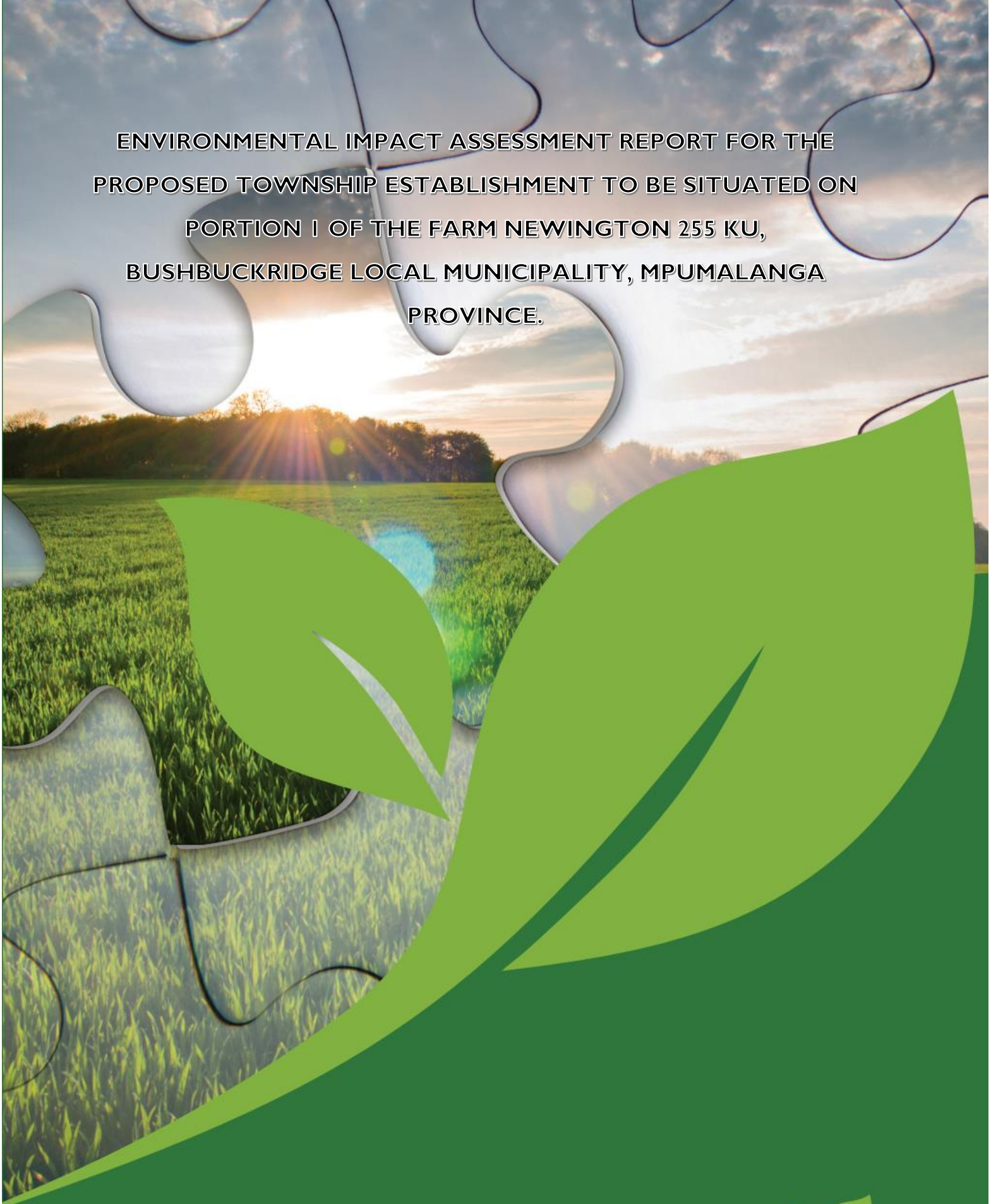
ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED TOWNSHIP ESTABLISHMENT TO BE SITUATED ON PORTION 1 OF THE FARM NEWINGTON 255 KU, BUSHBUCKRIDGE LOCAL MUNICIPALITY, MPUMALANGA PROVINCE.



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Report Title	Environmental Impact Assessment Report for the proposed township establishment to be situated on Portion 1 of the Farm Newington 255 KU, Bushbuckridge Local Municipality, Mpumalanga province.
Document ID	Consultation/ Draft Environmental Impact Assessment Report
Client	Bushbuckridge Local Municipality
Date	July 2021
Approval	
Name	Mankaleme M. Magoro
Title	Environmental Assessment Practitioner
Signature	

EAP DECLARATION OF INDEPENDCE

I **Mankaleme M. Magoro** in my capacity as an Environmental Assessment Practitioner, hereby declare that I-

- Act as an independent consultant;
- Do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed in terms of the National Environmental Management Act, 1998 (Act 107 of 1998);
- As a registered member of the South African Council for Natural Scientific Professions, will undertake our profession in accordance with the Code of Conduct of the Council, as well as any other societies to which we are members; and
- Based on information provided to us by the project proponent, and in addition to information obtained during this study, have presented the results and conclusion within the associated document to the best of our professional judgement.

Signature of EAP: …….

Date Signed……..

EXECUTIVE SUMMARY

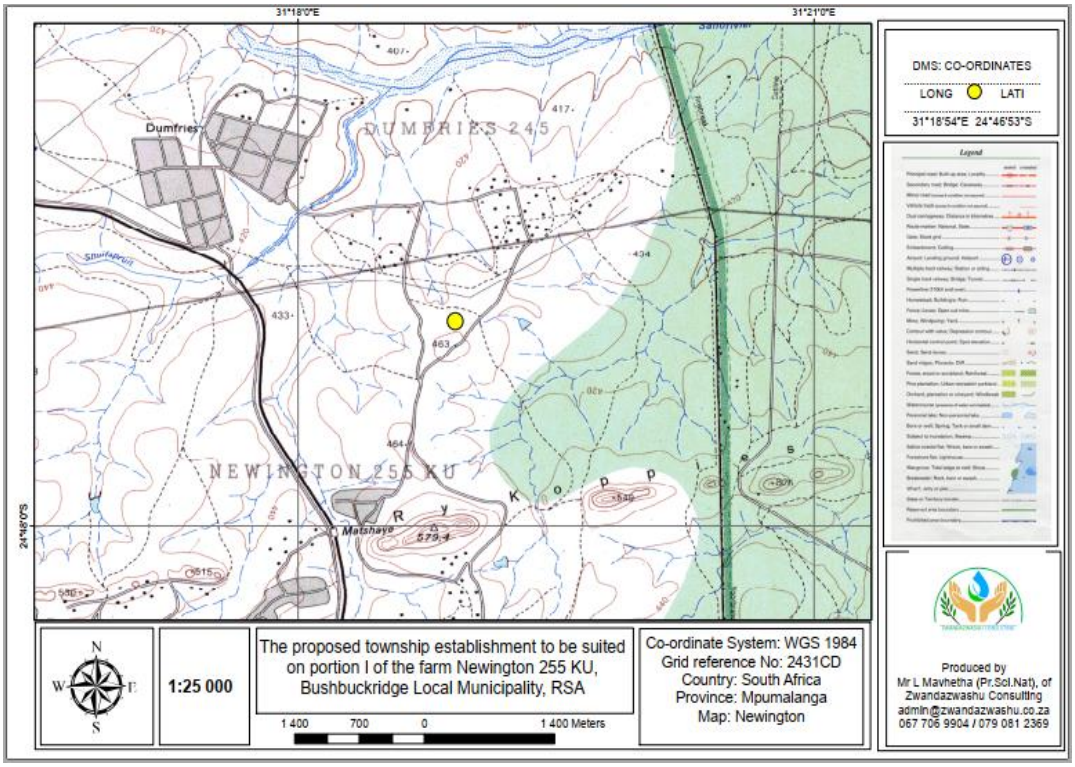
Leago Environmental Solutions was appointed by Nkanivo Development Consultants on behalf of Bushbuckridge Local Municipality as an Independent Environmental Assessment Practitioner (EAP) to undertake a Scoping and Environmental Impact Assessment (EIA) for the proposed township establishment to be situated on Portion 1 of the Farm Newington 255 KU. The project area is approximately 88.41 hectares in extent, and is expected to yield approximately 562 stands.

