Portion 25 Of The Farm Rietfontein 372JQ; Kgetlengrivier Local Municipality; Derby, Northwest Province

This Chapter of the BAR provides a summary of the findings of the impact assessment process, including the EAP's opinion as to whether the activity should or should not be authorised.

12.1 ENVIRONMENTAL IMPACT STATEMENT

The detailed environmental assessment for the proposed development, has not found any environmental impacts that *cannot* be mitigated to acceptable and manageable levels.

The proposed clearance of 6ha of indigenous vegetation, of which 5ha is located within a critical biodiversity area for the proposed establishment of a mixed use township development with associated services on a Portion Of The Remaining Extent Of Portion 25 Of The Farm Rietfontein 372JQ; Kgetlengrivier Local Municipality; Derby, Northwest Province.

The site is well suited for development as no wetlands and rocky ridges appear to be present at the site. Vegetation type Rand Highveld Grassland (Gm 11) (Mucina & Rutherford 2006) is listed as a Threatened ecosystem, Vulnerable, by the National List of Threatened Ecosystems (2011). Owing to developments at some adjacent areas, the extensive degradation and transformation of vegetation at the site, the small scope for any restoration of the site to its former vegetation type, the overall scope for conservation of this vegetation type at the site, is small. No Threatened or Near-Threatened plant or animal species appear to be resident at the site. No other plant or animal species of particular conservation concern appear to be present at the site.

No sites, features or material of cultural heritage (archaeological and/or historical) origin or significance were identified in the study area during the assessment. The area has been nearly completely transformed from its original landscape in recent years.

The proposed development will be able to connect to municipal infrastructure.

The alternatives considered for the proposed development includes **Alternative 1: Establishment of a mixed use development (6ha) with associated services on a Portion Of The Remaining Extent Of Portion 25 Of The Farm Rietfontein 372JQ; Kgetlengrivier Local Municipality; Derby.**

Section 2 of the Housing Act, No. 107 of 1997, compels **all three spheres of government** to give priority to the needs of the poor in respect of housing development. In addition, all three spheres of government must ensure that housing development:

- Provides as wide a choice of housing and tenure options as is reasonably possible;
- Is economically, fiscally, socially and financially affordable and sustainable;
- Is based on integrated development planning; and
- Is administered in a transparent, accountable and equitable manner, and upholds the practice of good governance.

The following housing related issues present immediate challenges that require tailor-made policy intervention and the adoption of policies that will influence the Housing Sector Plan of the Kgetlengrivier LM:

- Housing allocation policy for municipal rental accommodation and subsidized housing.

- ▣ Registration of all residents and properties including applicants for housing assistance into a computerized housing data base.
- ▣ Maximization of sources of housing finance to ameliorate the housing conditions of low – income areas.
- ▣ Management and control of the spread of informal settlements, land invasion and evictions from land.
- ▣ Promotion of integrated housing development.
- ▣ Prevention of illegal letting and sale of subsidized houses.

The site is located within the Urban Edge of the Municipality and is situated in an area that is transitioning to a residential character. The proposed development will attribute to accelerate housing delivery within the context of sustainable human settlements as it aims to create viable residential stands within the urban edge of Derby.

The proposed development will formalize an area which has already been highly disturbed on which informal settlement has already started taking place. The development will alleviate the housing shortage in the area as well as provide job opportunities during all phases and thus the unemployment rate of the area will be reduced.

The proposed development will also promote integration of areas and infill development as the development will be integrated within the remits of Derby following development and effectively uses the land in the urban edge for infill planning and development.

The proposed development will also ensure that:

- The housing shortage of the area will be partially addressed.
- During the construction phase of the proposed development, employment opportunities will be created and thus decrease the unemployment rate of the area.
- During the operational phase of the proposed development, additional employment opportunities will be created.

The tax base of the Local Municipality will be broadened.

Alternative 2: Establishment of an Industrial development (6ha) with associated services on a Portion Of The Remaining Extent Of Portion 25 Of The Farm Rietfontein 372JQ; Kgetlengrivier Local Municipality; Derby

This alternative will not be acceptable as the area is located within an area that has a residential character. The increased noise and possible emissions associated with this alternative has rendered it unfeasible and therefore it is recommended that Alternative 1 be implemented.

Alternative 3: The “no-go” option.

The no-go alternative will entail that the status quo will remain.

The influx of people to Derby implies that the demand for housing is increasing. Should the no-go option be implemented, this demand will not be partially addressed in Derby.

It is therefore proposed that Alternative 1 be the preferred alternative.

Specialist studies were conducted and a full Public Participation Process was followed. This information was used to generate a sensitivity map that was used to assess the sustainability of the design and layout plan for the proposed development.

The **Fauna and Flora Habitat** study conducted revealed that no Threatened or Near Threatened plant or animal species appear to be resident at the site. No other plant or animal species of particular conservation concern appear to be present at the site. He found no wetlands at the site.

The **SAHRA Specialist** found no sites (other than the De Beer family graveyard), features or material of cultural heritage (archaeological and/or historical) origin or significance were identified in the study area during the physical assessment. If any sites did exist here in the past it would have been largely disturbed or destroyed by recent historical agricultural and other development activities in the study and larger area around it.

A full Public Participation Process is being conducted and any objections or comments that will be received in relation to the proposed development will be incorporated into the Final BAR.

12.2 ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

EMPR's aim to identify and minimise the potential impacts that the proposed construction and operational phases of the project may have on the receiving environment. An EMPR has been developed which is contained in Appendix E and includes detailed mitigatory measures for the construction phase.

