Construction of Acornhoek Road, Acornhoek, Bushbuckridge Local Municipality, Mpumalanga Province

Draft Basic Assessment Report

23 August 2021

CORE Environmental Services

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Professional Registration -
SACNASP: 300067/15

EAPASA: 2020/602

EXECUTIVE SUMMARY

Bushbuckridge Local Municipality is proposing to surface the existing gravel road within Acornhoek. As part of the construction/surfacing process, culverts will also be constructed at three respective water crossings along the alignment of the existing road. Although the construction/surfacing of the existing road does not trigger any listed activity in accordance with the National Environmental Management Act 107 of 1998, Environmental Authorisation is however required for activities taking place within a watercourse.

Core Environmental Services was subsequently appointed as an independent Environmental Consultant, to apply for the Environmental Authorisation by means of conducting a Basic Environmental Authorisation Application process in accordance with GNR 982, 2014 (as amended in 2017). The applicant is also applying in terms of Section 21 of the National Water Act 36 of 1998 (NWA 36, 1998) for impeding or diverting the flow of water in a watercourse and altering the bed, banks, course of characteristics of a watercourse during the construction as well as operational phase of the project.

The establishment of the development area are likely to result in environmental and socio-economic impacts. The identified impacts are listed below and discussed thereafter:

- *Impact on biodiversity;*
- *Generation of dust;*
- *Impact on soil;*
- *Impact on water resources;*
- *Socio-economic impact.*

The table below summarises the impacts identified and assessed for the establishment of the project:

IMPACT	SIGNIFICANCE BEFORE MITIGATION MEASURES	SIGNIFICANCE AFTER MITIGATION MEASURES
Construction Phase Impacts		
Biodiversity Impact	Low	Very Low
Generation of dust	Medium	Low
Erosion	Low	Very Low
Soil Pollution	Medium	Low
Impact on water resources	Low	Very Low
Job opportunities	Low (+)	Medium (+)
Health and Safety	Low	Very Low
Operational Phase Impacts		
Impact on Dust	Low	High (+)
Impact on water resources	Low	Medium (+)
Socio-economic Impact	Very Low	High (+)

The assessment of the possible impacts associated with the establishment and operational activities, concluded that the impact on the surrounding environment is of **low significance**. Recommendations have however been made to address the impacts which could affect the biophysical and socio-economic environment. It is recommended that pro-active measures are taken to minimise the spread of alien invasive vegetation. Recommendations for the mitigation of impact are included within Section 6 and also the Draft Environmental Management Plan attached.

It is the opinion of the EAP that the EA for this project should be granted, and the proposed mitigation included as the conditions of the authorisation.

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ABBREVIATIONS

BAR	Basic Assessment Report
CBA	Critical Biodiversity Area
EA	Environmental Authorisation
GNR	General Notice Regulation
I&AP	Interested and Affected Party
LIA	Late Iron Age
MDARDLEA	Mpumalanga Department of Agriculture, Rural Development, Land and Administration
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NHRA	National Heritage Resources Agency
PPP	Public Participation Process
SACAA	South African Civil Aviation Authority

1. OVERVIEW OF THE PROJECT

1.1 Introduction

Bushbuckridge Local Municipality is proposing to surface the existing gravel road within Acornhoek, Bushbuckridge Local Municipality. As part of the construction/surfacing process, culverts will also be constructed at three respective water crossings along the alignment of the existing road. Although the construction/surfacing of the existing road does not trigger any listed activity in accordance with the National Environmental Management Act 107 of 1998, Environmental Authorisation is however required for activities taking place within a watercourse.

Core Environmental Services was subsequently appointed as an independent Environmental Consultant, to apply for the Environmental Authorisation by means of conducting a Basic Environmental Authorisation Application process in accordance with GNR 982, 2014 (as amended in 2017). The applicant is also applying in terms of Section 21 of the National Water Act 36 of 1998 (NWA 36, 1998) for impeding or diverting the flow of water in a watercourse and altering the bed, banks, course of characteristics of a watercourse during the construction as well as operational phase of the project.

1.2 Location

The proposed site is located in Acornhoek, Bushbuckridge Local Municipality, Mpumalanga Province at the following point locations:

Start Coordinates:
24°34'01.15"S
31°03'27.26"E

End Coordinates:
24°35' 33.94"S
31°03'43.12"E

Please refer to the locality map below, Figure 1.