The project was registered for an Environmental Impact Assessment (Scoping and Environmental Impact Reporting) process with the Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs, (MDARDLEA) under Regulation 982 to 985 as amended by 324 to 327 of the National Environmental Management Act (No. 107 of 1998) and was assigned the reference number: **1/3/1/16/1E-308.**

General Site Description

The proposed development/ activity is situated on Portion 1 of the Farm Newington 255 KU in Dumphries Village within the Bushbuckridge Local Municipality and is located approximately 17km away from the town of Thulamahashe and 38 km west of the Bushbuckridge town.

The site is located roughly at the following coordinates: 24°46'53"S; 31°18'54"E.



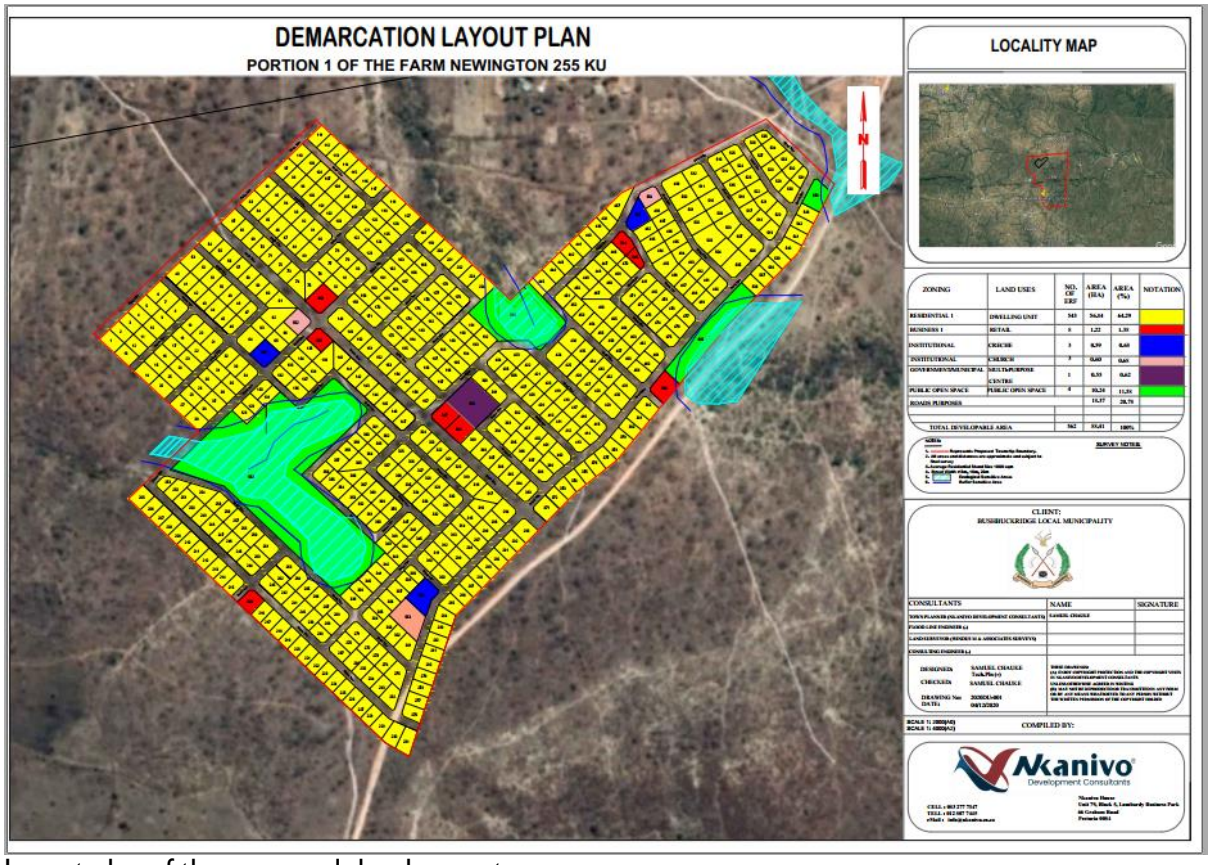
Locality map of the proposed development site

Description of Proposed Activity

The proposed activity is a township establishment. The project area is approximately 88.41 hectares in extent, and it is expected to yield 562 stands.

The proposed development entails 562 stands for:

- 543 Residential (dwelling units)
- 8 Business site (retail)
- 6 Institutional (crèche and church)
- 1 Government/ Municipal (multi-purpose centre)
- 4 Public Open Spaces



Layout plan of the proposed development

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ACRONYMS AND ABBREVIATIONS

MDARDLEA	Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs
SACNASP	South African Council for Natural Scientific Professions
No.	Number
EMPr	Environmental Management Plan Report
NEMA	National Environmental Management Act
S&EIR	Scoping and Environmental Impact Reporting
EIAr	Environmental Impact Assessment
I&AP	Interested and Affected Parties
EIA	Environmental Impact Assessment
SAHRA	South African Heritage Resource Agency
SAHRIS	South African Heritage Resource Information Systems
MPHRA	Mpumalanga Provincial Heritage Resource Authority
Ha	Hectares
CBAs	Critical Biodiversity Areas
Ptn	Portion
RE	Remainder
ESA	Ecological Support Area
I&APs	Interested and Affected Parties
NWA	National Water Act
BLM	Bushbuckridge Local Municipality
MTPA	Mpumalanga Tourism and Parks Agency
HIA	Heritage Impact Assessment
TIA	Traffic Impact Assessment
PPP	Public Participation Process
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Office

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NEMA REQUIREMENTS

According to Appendix 3 of the NEMA Regulations of 7 April 2017, the environmental impact assessment process must be undertaken in line with the approved plan of study for environmental impact assessment. The environmental impacts, mitigation and closure outcomes as well as the residual risks of the proposed activity must be set out in the environmental impact assessment report.

Objectives of the Environmental Impact Assessment

The objective of the environmental impact assessment process is to, through a consultative process

(a) Determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
(b) Describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the development footprint on the approved site as contemplated in the accepted scoping report;
(c) Identify the location of the development footprint within the approved site as contemplated in the accepted scoping report based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
(d) Determine the—
(i) Nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and
(ii) Degree to which these impacts—
(aa) Can be reversed;
(bb) May cause irreplaceable loss of resources, and
(cc) Can be avoided, managed or mitigated;
(e) Identify the most ideal location for the activity within the development footprint of the approved site as contemplated in the accepted scoping report based on the lowest level of environmental sensitivity identified during the assessment;
(f) Identify, assess, and rank the impacts the activity will impose on the development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity;
(g) Identify suitable measures to avoid, manage or mitigate identified impacts; and
(h) Identify residual risks that need to be managed and monitored

Scope of assessment and content of environmental impact assessment reports

3. (1) An environmental impact 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—

(a) details of—

(iii) the EAP who prepared the report; and

(iv) the expertise of the EAP, including a curriculum vitae;

(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; and

(iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties

(c) A plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is—

(i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken;

(ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;

(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 associated structures and infrastructure related to the development;

(e) a description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;

(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 development footprint within the approved site as contemplated in the accepted scoping report;

(g) a motivation for the preferred development footprint within the approved site as contemplated in the accepted scoping report;

(h) a full description of the process followed to reach the proposed development footprint within the approved site as contemplated in the accepted scoping report, including:

(i) details of the development footprint 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 development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;

(v) the impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts—

(aa) can be reversed;

(bb) may cause irreplaceable loss of resources; and

(cc) can be avoided, managed or mitigated;

(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;

(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;

(viii) the possible mitigation measures that could be applied and level of residual risk;

(ix) if no alternative development footprints for the activity were investigated, the motivation for not considering such; and

(x) a concluding statement indicating the location of the preferred alternative development footprint within the approved site as contemplated in the accepted scoping report;

(i) a full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred development footprint on the

approved site as contemplated in the accepted scoping report through the life of the activity, including—

(i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and

(ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;

(j) an assessment of each identified potentially significant impact and risk, including—

(i) cumulative impacts;

(ii) the nature, significance and consequences of the impact and risk;

(iii) the extent and duration of the impact and risk;

(iv) the probability of the impact and risk occurring;

(v) the degree to which the impact and risk can be reversed;

(vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and

(vii) the degree to which the impact and risk can be mitigated;

(k) where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;

(l) an environmental impact statement which contains—

(i) a summary of the key findings of the environmental impact assessment:

(ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred development footprint on the approved site as contemplated in the accepted scoping report indicating any areas that should be avoided, including buffers; and

(iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;

(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 as well as for inclusion as conditions of authorisation;

(n) the final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment;

(o) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;

(p) a description of any assumptions, uncertainties and gaps in knowledge which relate to the

assessment and mitigation measures proposed;

(q) a reasoned opinion as to whether the proposed activity should or should not be authorised,

and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;

(r) 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;

(s) an undertaking under oath or affirmation by the EAP in relation to—

(i) the correctness of the information provided in the reports;

(ii) the inclusion of comments and inputs from stakeholders and I&APs;

(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 or affected parties;

(t) where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;

(u) an indication of any deviation from the approved scoping report, including the plan of study, including—

(i) any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and

(ii) a motivation for the deviation;

(v) any specific information that may be required by the competent authority; and

(w) any other matters required in terms of section 24(4)(a) and (b) of the Act.