As a general guideline, the EMPR should be based on a comprehensive set of environmental aspects (elements of the facility that can interact with the environment), and hence, the EMPR compiled for this application includes the following key components:

- Mechanisms for the on-going identification and assessment of environmental aspects and impacts;
- Environmental management programmes; objectives and targets;
- Environmental monitoring and reporting framework;
- Environmental management procedures; and,
- Mechanisms for the recording of environmental incidents and implementing corrective and preventative actions.

12.3 EAP OPINION

The information contained in this BAR and Specialist Studies, provides a detailed and comprehensive description of the proposed project, baseline environment and potential environmental impacts associated with the proposed development. As no significant impacts that cannot be mitigated were identified, AB Enviro Consult is of the opinion that the project should proceed, provided that the necessary mitigation and management measures are implemented.

Under South African environmental legislation, the Applicant is accountable for the potential impacts of the activities that are undertaken and is responsible for managing these impacts. The Applicant therefore has overall and total environmental responsibility to ensure that the implementation of the construction phase of the EMPR complies with the relevant legislation and the conditions of the environmental authorisation. The applicant will thus be responsible for the implementation of the EMPR.

The environmental management programme (EMPR) should form part of the contract between the construction company and the applicant. This will help ensure that the EMPR is adhered to. It is suggested that a suitably qualified Environmental Control Officer (ECO) be appointed for the construction phase.

12.4 CONDITIONS RECOMMENDED TO BE INCLUDED IN ANY AUTHORISATION THAT MAY BE GRANTED BY THE COMPETENT AUTHORITY IN RESPECT OF THE APPLICATION

The following recommendations has been identified for the pre-construction and construction phases of the proposed development

1. A full copy of the signed EA from DEDECT in terms of NEMA, granting approval for the development must be available on site
2. A copy of the EMPr as well as any amendments thereof must be available on site
3. A suitably qualified ECO must be appointed.
4. Impacts on the environment must be minimised during site establishment and the development footprint must be kept to the approved development area.
5. Vegetation clearing may not commence until such time as the development footprint has been clearly defined.
6. No clearance of vegetation outside of the development footprint may occur.
7. At the end of the construction phase the site and its surrounding area must be free from any pollution that originated as a result of the construction activities.
8. No disturbance of topsoil & subsoil may commence until such time as the development footprint has been clearly defined.
9. No disturbance of topsoil & subsoil outside of the development footprint may occur.
10. At the end of the construction phase the site and its surrounding area must be free from any chemical, fuel, oil and cement spills that originated as a result of the construction activities.
11. At the end of the construction phase the site and its surrounding area must be free from any sewage that originated as a result of the construction activities.
12. At the end of the construction phase the site and its surrounding area must be free from any hazardous or general waste pollution that originated as a result of the construction activities.
13. Dust prevention measures must be applied to minimise the generation of dust.
14. Noise prevention measures must be applied to minimise the generation of unnecessary noise pollution as a result of construction activities on site.
15. Absolutely no burning of waste is permitted.
16. Fires will only be allowed in facilities especially constructed for this purpose.
17. No hunting of animals will be allowed.
18. No intentional destruction of any sites, features or material of cultural heritage (archaeological and/or historical) origin or significance may occur.
19. All Contractors and sub-contractors must abide to the rules and regulations of the Occupational Health and Safety Act, 85 of 1993.

13. AFFIRMATION BY EAP

- | **Mr. Jean Pierre De Villiers** declare under oath that I:
- a. act as the independent environmental practitioner in this application ;
 - b. do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed;
 - c. do not have and will not have a vested interest in the proposed activity proceeding;
 - d. have no, and will not engage in, conflicting interests in the undertaking of the activity;
 - e. undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required;
 - f. will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
 - g. will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
 - h. will keep a register of all interested and affected parties that participated in a public participation process; and
 - i. will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.

Signature of the Environmental Assessment Practitioner:

Name of company: AB Enviro Consult CC

Date:

Signature of the Commissioner of Oaths:

Date

Designation

Official stamp:

14. LIST OF REFERENCES

Department of Environmental Affairs and Tourism. 1992. Integrated Environmental Management. Pretoria, DEAT.

Department of Environmental Affairs and Tourism. 1998. *Guideline Document - EIA Regulations.* Pretoria, DEAT.

Department of Environmental Affairs. 1988. *Climate of South Africa, climate statistics up to 1984.* Weather Bureau (WB40). Pretoria, Government Printer.

Department of Transport, 19--. *Climate of South Africa Part 1 Climate statistics.* Weather Bureau (WB20). Pretoria Government Printer.

S. Cliff. 2015. Environmental Scoping report for the proposed high density residential township "Tanganani extension 7", to be located on a part of Portion 119 of the farm Diepsloot 388 JR, City of Johannesburg Municipality, Gauteng

**APPENDIX A:
GEOTECHNICAL SPECIALIST REPORT**

**APPENDIX B:
CIVIL SERVICES REPORT**

**APPENDIX C:
ECOLOGICAL SPECIALIST REPORT**

**APPENDIX D:
SAHRA SPECIALIST REPORT**

**APPENDIX E:
ENVIRONMENTAL MANAGEMENT PROGRAMME**

**APPENDIX F:
SPECIALIST DECLARATION OF INDEPENDENCE (TO FOLLOW)**

**APPENDIX G
PROOF OF BAR SENT TO DW&S**