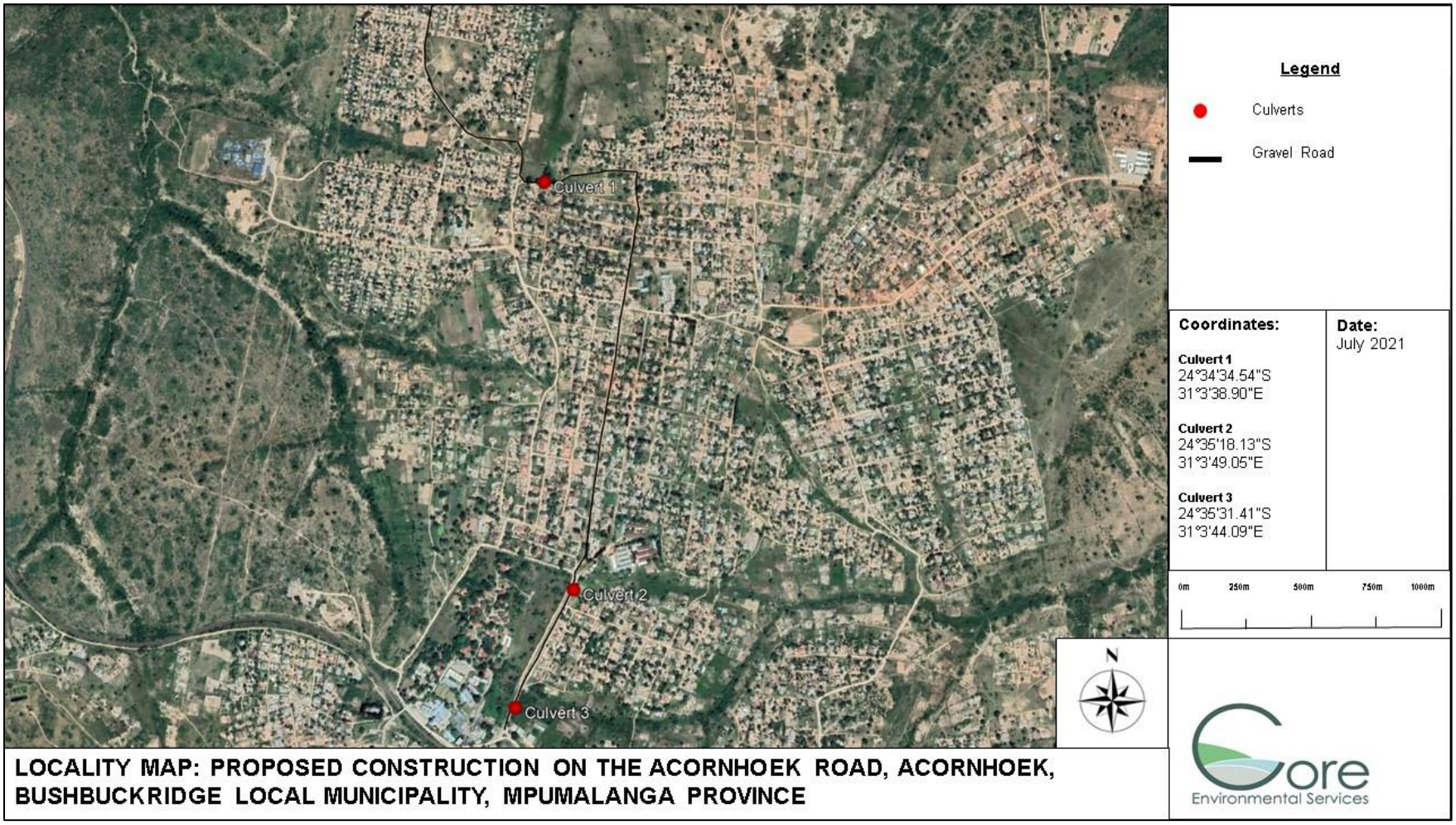

FIGURE 1: LOCALITY MAP – PROPOSED CONSTRUCTION ON THE ACORNHOEK ROAD

1.3 Details of the EAP

Ms. Anne-Mari White, is an Environmental Specialist, who started her studies at the North-West University (NWU) and completed her Bachelor of Science: Environmental Management at the University of South Africa (UNISA) in 2007. Ms. White is registered with the Environmental Assessment Practitioners Association of South Africa (EAPASA Reg No: 2020/602) as well as the South African Council for Natural Scientific Professionals as a Certificated Natural Scientist (Reg. No 300067/15). In addition to her qualification, she completed short courses in soil classification and wetland delineations (Terrasoil Science), Geographic Information Systems (University of KwaZulu-Natal), and Environmental Impact Assessments (NWU).