(2) Where a government notice by the Minister provides for any protocol or minimum information requirement to be applied to an environmental impact assessment report the requirements as indicated in such notice will apply.

1. INTRODUCTION

1.1. Compilation of EIA Report

This report was compiled by Leago Environmental Solutions on acceptance of the submitted scoping report and advice from the Competent Authority to proceed with the tasks contemplated in the plan of study for environmental impact assessment, including the public participation process. The report was compiled according to the NEMA Regulations of 7 April 2017 promulgated in terms of Chapter 5 of the National Environmental Management Act (No. 107 of 1998) stipulating the information that is necessary for the competent authority to consider the application and to reach a decision.

1.2. Terms Of Reference

The objective of this study is to conduct an environmental impact assessment. The broad terms of reference for an assessment exercise are to:

- Conduct an in-depth investigation into biophysical aspects, and socio economic aspects focusing on key issues;
- Address the issues that were identified during the scoping process and investigation, which are associated with this planned project;
- Advise the proponent about the potential impacts (positive and negative impacts) of their planned development, as well as the implications for the design, construction and operational phases of the project;
- Identify possible measures to mitigate the potential impacts of the planned project;
- Address the cumulative impact of all aspects of the planned development as well as recommend possible mitigating measures.

1.3. Information on the Methodology of EIA.

This report addresses the biophysical as well as the socio-economic environments. The information was captured in the following manner:

- Site visits to determine the setting, visual character and land-uses in the area;
- I & APs were informed and consulted by phone, newspaper advertisement, emails, letters and notice boards/ site notices
- Identifying positive, as well as negative issues;
- Specialist studies done by independent specialists in areas where impacts were identified;
- Making recommendations and presenting guidelines for the mitigation of impacts identified during this exercise.

2. DETAILS OF THE APPLICANT AND THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

2.1. Applicant Details	
Project Applicant	Bushbuckridge Local Municipality
Physical Address	R533 Graskop Road, Opposite Mapulaneng Driving Licensing Testing Center Bushbuckridge,1280
Contact Person	Mr. Lucas Seshebela
Tel	013 004 0291
Cell Phone	078 258 7550
Email	lseshabela@yahoo.co.uk / lseshabela@bushbuckridge.gov.za

2.2. EAP Details	
Company Name	Leago Environmental Solutions
Physical Address	66 Graham Road, Lombardy Business Park, Block 5, Unit 79, Pretoria, 0084
Contact Person	Mankaleme M. Magoro
Tel	012 807 7445
Cell Phone	081 428 6116
Email	Mankaleme@leagoenviro.co.za / info@leagoenviro.co.za

Qualifications	Bachelor of Earth Sciences in Mining and Environmental Geology
Professional Affiliation	SACNASP (Reg No: 120970)
Expertise	Key expertise and experience include environmental impact assessments, environmental management plans, public participation process, geotechnical investigation studies and project management.

3. DETAILS OF THE PROPOSED ACTIVITY

3.1. Location of the Proposed Activity

The proposed development/ activity is situated on Portion 1 of the Farm Newington 255 KU in Dumphries Village under the jurisdiction of Bushbuckridge Local Municipality. The proposed project area is located approximately 17km away from the town of Thulamahashe and 38 km west of the Bushbuckridge town.

The site is located roughly at the following coordinates: 24°46'53"S; 31°18'54"E.

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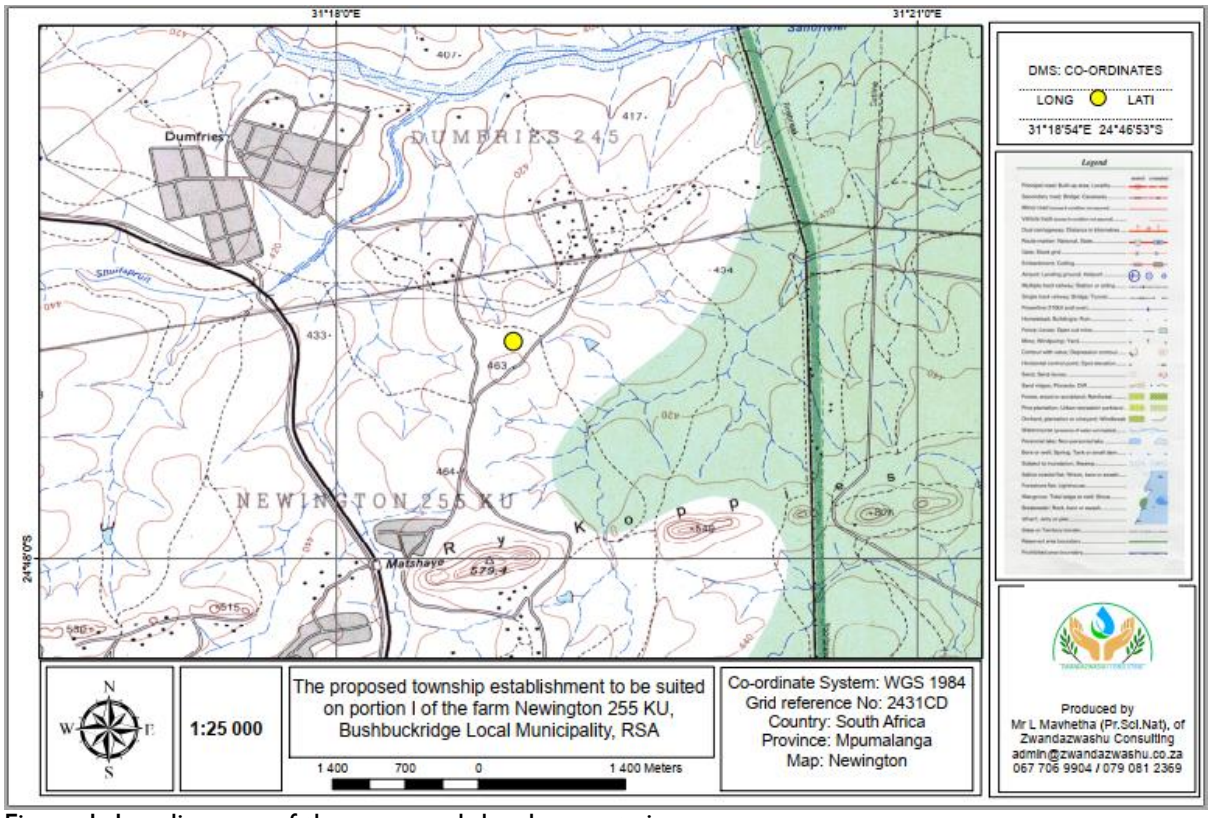

Figure 1: Locality map of the proposed development site.

3.2. Description of Proposed Activity

The proposed activity is a township establishment. The project area is approximately 88.41 hectares in extent and it is expected to yield 562 stands.

The proposed development entails 562 stands for:

- 543 Residential (dwelling units)
- 8 Business site (retail)
- 6 Institutional (crèche and church)