1.4 Policy, Legal and Administrative Framework

TABLE 1: LEGISLATION APPLICABLE TO THE PROJECT

Applicable legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments considered	Project application and type (permit / licence / authorisation / comment)
The Constitution of South Africa, Act No. 108 of 1996	**Bushbuckridge Local Municipality** will be required to adhere to the Environmental Management Programme (EMPr) requirements to ensure that social and environmental management considerations are considered and implemented. As per Section 25 the Constitution, a public participation process (PPP) was and will continue to be undertaken, as this is considered to be an essential mechanism for informing stakeholders of their rights and obligations in terms of the project.
National Environmental Management Act, 1998 (Act No. 107 of 1998)	Environmental Authorisation will subsequently be applied for by means of conducting a Basic Environmental Authorisation process as regulated within GNR982 of 2014 (as amended in 2017).
National Biodiversity Act, 2004 (Act No. 10 of 2004)	The act 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 and equitable sharing of benefits arising from bioprospecting involving indigenous biological resource; the establishment and functions of a South African National Biodiversity Institute; and for matters connected therewith.

	The National Biodiversity Act, 2004, must therefore be considered prior to the clearance of vegetation to minimise the impact on the terrestrial biodiversity.
Occupational Health and Safety Act, 1998 (Act No. 85 of 1998)	The Act provides for the health and safety of people at work and for the health and safety of people using plant and machinery. During establishment, work must be conducted with strict adherence to the Occupational Health and Safety Act 85 of 1998.
National Heritage Resources Act, 1999 (Act No 25 of 1999)	This legislation aims to promote good management of the national estate, and to enable and encourage communities to nurture and conserve their legacy so that it may be bequeathed to future generations. Should any other items of significance be discovered during establishment, a Heritage Specialist must be contacted immediately, and work must cease until confirmation from the Specialist is received. For this reason, the applicant must adhere to the regulations stipulated within the National Heritage Resources Act, 1999.
Mpumalanga Provincial Roads Act, 2008 (Act No 1 of 2008)	The Act provides for the establishment, transformation, restructuring and control of the Mpumalanga Provincial road network; to develop and implement Provincial road policy, norms and standards; to provide for optimum road safety standards, efficient and cost-effective management of the Provincial road network, the maintenance of Provincial road asses and the provision and development of equitable road access to all communities within the Province; to provide for transparency in the development and implementation of Provincial road network policies and practices; and to provide for matters connected therewith.
Bushbuckridge Local Municipality Integrated Development Plan (IDP) (2021 - 2022)	The primary objectives of the IDP are to foster economic growth that creates jobs and improve infrastructure within the province. Within the IDP's SWOT Analysis it was listed that one of the weaknesses are poor public road infrastructure, facilities, and pedestrian access to enable service delivery and economic development. This proposed project will aim to address this aspect. Job opportunities will be created by the proposed activities which supports economic growth within

	the area as well as contributing to improving infrastructure that contributes to the goals listed within the IDP.

1.5 National Environmental Management Act 107 of 1998

In accordance with the National Environmental Management Act 107, of 1998, the following listed activities will be triggered by the proposed development and will require approval prior to commencement:

General Notice R983, 2014 (as amended in 2017), Activity 12:
(ii)The development of infrastructure or structures with a physical footprint of 100 square meters or more; Where such development occurs-
(a) within a watercourse

GNR 983, 2014 (as amended in 2017), Activity 19:
The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from (i) a watercourse;
More than 10 cubic metres of sand/soil and/or silt will be moved filled or removed from a watercourse.

In terms of the National Water Act 36, of 1998, the applicant is applying for the following activities in terms of Section 21 of the NWA 36, 1998:

Section 21(c) and (i) – Impending or diverting the flow of water in a watercourse, as well as altering the bed, banks, course or characteristics of a watercourse.

1.6 Description of the project

Bushbuckridge Local Municipality is proposing to surface the existing gravel road within Acornhoek. The existing road proposed for surfacing is approximately 3.7km in length.

As part of the construction/surfacing process, culverts will also be constructed at three respective water crossings along the alignment of the existing road.

1.7 Need and Desirability

- The upgrade of the gravel road to asphalt is predicted to decrease traveling time and reduce damage to residents' vehicles.

- Water is a scarce resource, which makes its management one of the greatest challenges facing us globally. In South Africa, water is a basic human right - but that right only applies to basic human needs and the maintenance of environmental sustainability.
- Culverts function primarily as hydraulic conduits, conveying water from one side of a roadway or similar traffic embankment to the other; therefore, culverts serve the dual purposes of functioning as hydraulic structures as well as acting as traffic load bearing structures.
- Culverts play an important role in keeping roads safe and in usable condition. Without the culverts even small or seasonal flows of water will damage road surfaces. Pooled water on a road can also cause vehicle tyres to lose their grip on the road surface, resulting in hydroplaning, or hide potentially dangerous potholes or obstructions.

2. PUBLIC PARTICIPATION PROCESS

The purpose of this chapter is to provide an outline of the public participation process (PPP) to date and the way forward with respect to the Basic Assessment process.

Consultation with the public forms an integral component of the EA process. This process enables Interested and Affected Parties (I&APs) (e.g. directly affected landowners, national-, provincial- and local authorities, and local communities etc.) to raise their issues and concerns regarding the proposed activities, which they feel should be addressed in the BA process. The PPP has thus been structured such as to provide I&APs with an opportunity to gain more knowledge about the proposed project, to provide input through the review of documents/reports, and to voice any issues or concerns at various stages throughout the BA process.

I&APs were identified during the public participation phase of the project. All the parties identified as an I&AP (surrounding landowners, relevant departments, stakeholders, local and district authorities) have automatically been registered in the I&APs database for the project. The registered I&AP list is attached as **Annexure C.1.**

In effort to engage potential stakeholders, different communication methods were used to inform them about the project and how to get involved in the BA process. These methods include:

- Distributing English Background Information Documents (BIDs) to all registered I&APs, proof of which is attached in **Annexure C.2**;
- Placement of media advert in a local newspaper (The Lowvelder) on 29 July 2021 (see **Annexure C.3**).
- Placing of a notice at the proposed site took place on 21 July 2021 (see **Annexure C.4**)

The draft Basic Assessment Report will be made available for public review from August 2021 – September 2021.

To date no comments have been received by I&AP's.

3. CONSIDERATION OF ALTERNATIVES

The EIA process requires the developer to identify and investigate/assess feasible and reasonable alternatives. The project alternatives range from the location where the activity is proposed, type of activity to be undertaken, design the of activity, technology to be used in the activity to the option of not implementing the activity (No-Go Alternative).

The assessment of the alternatives is a complicated and multi-faceted issue, which is essential to the success of this application and ultimately to the proper, responsible and sustainable operation of the proposed project.

3.1 Alternative Selection

3.1.1 Location alternatives

No other locality alternatives could be investigated as the application includes the surfacing of an existing gravel road. As part of the construction/surfacing process, culverts will be constructed at three respective water crossings along the alignment of the existing road.

3.1.2 No-Go alternative

The no-go alternative would be to not authorise the application for the surfacing process and the construction of the culverts. Should this alternative be favourable, the construction will not take place, and the current negative impact will remain. The impacts associated with the proposed construction were not found to be so severe for the no-go alternative to be further investigated.

4. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The description of the affected environment below draws on existing knowledge from published data, previous studies, specialist investigations, site visits to the area and is used to understand the possible effects of the proposed project on the environment.

4.1 Topography

The topography of project area is approximately 669m - 692m above mean sea level. The project area slopes towards the south. Culvert 1 is approximately 677 m above mean sea level and slopes from north to south. Culvert 2 is approximately 681 m above mean sea level and slopes from east to west. Culvert 3 is approximately 687m above mean sea level and slopes from east to west

4.2 Climate

Mpumalanga is a province where the climate varies due to its topography. The project site is located within the Lowveld Region and has a tropical climate with warm sub-tropical temperatures and experiences high summer rainfalls. It is characterized by moderate climatic conditions with a mean maximum temperature of 28^{o}C during January and 22^{o}C during June.

The study area experiences a humid and hot weather during summer seasons. The climatic trends of the area suggest summer season precipitation and dryer periods during winter. Winter rainfall is almost non-existent. Its lowest rainfall (4mm) is in June and highest (158mm) in January. The area receives a total of about 800-1000 mm of rain over 12 months.