- 1 Government/ Municipal (multi-purpose centre)
- 4 Public Open Space

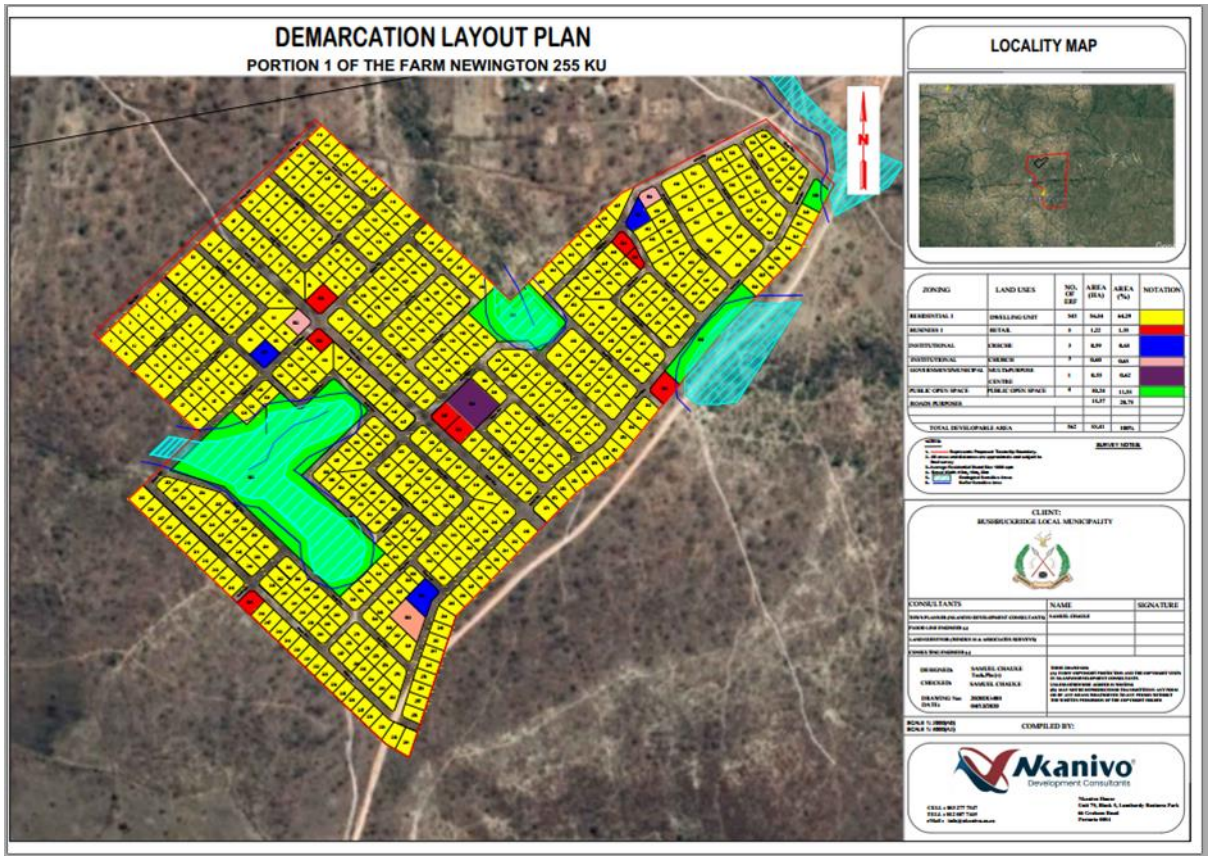

Figure 2: Layout plan for the proposed development

4. THE FOLLOWING ASSOCIATED INFRASTRUCTURE AND SERVICES ARE ALSO ENVISAGED FOR THE DEVELOPMENT:

4.1. Roads

The proposed development site can be accessed through a gravel road D4392 which links Dumphries B Village to Matshaye Village.

4.2. Water

According to the Engineering Services Report, the Dumphries B village water source is the Inyaka Dam Bulk Water Treatment Works (WTW), whose custodian is Bushbuckridge Water. Water is conveyed from the Inyaka Bulk WTW to the existing Dumphries 600kℓ command reservoir.

There is an existing 200mm diameter water bulk line linking the existing 600kℓ command reservoir to the Dumphries B 180kℓ and 600kℓ reservoirs along the D4392 road.

4.3. Sewer Services

Currently, Dumphries has no existing wastewater treatment works. Sewer is currently handled onsite through the use of septic tanks and pit toilets.

4.4. Solid Waste

Based on the findings of the Engineering Services Report, a regional landfill closest to the site will be used to dispose the solid waste.

4.5. Electricity

There is existing electricity supply infrastructure in the area and adjacent to the site, therefore the proposed development can be connected to the existing electrical infrastructures.

5. NEED AND DESIRABILITY OF PROPOSED ACTIVITY

- The proposed development site is strategically located next to the current boundaries of the existing villages/ township of Dumphries B and Matshaye.
- There is an existing road network which is the D4392 gravel road that can be used access the proposed development site.
- Improvement of the socio-economic status of the area
- The proposed development will contribute towards improving the housing stock of the area and general livelihood of the residents.
- The proposed township will aid in eliminating informal settlements/ land invasions

The development's location is therefore desirable due to its location in terms of:

- The existing road leading to the existing village, which will provide access to the proposed development area.
- Furthermore, the development will eventually be integrated with the environment, have proper service provision and it will be well planned.
- The proposed development will have long term positive impacts on the local residents as the layout does not only make provision for residential units but also for business, institutional and municipal facilities.
- It will create job opportunities (permanent and temporary), ensure social upliftment of the area, create investment opportunities and create a sustainable development environment.
- The proposed development will not have a significant detrimental impact on the surrounding areas and is not in conflict with the adjacent land uses.

6. ALTERNATIVES

The EIA Regulations stipulate that a requirement of the Scoping and Environmental Impact Assessment Process is to investigate feasible and reasonable alternatives to the project proposal.

The EIA Regulations define "Alternatives", in relation to a proposed activity, as "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

The concept of alternatives is aimed at ensuring that the best among all possible options in all aspects (environmental, economic, etc.) is selected. The option of not carrying out the proposed actions (no-go option) or developments is discussed to demonstrate environmental conditions without the project.

This means that for any project that is proposed, there should be a number of possible proposals or alternatives for accomplishing the same objectives or meeting the same need. Alternatives that would still meet the objective of the original proposal, but which would also have an acceptable impact on the environment (referring to physical, biological, aesthetic/visual) must be considered.

6.1. FEASIBLE AND REASONABLE ALTERNATIVES CONSIDERED FOR THE PROPOSED ACTIVITY:

6.1.1. Site Alternatives:

Site alternatives are not applicable for this project. The site was also selected so that mainly the disturbed land will be developed.

6.1.2. Activity Alternatives:

The current preferred activity is deemed to be the only feasible activity alternative as this activity will result in improved housing which can accommodate more people and reduce the number of informal settlements. No other activities were considered in this application due to the assessed need and feasibility of the proposed activity.

6.1.3. Design Alternatives:

The unique character and appeal of Dumphries were taken into consideration with the design philosophy. Various layout alternatives were considered by the applicant and town planners, also taking terrain and environmental constraints into account, the current design plan being the result, however there is a possibility of a layout alternative that will still meet the objective of the project scope.

6.1.4. Operational Aspects

The operational aspects of the activity relate to the improved housing for the local community. No other alternatives were deemed feasible other than the proposed activity.

7. NO-GO ALTERNATIVES

This option would come into effect if this assessment reveals fatal flaws in the process. To date no fatal flaws have been revealed. The no-go alternative of not developing the proposed site would leave the environment in the current state.

8. LEGISLATION, POLICIES AND GUIDELINES

The following is a broad overview of the relevant policy and legal requirements, but not limited to, applicable to the proposed project.

8.1. The Constitution of the Republic of South Africa (No. 108 of 1996)

The Constitution is the most important part of a legislation that provides a framework for the environmental management in South Africa. Section 24 of the Constitution encourages the prevention of pollution and ecological degradation and also promotes sustainable ecological developments.

According to Chapter 2 of the Bill of Rights, everyone has the right to:

- An environment that is not harmful to their health or wellbeing,
- To have the environment protected, for the benefit of present and future generations through reasonable legislative and other measures that:
  - Prevent pollution and ecological degradation
  - Promote conservation and
  - Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

8.2. National Environmental Management Act (No. 107 of 1998)

The National Environmental Management Act generally known as "NEMA" is South Africa's overarching framework for environmental legislation. The NEMA Act sets out the principles of Integrated Environmental Management (IEM). NEMA aims to promote sustainable development, with wide-ranging implications for national, provincial, and local government. Included amongst the key principles is that all development must be environmentally, economically and socially sustainable and that environmental management must place people and their needs at the forefront, and equitably serve their physical, developmental, psychological, cultural and social interest. Section 2 of NEMA, sets out a range of environmental principles that are to be applied by all organs of state when taking decisions that may significantly affect the environment. Section 24, as amended, states that the activities that may significantly affect the environment and require authorization or permission by law must be

investigated and assessed prior to approval. These activities are listed in Government Notice R324, R325 and R327, 07 April 2017.

8.3. Environmental Impact Assessment Regulations, 2017

The Environmental Impact Assessment (EIA) Regulations, 2017, promulgated in terms of Section 24(5) of the National Environmental Management Act (No.107 of 1998) are divided into 3 Listing Notices, GNR 324, GNR 325 and GNR 327. GNR 327 defines activities which will trigger the need for a Basic Assessment and GNR 325 defines activities which trigger an Environmental Impact Assessment (EIA) process. If activities from both Listing Notices are triggered, then an EIA process will be required. Regulation 324 defines certain additional listed activities per province.