4.3 Ecology

On a national level, the larger study area can be classified as Lowveld (A10), according to Acocks (1988) and Sour Lowveld Bushveld according to Low & Rebelo (1998). Classified on a regional scale and according to a more detailed system the study area comprises several distinct vegetation units (Mucina & Rutherford, 2006):

Terrestrial Ecology: According to the Mpumalanga Biodiversity Sector Plan of 2014, the site falls within the class namely, *Moderately to Heavily Modified* as seen below in Figure 2*.* *Moderately / Heavily modified:* MTPA objectives for these areas are quoted as follows: Such areas offer the most flexibility regarding potential land-uses, but these should be managed in a biodiversity-sensitive manner, aiming to maximize ecological functionality and authorization is still required for high impact land uses.

Overall, the site is located within the Savannah Biome. The Savanna Biome is the largest Biome in southern Africa, occupying 46% of its area, and over one-third the area of South Africa. It is well developed over the lowveld and Kalahari region of South Africa. It is characterized by a grassy ground layer and a distinct upper layer of woody plants. The vegetation type is classified as the Pretoriuskop

Sour Bushveld. It is found in Mpumalanga and Limpopo Provinces along the eastern foothills of the northeastern escarpment. Characteristic trees and shrubs are *Dichrostachys cinerea* and *Terminalia sericea*. The area is classified as open savannah with various *Acacia* species and occurs on the upland areas.

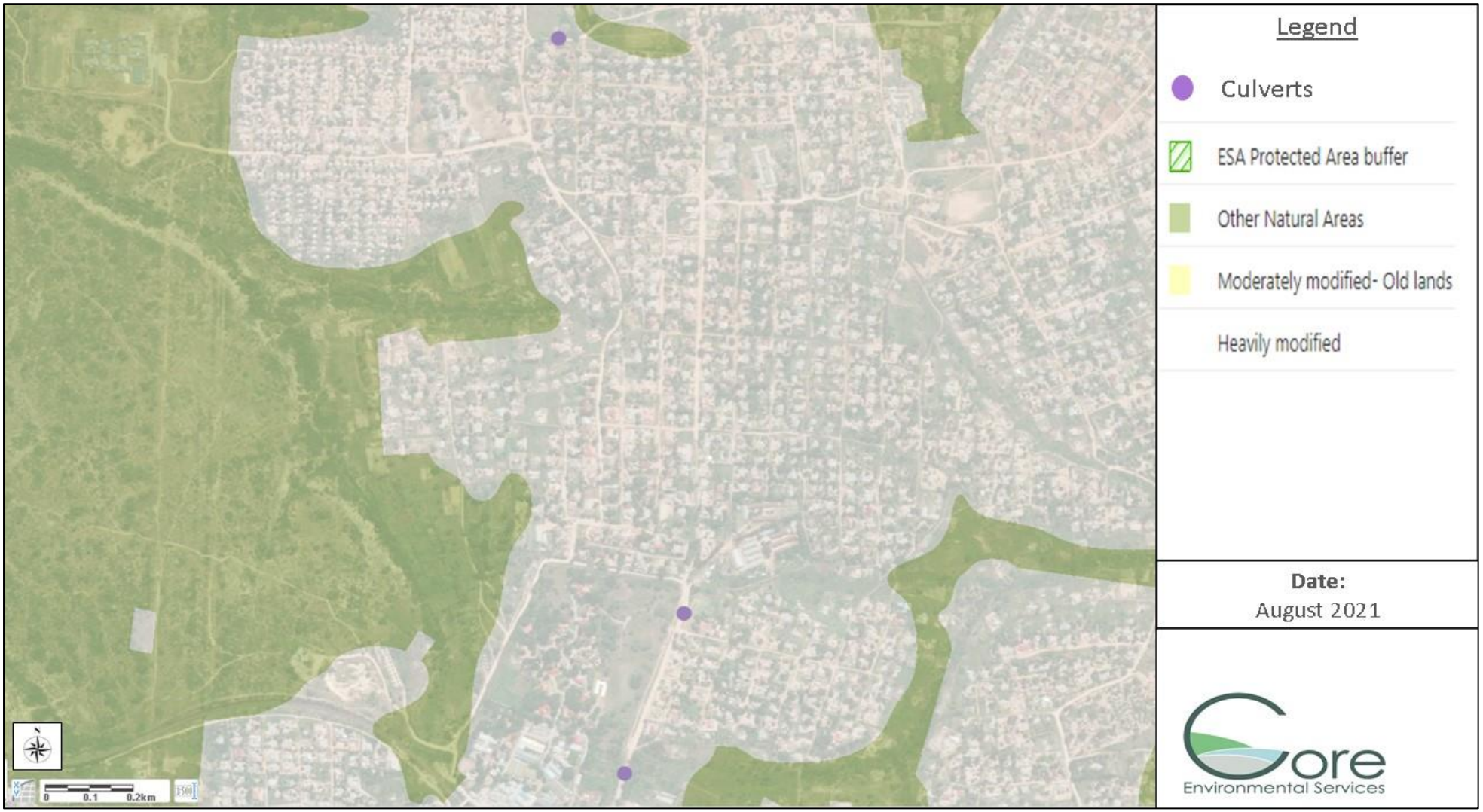

FIGURE 2: TERRESTRIAL ECOLOGY ACCORDING TO THE MPUMALANGA BIODIVERSITY SECTOR PLAN, 2014

Freshwater Ecology: The area is characterized as Other Natural Areas (ONAs) and heavily modified. Although these areas are not needed to meet biodiversity pattern targets and not identified as necessary for supporting the functioning of freshwater CBAs or ESA, they still provide a range of ecosystem services and may be particularly important. Freshwater ONAs include "old lands" as these provide a valuable ecosystem service and are important for maintaining freshwater CBAs. The MTPA still requires that the area is to be kept in a good ecological condition. This requires that management activities are focused on maintaining water quantity and quality and the integrity of natural habitat in the sub-catchment.