8.4 National Environmental Management: Biodiversity Act (Act 10 of 2004)

The National Environmental Management: Biodiversity Act (NEMBA) provides for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, which includes:

- The protection of species and ecosystems that warrant national protection;
- The sustainable use of indigenous biological resources;
- The fair 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.

8.5. National Heritage Resources Act (No. 25 of 1999)

In terms of Section 38 of the Heritage Resources Act, a Heritage Impact Assessment has to be undertaken for the following developments:

Any development or other activity which will change the character of a site

- Exceeding 5 000 m2 in extent; or
- Involving three or more existing erven or subdivisions thereof; or
- Involving three or more erven or divisions thereof which have been consolidated within the past five years; or
- The costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- The re-zoning of a site exceeding 10 000 m2 in extent; or

- Any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

Section 38 of the NHRA makes provision for developers to apply for a permit before any heritage resource may be damaged or destroyed.

8.6. Conservation of Agricultural Resources Act (No. 43 of 1983)

To provide for the conservation of the natural agricultural resources of the Republic of South Africa by the preservation of the production potential of land, by the combating and prevention of erosion and weakening or destruction of the water sources, and by the protection of the vegetation and the combating of weeds and invader plants.

9. NEMA LISTED ACTIVITY APPLIED FOR:

The Minister of Environmental Affairs and Tourism passed Environmental Impact Assessment Regulations in terms of Chapter 5 of the National Environmental Management Act (No. 107 of 1998). The most recent regulations came into place on 07 April 2017 and, therefore, all application must be made in terms of these NEMA regulations.

The purpose of this process is to determine the possible negative and positive impacts of the proposed development on the surrounding environment and to provide measures for the mitigation of negative impacts and to maximise positive impacts.

Notice No. R 982 to 985, specifically 983, 984 and 985 as amended by Notice No. R 324 to 327 list activities that must be considered in the process to be followed. The activities listed in Notice No. R 984 as amended by 325 requires that the Scoping and EIA process be followed. However, the draft guidelines document supplied by DEAT states that if any activity being applied for is made up of more than one listed activity and the scoping and EIA process is required for one or more of these activities, the full EIA process must be followed.

The applicant is therefore applying for the following listed activity:

Table 3: Listed activity triggered by the proposed development.

Number and Date of the Relevant Notice:	Activity No (s) In terms of the Relevant Notice	Project Description in Relation to the listed activity

GNR 325, Activity 15	The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	The clearance of an area of 88.41 Ha.

10. PUBLIC PARTICIPATION

10.1. Introduction and Objectives

As an important component of the EIA process, the public participation process involves public inputs from interested and affected parties (I&APs) according to the 2017 NEMA Regulations.

I&AP may comment during the planning phase of the proposed project.

The key objectives of the public participation process are to:

- Identify a broad range of I & APs, and inform them about the proposed project;
- Understand and clearly document all issues, underlying concerns and suggestions raised by the I & APs; and
- Identify areas that require further specialist investigation.

10.2. Methodology

The public participation process was undertaken in accordance with the plan of study as part of the Scoping Report that was accepted in terms of Regulation 22(a) of the NEMA Regulations. The following activities have already been undertaken as part of this process:

- Advertisement on the local newspaper
- On-site notices
- Hand delivery of notices to the landowners adjacent to the proposed development site.
- Phone calls and email consultation with stakeholders

10.2.1. Newspaper Advertisement

The proposed project was advertised in the local newspaper (Hazy View Herald) on the 24 February 2021 to inform people about the project and request them to register their names and comment on the proposed development.

(Refer to Appendix 6.6)

10.2.2. Site Notices

Site notices were placed at various points around the site.

Notices/ letters regarding the background information of the proposed development activity were also hand delivered to the landowners/ occupiers located next to the proposed development site.

(Refer to Appendix 6.7)

10.2.3. Consultation with Stakeholders

The scoping report was circulated to the stakeholders for observation and comments. **(Refer to appendix 6.4)**

10.2.4. Comments Received

The draft/ consultation EIA Report is currently being circulated for comments. Below are the comments received during the Scoping Phase of the project.

Table 4: Summary of Key Issues raised by the I&AP's:

Organisation	Name	Date Received	Comments Received	Responses
Mpumalanga Tourism & Parks Agency	P. L Khoza	12/03/2021	Your correspondence of date 03/03/2021 has reference. 1. Leago Environmental Solutions (Pty) Ltd on behalf of Bushbuckridge Local Municipality is proposing to establish a township of approximately 71.65 ha in extent and is expected to yield 514 stands. These will comprise of 500 residential, 7 business sites, 3 educational, 3 institutional and 1 community facility. 2. The sensitivity of the above farm of which the development will occur was assessed according to the Mpumalanga Biodiversity Sector Plan (MBSP; MTPA, 2014). This sensitivity is assessed in terms of the terrestrial and freshwater assessments. In the MBSP, sensitive areas are identified in terms of Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs). CBAs and ESAs are deemed to be necessary to ensure protection of biodiversity,	Good day Phumla, I hope you are well. All the comments have been noted and will be adequately addressed. Hope you find this in order. Regards, 

			environmental sustainability, and human wellbeing and are to remain unaltered. • According to the terrestrial assessment, the development is proposed to occur within the 5km protected area buffer of the Sabie Sand Game Reserve. Although it is within the buffer, it is also within moderately to heavily modified areas. • According to the freshwater assessment, the proposed development will occur within an ESA Important sub-catchment area. 3. Recommendations • The MTPA agrees to the proposed ecological/ biodiversity studies that will be undertaken as part of the EIA process for the site-specific baseline information to be established for the potential impact on the development. • The report should address the following: flora and fauna- conservation important species that need to be avoided or rescue permit to be obtained from the Mpumalanga Tourism and Parks Agency (MTPA) or other relevant authorities (if any) are identified and protected	

			accordingly. Relocation of plants of conservation concern should be included and relocation should be done by specialist with expertise in the area of environmental concern. • The demarcation layout plan does not show any public open spaces. We would like for this plan to be revised and add one or more public spaces to be included. • All the negative environmental impacts that could arise as a result of this development should be avoided, minimised, mitigated or rehabilitated. • The MTPA is looking forward to receiving and reviewing the draft EIA report once it is available.	

Table 2: Comments and Responses

11. ENVIRONMENTAL ASPECTS

11.1 LITERATURE REVIEW

Literature pertinent to this area and its immediate environs have been reviewed.

11.2. DESCRIPTION OF THE ENVIRONMENT

11.2.1 Topography

The slope of the proposed development site is relatively flat.

11.2.2. Climate

Dumphries Village climatic conditions can be characterised as semi-arid climate which receive approximately 353mm precipitation annually. The highest temperatures in Dumphries occur in the month of January at 29°C, while the lowest temperatures can be observed in the month of July at 22°C.

11.2.3. Geology of the Area

According to literatures and geological maps of the site, it can be confirmed that the site geology is canning moor tonalite.

11.2.4. Hydrology

According to the geotechnical investigation assessment report, no groundwater seepage was encountered in any of the trial pits excavated as part of the investigation.

11.2.5. Historical, Archaeological or Cultural Sites

A heritage specialist was appointed to assess the site and determine whether any significant material or graves are present at or near the site.

12. SUMMARY OF FINDINGS AND RECOMMENDATIONS OF SPECIALIST STUDIES AND SPECIALISED PROCESSES.

The necessary specialist studies have been performed in areas where possible negative impacts were identified. Specialist studies conducted in relation to the proposed development are:

12.1. Ecological Assessment

Details of the Specialist:

Afrika Enviro & Biology
P.O. BOX 2980
White River
1240

Cell: 072 623 1845
Email: danie.aeb@gmail.com

Contact Person: Danie van der Walt
Area of Expertise: Environmental & Biodiversity Assessment Specialist

Findings

Vegetation & Habitats

Floral diversity was determined by completing survey transects and sample sites along all the different habitats within the physiographic zones represented in the study area (Deal et al. 1989a). In order to attain scientifically reliable results, obviously distinct vegetation communities were surveyed by selecting representative sites in each homogenous unit (Mathews et al. 1992).

The vegetation units of Mucina & Rutherford (2006) are used as reference but where necessary communities are named according to a unit's diagnostic floral feature and/or topographical setting or other biophysical features (or a combination of several descriptive features). By combining the available literature with the survey results, stratification of vegetation communities was possible.

The survey transects and sites in the affected areas were also intensively searched for important species and the potential for Red Data Listed (RDL) and other important species were established and cross referenced with PRECIS Data for the relevant quarter degree grid/s (POSA) as obtained from the SANBI data base. The aim was to identify distinct vegetation types and to establish their integrity and representation in the study area. The vegetation and habitats are described on site and local level in section 4 of this report.