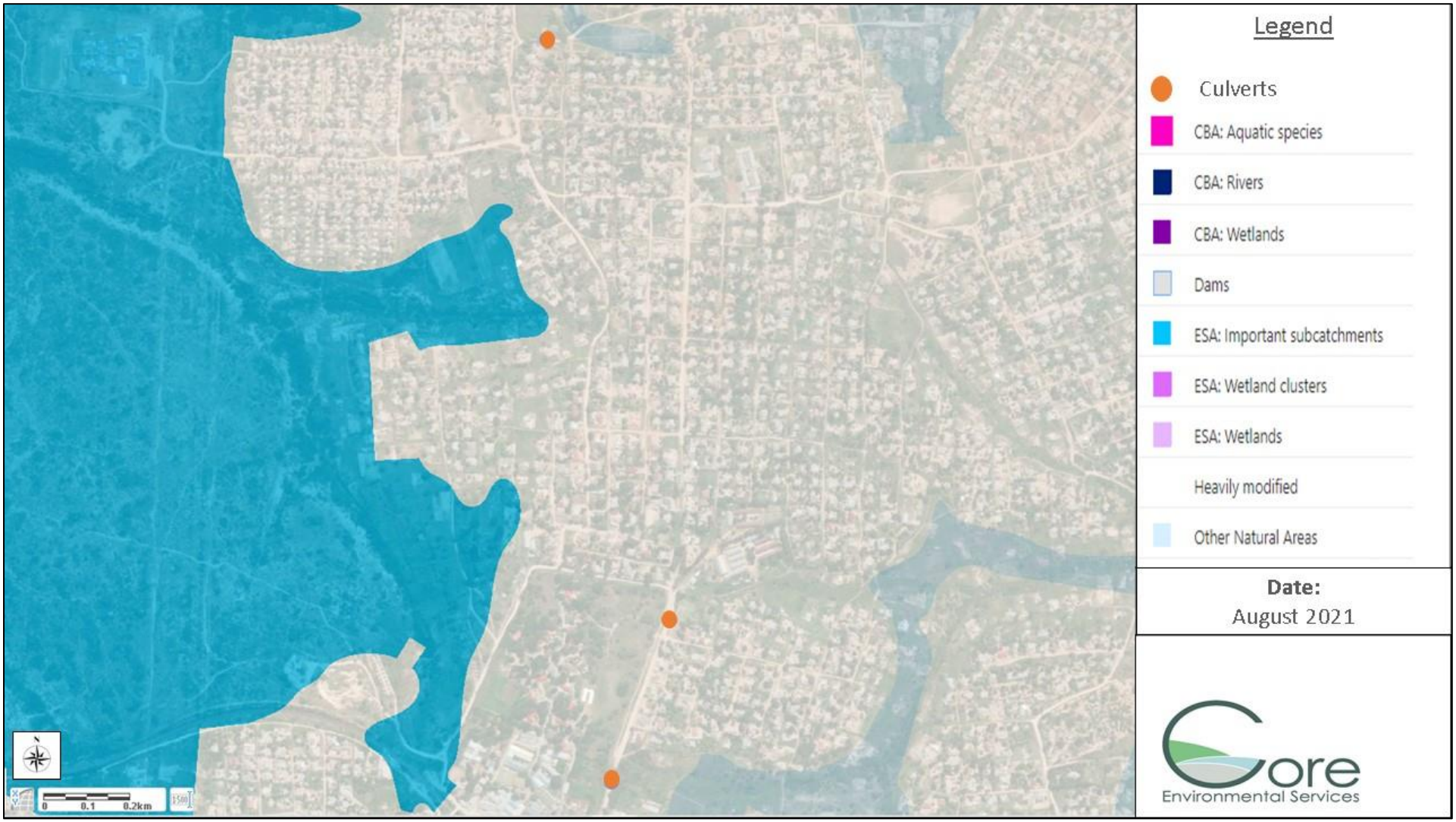

FIGURE 3: FRESHWATER ECOLOGY ACCORDING TO THE MPUMALANGA BIODIVERSITY SECTOR PLAN, 2014

4.4 Surface and Groundwater

The area where activities are to take place falls within a watercourse/drainage line. This requires that activities are focused on maintaining water quality and the integrity of natural habitat.

Currently, there are no water within these drainage lines as the site investigation was undertaken during the low rainfall period and therefore the impact on the water resources would be limited during construction if construction activities are to take place during the low/no rainfall period.

4.5 Land use

The construction site falls within an urban and homestead area. Large areas of the surrounding environment have been transformed too residential (formal and informal). Unlawful construction and vegetation clearing activities have devastated large sections of the respective wetland habitats.

4.6 Geology and Soils

The Granite Lowveld is found from north to south the Swazian Gudplaats Gneiss, Mukhutswi Gneiss, Nelspruit Suite and Mpuluzi Granites form the main geological features. The granites and gneiss weathered into sandy soils in the higher areas with clay soils high in sodium in the lower areas (Mucina and Rutherford, 2006).

The soil within the project area is classified as undifferentiated shallow soils. Soils with minimal development, usually shallow, on hard or weathering rock, with or without intermittent diverse soils. Soil may receive water runoff from associated rock, water intake areas. Lime generally present in part or most of the landscape

4.8 Heritage

No Heritage Impact Assessment was conducted as the surfacing process and the construction of the culverts will take place on an existing road. However, it is recommended that the applicant be made aware that distinct archaeological material or human remains may only be revealed during the development phase. Sub-surface finds must be assessed by a qualified archaeologist after which an assessment should be conducted.

4.9 Socio-Economic Environment

Acornhoek is located within the Bushbuckridge local Municipality. The Bushbuckridge local Municipality it is located in the north-eastern part of the Mpumalanga Province and is bounded by Kruger National Park in the east, City of Mbombela Local Municipality in the South and Thaba Chweu local Municipality and it covers approximately over 1 000 000 ha.

The Municipality covers the largest population size of 548 760 persons as per 2016 Community survey, which is 34% of the total population of the Ehlanzeni District Municipality and 14% of the Provincial

population. Between 2011 & 2016, the population grew by only 7 512 and recorded a growth rate of 0.3% per annum – slightly lower than the average annual economic growth rate in the same period, which is positive.

Poverty and unemployment are core development challenges in Bushbuckridge Local Municipality, as the majority of people in the municipal area of jurisdiction are unemployed and this poses a big challenge for the municipal economic development.

The unemployment rate is a big challenge in the municipality which has seen an unwanted increase from 2015 from 48% to 53.9% in 2019. This has surely become worse when taking the Covid-19 pandemic which has resulted with high job losses in the country and province. Education and unemployment in the municipality continues to drive multi-dimensional poverty.

One of the current challenges facing the Bushbuckridge Municipality includes the poor road network to enable easy movement for the community that will facilitate economic development.