Terrestrial Fauna

The fauna investigation is based on a desktop study verified by cross reference with available habitats of the study area in order to establish the faunal potential. All fauna that were observed during field trips and floral surveys were also recorded. However, selected survey sites were searched for fauna and habitats were identified during the vegetation surveys so as to establish the faunal potential of a particular area.

Ecological Importance and Sensitivity Rating of Habitats

By considering the results of all the above investigations, the authors allocate a qualitative sensitivity rating to the habitats that were identified, based upon its ecological importance and biodiversity value. A qualitative method was chosen at the first stage of assessment instead of a quantitative method in order simplify the procedure of assessment.

Conclusions and Recommendations

It is concluded that the terrestrial vegetation assemblage and habitat on the site is degraded and impoverished (as will also be the case with the fauna assemblage). By selecting the best option to place the footprint without directly affecting sensitive ecological features and important species (e.g. the wetland zones and conserving large trees) the potential impacts on the ecology and biodiversity will be mitigated.

12.2. Wetland Assessment

Details of the Specialist:

Afrika Enviro & Biology
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White River
1240

Cell: 072 623 1845

Email: danie.aeb@gmail.com

Contact Person: Danie van der Walt

Area of expertise: Environmental & Biodiversity Assessment Specialist

Findings

The topography of the site relatively flat but slopes towards the main drainage line to the west of the site. The slope is gentle and becomes steeper to the west where a drainage basin is formed on an east –west axis. As result of the flat topography on the central section, seasonal flat wetlands are formed in this area when periods of heavy rain are experienced. The wet conditions may continue for a prolonged period of time depending on soil saturation and the depth of the water table. Subsurface flow is directed in this direction when the soil is saturated during and after the rainy season. It is suspected that a shallow hard subsurface horizon is present, creating a perched water table that comes to the surface in places as seepage flow as the predominantly sandy soil is ideal for the formation of seepage wetlands.

Flow is seasonal and the wetland surface may dry out during the dry season. These wetlands do not form a single large observable unit but comes to the surface as numerous sub-units of different sizes that can be termed as wetland clusters. The soil samples confirm wetland conditions (wet, grey clayey soil). During the dry season the soil on the surface is bleached white by the sun and is readily observable on aerial images.

Vegetation indicators include hygrophilous grasses and sedges. The grass Sporobolus africanus is the dominant wetland indicator, other grasses present are Digitaria eriantha, Eragrostis micrantha and Panicum schinzii. Several species of Cyperacea are indicators of wet conditions.

Recommendations

The investigation found that the wetlands on site are largely natural - moderately modified (PES= Class B/C) and medium ecological sensitivity and importance. A 20m buffer zone is recommended to protect the wetlands and hydrological features. The ecological functions and overall condition of the wetland can be maintained and improved by simple rehabilitation tasks, maintenance of infrastructure and preventative measures, especially alien invasive vegetation control, erosion control and not allowing illegal sand mining and encroaching informal settlements.

The investigation and assessment concludes that the aquatic ecosystems and wetlands will not be significantly affected by the proposed activities if the appropriate buffer zone and mitigation measures are adhered to. The wetlands and sensitive biota will be protected within a buffered conservation area. Generic mitigation measures will apply with regards to alien invasive vegetation, pollution, erosion/sedimentation and other environmental aspects.

12.3. Heritage Impact Assessment

Details of the Specialist:

Heritage Contracts and Archaeological Consulting CC (HCAC)
Private Bag X1049, Suite 34,
Modimolle
0510

Cell: 082 373 8491
Email: jaco@heritageconsultants.co.za

Contact Person: Jaco van der Walt
Area of Expertise: Heritage and Archaeological Specialist

Findings

During the site visit, the area was characterised by high vegetation cover due to heavy rains limiting archeological visibility, however two areas containing Iron Age sites were identified. These areas consist of cattle kraals and middens marked by a change in grass types, ashy soil and ceramic sherds that is eroding out from the sides of the small gravel roads. A concentration of large Marula trees is also found on these sites. The recorded ceramics are mostly undecorated although a few decorated

fragments were found characteristic of the Early Iron Age on Later Iron Age (Maguga facies) but a larger sample is needed to accurately place the ceramic industry.

Recommendations

- The area must be subjected to heritage walk through after the winter when the vegetation cover is lower to identify additional areas with Iron Age material and to determine the extent of the recorded sites;
- The Iron Age sites will have to be mitigated, excavated and documented before a destruction permit can be applied for;
- Archaeological monitoring of the sites during destruction and installation of services;
- If the Iron Age sites can be preserved in situ within the development this will be preferable and a Site Development plan will then have to be developed for the project;
- The lack of graves in the study area will have to be confirmed through social consultation;
- Implementation of a chance find procedure for the project

12.4. Geotechnical Investigations

Details of the Specialist:

Zwandazwashu Consulting (Pty) Ltd
Unit 01A Stanford Park
817 16th Road
Randjespark, Midrand, 1685

Cell: 079 081 2369/ 067 706 9904
Email: admin@zwandazwashu.co.za

Contact Person: Mavhetha Lavhelesani
Area of Expertise: Geologist

Findings

- The area investigated is underlain by top soils of sand, including residual soils derived from the in-situ weathering of Granite.
- Residual soil from Granite is well developed and was encountered in the entire site an average depth of 1.9m below existing ground level.
- The excavation on site is likely to classify as "soft" to an average depth of 1.9m below existing ground level. Below this, "intermediate to hard" excavation is expected. This due to the underlining granite bedrock.

- The laboratory tests indicated that material underlying the site exhibits low potential expansiveness
- The topsoil is characterised by an upper stratum of sandy silt which have an average thickness of 0.4m in the range 0 to 0.4m below ground level. It is characterised by non-cohesive materials typically described as "Dry to Slightly moist, greyish, intact, Dense, sandy silt.

Seepage and Groundwater

Natural ground water seepage was encountered at an average of 2.1m onsite at an area that is classified as C1 in terms of soil site designation which can be regarded as a wetland.

Recommendations

Foundations on Residual Soils

Residual soil and its parent rock were encountered at various, uneven depths ranging from 0.7 to 1.95m below the ground level. Therefore, the recommended foundation type is a ***reinforced strip foundation founded on a G5/G6 engineered soil mattress***. The in-situ material can be utilised for founding material as there are of G5 material.

- Reinforcement should be designed by a competent person. The following construction procedures apply.
- All topsoil to be stripped to spoil;
- Foundation trenches for 500mm wide strip footing to be over-excavated to 1.0m wide by 1.6m deep below existing ground level;
- Excavation to be backfill with G6 quality material to a depth of 0.6m existing ground level; G6 material to be compacted in 150mm thick layers to 93% Mod AASHTO density at –1% to +2% OMC;
- Strip footings 500mm wide and adequately reinforced should be constructed at a depth of 0.6m;
- The allowable bearing capacity should be limited to 150kPa on the engineered soil mattress;
- Articulation joints at some internal doors and all external doors;
- Light reinforcement in masonry;
- Good site drainage requirements.

Foundations on weathered Granite

The slightly weathered granite hard rock is encountered at a depth of 0.8m below existing ground level. The recommended foundation type is a normal strip foundation onto the medium hard rock granite. The following construction procedures apply:

- All topsoil to be stripped to spoil;

- Foundation excavation to the moderately weathered, highly fractured, medium hard rock at an average depth of 1.9 m below existing ground level;
- The excavation onto the weathered Granite to be hand cleaned and all loose material to be removed;
- A concrete blinding to be cast to onto cleaned rock surface prior to casting foundations;
- The allowable bearing capacity should be limited to 300kPa on the weathered Granite bedrock

During the construction phase, it is highly recommended that qualified personnel should regularly inspect and monitor, to track and record deviations in the actual foundation conditions from those predicted as reported in this geotechnical site investigation report

12.5. Flood line Report

Details of the Specialist:

Dalimede Projects (PTY) LTD
No. 11 Pierre street, IT Park RentCo
Building, Office 6,
Bendor, 0699

Cell: 079 368 8414
Email: admin@dalimede.com

Contact Person: Litmos Mthunzi
Area of expertise: Civil Engineering, Floodline and Storm Water

Findings

In terms of section 114 of the National Water Act, Act 36 of 1998 the above-mentioned property is partially affected by flood water within the 1:100 period from the stream / river as indicated in the floodline report.

Recommendations

The floodline report recommends that a buffer zone of 20m should be provided between the 1:100 flood line and any proposed development.

12.6. Engineering Services (Bulk Infrastructures)

Details of the Specialist:

Dalimede Projects (PTY) LTD

No. 11 Pierre street, IT Park RentCo
Building, Office 6,
Bendor, 0699

Cell: 079 368 8414
Email: admin@dalimede.com

Contact Person: Litmos Mthunzi
Area of expertise: Civil Engineering, Floodline and Storm Water

Findings

Solid Waste

A regional landfill situated nearest the site is to be used to dispose solid waste. The local municipality is responsible for connecting and disposing the solid waste.

Sewer Reticulation

Sewer reticulation must be constructed to service the township on the premise that the following must be in-place:

- A Waste Water Treatment Works (WWTW) to handle the sewer for the whole Dumphries area or;
- A WWTW package plant to handle the proposed township sewer flows.

Water Bulk line

There is an existing 200mm diameter water bulk line linking the 600kℓ command reservoir to the Dumphries B 180kℓ and 600kℓ reservoirs along the D4392 road.

Water Source

The Dumphries B village water source is the Inyaka Dam Bulk Water Treatment Works (WTW), whose custodian is Bushbuckridge Water. The Inyaka Dam is located 42km north east to the Dumphries site.

Water is conveyed from the Inyaka Bulk WTW to the existing Dumphries 600kℓ command reservoir.

Water Bulk Proposed

The central area of the proposed township has elevation just over 10m below that of the command reservoir. This implies that a gravity feed alone from the command reservoir would have stands that may not receive water.

Recommendations

Solid Waste

If the municipality is not able to provide the services, then a private company will need to be appointed by the development owners for the service.

Sewer Reticulation

- A new WWTW will require a water use licence from the Department of Water and Sanitation (DWS).
- If the above conditions are not met, then sewer flow may have to be handled onsite, as currently is the situation in the area.

Water Bulk

A booster pump and a 20m elevated tank would suffice to boost the township. It is also proposed that additional water sources would be needed to augment the existing water source.

12.7. Storm Water Management Plan

Details of the Specialist:
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Contact Person: Litmos Mthunzi
Area of expertise: Civil Engineering, Floodline and Storm Water

Findings

The run-off from the roofs, gutters and downpipes shall be collected in rainwater harvesting tanks considering any overflows being dispersed overland into swales and ultimately collected into underground storm water systems and contained in two storm water attenuation ponds. Hardened areas, like roads and parking areas will be routed overland, collected in kerbs and channels and into grid inlets or catch pits where it is collected in concrete storm water pipes and diverted into the two stormwater attenuation ponds along the lower boundary of the site where increased flow will be attenuated, whilst silt is deposited.

The storm water attenuation ponds should be located along the lower end of the site, but outside the mainstream area to encourage the infiltration of storm water, whilst silt is collected. The outlet or discharge from the attenuation pond will be protected with gabion mattresses and other energy dissipaters from where it will be released into the natural drainage areas and stream in a controlled manner.

Recommendations

- The storm water design parameters used in the design of the storm water management system are accepted and approved.
- The detail design of the storm water system includes recommendations of this storm water management plan.
- Rainwater harvesting should be encouraged at all residential dwellings.
- Rainwater harvesting tanks should be included in building plans submitted to the municipality for building plan approval.
- The storm water attenuation ponds should be constructed off-channel before draining into the stream.
- The storm water system must be kept separate from the sewerage system.
- All chemicals, cement, fuel and other hazardous material used during construction should be stored in controlled areas and not lower than the internal road.
- Concentration of storm water should be prevented where possible, but energy dissipaters should be provided in areas of concentration.
- On completion of every construction phase within the development, comprising the construction of buildings, roads and parking areas, all remaining exposed embankments and open areas must be vegetated as soon as possible, including the use of "Soilsaver", where necessary.
- During the construction phase, the following aspects shall be closely monitored by the ECO to ensure the contractor complies:
    - Temporary berms and cut-off drains must be provided on site to collect runoff, especially until the storm water attenuation pond is complete and functional.
    - Silt screens must be provided at the catch pits during road/storm water construction.
    - Topsoil must be conserved on site and prevented from entering the storm water system.
    - Exposed embankments, cut/fill slopes and open areas must be vegetated as soon as possible to reduce runoff.
    - Dust control during construction must be always applied.
    - Excess spoil material from topsoil or bulk earthworks must be placed in areas or even removed entirely off site to minimise silt deposition, scouring and soil erosion.

- Post construction, all exposed areas must be covered in vegetation, grass or landscaped.

12.8. Traffic Impact Assessment

Details of the Specialist:
Nyeleti Consulting (Pty) Ltd
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Menlopark
0102

Tel: (012) 361 3629
Email: trikhotso@nyeleti.co.za

Contact Person: Nyeleti Rikhotso
Area of expertise: Traffic Engineer

Findings

- The current traffic volumes were determined by means of 12-hour traffic counts. Traffic was counted from 06:00 to 18:00 on Thursday the 12 of November October 2020.
- The morning peak is between 06:45 to 07:45 and the afternoon peak is between15:30 to 16:30 at the respective intersection.
- The modal split on Dumphries Road and Access Road to School (Intersection 1) is made up of Light Vehicles (LV) at about 74.2% followed by Taxis at about 23.5%, Buses at 0% and Heavy Vehicles (HV) at about 2.3%.
- The existing Intersection at Dumphries Road and Access Road to School (Intersection 1) operates at average delays of 1.6 seconds and 0.9 seconds for the morning and afternoon peaks respectively.
- The existing Intersection at Dumphries Road and Access Road to School (Intersection1) operates at average delays of 1.6 seconds and 0.9 seconds for the morning and afternoon peaks respectively.
- The proposed development will generate 150 trips in the morning peak and 150 trips in the afternoon peak.
- It was assumed that traffic growth will be proportional to GDP growth, therefore an annual traffic growth rate of 1.7% for design traffic was assumed.
- Design and Planning Horizon analysis was undertaken for the existing Dumphries Road and Access Road to School (Intersection 1) intersection.

- The Design Horizon traffic volumes for the Dumphries Road and Access Road to School (Intersection 1) intersection will operate at acceptable Level of service for both morning and afternoon peaks.
- The average delay for all vehicles is 6.0 seconds and 5.4 seconds for the morning and afternoon peaks at design horizon traffic volumes at the existing Dumphries Road and Access Road to School (Intersection 1) intersection.
- The average delay for all vehicles is 6.0 seconds and 5.4 seconds for the morning and afternoon peaks at design horizon traffic volumes at the existing Dumphries Road and Access Road to School (Intersection 1) intersection.
- The average delay for all vehicles is 6.0 seconds and 5.4 seconds for the morning and afternoon peaks at planning horizon traffic volumes at the Dumphries Road and Access Road to School (Intersection 1) intersection.
- NMT and universal access facilities be incorporated in the design and construction of the proposed township establishment development and the roads adjacent to the development.
- The access to the development must be designed and constructed such that it meets the Bushbuckridge local municipality requirements by a Professional Engineer or Engineering Technologist.

Recommendations

- The proposed development should be considered favourably from a traffic engineering point of view by the relevant authorities, given the proposed road upgrades in this report.
- NMT and universal access facilities be incorporated in the development especially on the roads / access that will be used by Public Transport and where the social facilities will be located.
- Detailed designs for the development access should be undertaken by a professional engineer / technologist with suitable road design experience.

13. ENVIRONMENTAL IMPACT DETERMINATION AND EVALUATION

13.1 Methodology to assess the impacts

To assess the impacts on the environment, the process has been divided into two main phases namely the Construction phase and the Operational phase. The activities, products and services present in these two phases have been studied to identify and predict all possible impacts.

In any process of identifying and recognising impacts, one must recognise that the determination of impact significance is inherently an anthropocentric concept. Duinker and Beanlands, (1986) in DEAT 2002, Thompson (1988), in DEAT 2002 stated that the significance of an impact is an expression of the cost or value of an impact to society.

However, the tendency is always towards a system of quantifying the significance of the impacts so that it is a true representation of the existing situation on site. This has been done by using wherever possible, legal and scientific standards which are applicable.

The significance of the aspects/impacts of the process have been rated by using a matrix derived from Plomp (2004) and adapted to some extent to fit this process. These matrixes use the consequence and the likelihood of the different aspects and associated impacts to determine the significance of the impacts.

The consequence matrix use parameters like severity, duration and extent of impact as well as compliance to standards. Values of 1-5 are assigned to the parameters that are added and averaged to determine the overall consequence. The same process is followed with the likelihood that consists of two parameters namely frequency and probability. The overall consequence and the overall likelihood are then multiplied to give values ranging from 1 to 25. These values as shown in the following table and are used to rank the significance.

Table 5: Significance ratings

Significance	**Low**	**Low Medium**	**Medium**	**Medium High**	**High**
Overall Consequence X Overall Likelihood	1-4.9	5-9.9	10-14.9	15-19.9	20-25

Table 6: Description of the parameters used in the matrixes

SEVERITY	
Low	Low cost/high potential to mitigate. Impacts easily reversible, non – harmful insignificant change/deterioration or disturbance to natural environments.
Low-medium	Low cost to mitigate small/ potentially harmful moderate change/deterioration or disturbance to natural environment.
Medium	Substantial cost to mitigate. Potential to mitigate and potential to reverse impact. Harmful Significant change/ deterioration or disturbance to natural environment.
Medium-high	High cost to mitigate. Possible to mitigate great/very harmful, very significant change/deterioration or disturbance to natural environment.

High	Prohibitive cost to mitigate. Little or no mechanism to mitigate. Irreversible. Extremely harmful Disastrous change/deterioration or disturbance to natural environment.

DURATION	
Low	Up to one month
Low-medium	One month to three months
Medium	Three months to one year
Medium-high	One to ten years
High	Beyond ten years

EXTENT	
Low	Project area
Low-medium	Surrounding area
Medium	Within the jurisdiction of Bushbuckridge Local Municipality
Medium-high	Within Ehlanzeni District Municipality area
High	Regional, National and International

FREQUENCY	
Low	Once a year or once during operation
Low-medium	Once in 6 months
Medium	Once a month
Medium-high	Once a week
High	Daily

PROBABILITY	
Low	Almost never/almost impossible
Low-medium	Very seldom/highly unlikely
Medium	Infrequent/unlikely/seldom
Medium-high	Often/Regularly/Likely/Possible

High	Daily/Highly likely/definitely

COMPLIANCE The following criteria are used during the rating of possible impacts.	
Low	Best practise
Low-medium	Compliance
Medium	Non-compliance/conformance to Policies etc. – Internal
Medium-high	Non-compliance/conformance to Legislation etc. – External
High	Directive, prosecution of closure or potential for non-renewal of licences or rights

14. KEY ENVIRONMENTAL IMPACTS

Table 7: The following environmental impacts were identified

Environmental Issues	Possible Cause	Potential impacts
Air Pollution and Noise		
Smoke	• Vehicle emissions. • Fires	• Health problems. • Air pollution. • Public nuisance. • Noise pollution.
Dust	• During construction • Vehicle operation on roads • Vegetation clearing	
Fumes	• Fumes from vehicles • Fumes from machinery	
Noise	• Construction machinery and vehicles. • Presence of construction camp. • Operation noise (music and people).	
Environmental issues	**Possible Cause**	**Potential Impacts**
Water Quality		
Pollution of water sources	• Spillage of fuel & oil from vehicles. • Spillage of building material e.g. cement etc. • Migration of contaminants off the site. • Solid waste in storm water. • Littering.	• Pollution of surface and groundwater. • Health risk. • Lower water quality. • Soil degradation. • Erosion. • Siltation.
Silt deposition in surface water	• Erosion risk due to increased run-off from built up area. • Erosion from cleared areas during construction.	

Pollution from sanitation system	• Leakages of system and incorrect management of sanitation system. • Inadequate measures to prevent sewage spillages. • Overflow of sewage to groundwater.	
Environmental Issues	**Possible Cause**	**Potential Impacts**
Water Quantity		
Impact on amount of water resources Available	• Over-utilisation of available water.	• Lose scarce resource • Increased pressure on ground water supply sources.
Environmental Issues	**Possible Cause**	**Potential Impacts**
Land/Soil Degradation		
Soil contamination and degradation	• Spillages of oil, chemicals from machinery & vehicles. • Removal of vegetation during clearing for construction. • Sewerage spillages. • Erosion due to increased runoff from built-up areas. • Increased erosion of drainage channels. • Site clearing during construction.	• Soil degradation • Loss of topsoil • Dust formation • Erosion
Environmental Issues	**Possible Cause**	**Potential Impacts**
Biodiversity		
Decline in fauna and flora diversity	• Cleaning of site for construction. • Pollution of soil. • Pollution of water resources. • Physical establishment of development. • Loss of habitat due to establishment of development.	• Loss of biodiversity. • Loss of habitat. • Negative impact on biodiversity. • Negative impact on rare /endangered/ endemic species and habitats.
Environmental issues	**Possible Cause**	**Potential impacts**
Cultural/Heritage		

Possible loss of heritage sites	• Damage / loss during construction. • Damage / loss during operation.	• Possible loss of cultural heritage.
Environmental Issues	**Possible Cause**	**Potential Impacts**
Visual Impact		
Impact of the proposed development of sense of place.	The physical existence of the development.	• Negative impact on landscape quality character. • Negative impact on sense of place.
Visual impact	• Construction site and buildings. • Lights at night. • Presence of new development. • Overhead power lines.	• Obstruction. • Visual intrusion. • Public nuisance.
Environmental Issues	**Possible Cause**	**Potential Impacts**
Health and Safety		
Security	• Influx of people to area including construction workers and others after completion.	• Loss of safe and secure environment. • Threat to health. • Danger to human life.
Fires	• Accidental fires. • Burning of waste. • Cooking with fires.	
Environmental Issues	**Possible Cause**	**Potential Impacts**
Socio-Economic Impacts		
Impact from change of land use from agriculture to township.	• Change of land use to residential, business, institutional, educational, public open spaces and streets.	• Impact negatively on agricultural production. • Land will no longer be used for agriculture.
Impact of the residential and other development on adjacent landowners	• Noise from construction activities, • Dust generated by construction vehicles and from site preparation. • The visual impact of lights. • The visual impact of residential and other units (business, institutional etc.)	• Nuisance and disruption. • Noise pollution. • Air pollution. • Negative visual impact.
Impacts related to the	• Location of construction camp.	• Adverse impact on the environment.

establishment of a construction camp with accommodation	• Environmental impacts of construction activities e.g. spillage of hazardous liquids such as oil and fuel onto the soil surface. • Accommodation of construction teams on site • Littering, accidental fires, collecting of firewood and poaching. • Undesirable visitors to the area.	• Resentment from neighbouring residents.
Impact ground and water pollution from littering and waste disposal during construction and operational phases	• The presence of a large work force and equipment and machinery during construction causing littering and dumping refuge and builder's rubble on site. • Construction activities from heavy vehicles and machinery.	• Soil and water pollution
	• The construction of structures such as open trenches and earth heaps might also hold safety risks for people.	• Safety risks for motorists, passengers, pedestrians and residents of the area
	• A lack of proper ablution facilities for temporary workers during construction.	• Soil and water pollution • Unhygienic conditions • Health risk.
Impact from the provision of structures and infrastructure services	• The development, construction and provision of infrastructure services.	• Pollution from sanitation systems • Pollution of water resources. • Negative visual impact of overhead power lines and electricity supply and waste removal. • Soil erosion as a result of the construction of internal roads and water reticulation networks.
Impact on archaeological /cultural / social features	• The development of structures and infrastructure services for residential and other sites. • Clearing of construction sites. • Construction of access roads.	• Negative impact on cultural or heritage resources.

	• Excavation of trenches for the installation of underground pipelines and cables.	
Job creation Ownership	• Temporary jobs during construction phase. • Permanent jobs during operation. • New housing. • New businesses. • New institutions	• Positive impact – job creation.

15. CONCLUSIONS

The purpose of this report is to provide MDARDLEA with sufficient information regarding the potential impacts of the development to make an informed decision regarding the approval of the proposed township establishment.

The proposed development has no fatal flows in terms of the biophysical and socio economic environment. In fact, it is believed that proposed development compliments the required and desired balance to be achieved between the socio-economic and environmental factors.

The Environmental Management Plan and all the mitigation measures provided in the specialist reports should be strictly adhered to, therefore mitigating impacts as far as possible. Should this site not be developed, it will remain as isolated and an unconnected area that will be vulnerable to crime and potential illegal informal occupation.

16. RECOMMENDATIONS

The EAP recommends that the "township establishment" option which has been identified as the preferred alternative is used. It is further recommended that this application be approved with the following conditions:

- All the requirements from the Bushbuckridge Local Municipality be adhered to including:
- The conditions of the Environmental Authorisation from the Competent Authority (MDARDLEA)
- The responsibilities to obtain any further authorisations and/or licenses will rest on the proponent of the project, PRIOR to any activities on site
- The EMPr conditions as attached to this report
- An Environmental Control Officer (ECO) should be appointed to audit the Environmental Management Plan on a bi-weekly basis during the construction phase of the development.