Bushbuckridge Local Municipality's roads are characterized by poor gravel roads with unclearly defined road network links due to conditions of the roads. The entire roads infrastructure has limited storm water drainage and poor maintenance strategy and as a result, some tarred roads are destroyed by storm water. There is also limited access to bridges to provide sufficient linkage on communities for economic engagements. The R40 road is the only provincial road which is well maintained by the Department of Roads and Transport; other provincial roads are not well maintained. The municipality has budgeted money to improve the measure economic road and roads leading to social facilities (clinics and schools).

5. SPECIALIST ASSESSMENT REQUIREMENTS AS IDENTIFIED IN THE SCREENING REPORT

The following specialist assessments were identified within the Department of Environmental Affairs Screening Report to be conducted as part of the Basic Environmental Impact Assessment:

- Visual Impact Assessment

The surfacing of the existing road and the construction of the culverts at the respective water crossings will have no additional visual impact on the surrounding area. For this reason, no visual impact assessment was conducted.

- Heritage and Paleontological Impact Assessment

The project area consists of the existing road for which the areas have already been impacted by the road. For this reason, no Heritage or Paleontological Assessment would be required.

- Terrestrial Biodiversity Assessment / Plant and Animal Species Assessment

The proposed project site falls within an area which has been characterised as "*Moderately/Heavily Modified"* in accordance with the MBSP, 2014. Such areas offer the most flexibility regarding potential land-uses, but these should be managed in a biodiversity-sensitive manner, aiming to maximize ecological functionality. The respective drainage areas are heavily invaded with alien invasive plant species and most of the construction activities are restricted to areas previously disturbed. For this reason, no Biodiversity Assessment was conducted.

- Hydrology Impact Assessment

The Engineers have designed the culverts in such way that the flow of water will not be impacted by the culverts during either high or low rainfall periods. In view of the degraded state of the wetland areas and the fact that there is no water within the respective drainage lines during most of the year, it is the opinion of the EAP that no Hydrological impact assessment is required.

- Socio-economic Assessment

The proposed project will not have any negative impact on the socio-economic environment. Contrary to this, some additional job opportunities will be created during the construction phase of the project, which will impact the surrounding community positively. Improved infrastructure will also have positive impact on the socio-economic environment.

As no negative socio-economic impact is expected with the proposed project, it is the opinion of the EAP that no Socio-Economic Impact Assessment is required.

6. METHODOLOGY OF ASSESSING THE SIGNIFICANCE OF IMPACTS

This section outlines the method used for assessing the significance of the potential environmental impacts during the construction/establishment, operational and decommissioning phases.

For each impact, the EXTENT (spatial scale), MAGNITUDE and DURATION (time scale) would be described, as shown in **Table 2**. These criteria are then used to determine the SIGNIFICANCE of the impact, firstly in the case of no mitigation and then with the most effective mitigation measure(s) in place. The mitigation described in the Report represents the full range of plausible and pragmatic measures but does not necessarily imply that they would be implemented.

The following tables show the scale used to assess these variables and defines each of the rating categories.

TABLE 2: ASSESSMENT CRITERIA FOR THE EVALUATION OF IMPACTS

Criteria	Category	Description
Extent or spatial influence of impact	**Regional**	Beyond a 30km radius of the candidate site.
	Local	Within a 30km radius of the candidate site.
	Site-specific	On site or within 100 m of the candidate site.
Magnitude of impact (at the indicated spatial scale)	**High**	Natural and/ or social functions and/ or processes are *severely* altered
	Medium	Natural and/ or social functions and/ or processes are *notably* altered
	Low	Natural and/ or social functions and/ or processes are *slightly* altered
	Very low	Natural and/ or social functions and/ or processes are *negligibly* altered
	Zero	Natural and/ or social functions and/ or processes remain *unaltered*
Duration of impact	**Long-term**	More than 10 years after construction
	Medium-term	Up to 5 years after construction
	Construction-term	Up to 3 years

The SIGNIFICANCE of an impact is derived by taking into account magnitude, duration and extent of each impact. The criteria employed in arriving at the different significance ratings is shown in Table 3.

TABLE 3: DEFINITION OF SIGNIFICANCE RATINGS

Significance ratings	Level of criteria required
High	• High magnitude with a regional extent and long-term duration • High magnitude with either a regional extent and medium-term duration or a local extent and long-term duration • Medium magnitude with a regional extent and long-term duration
Medium	• High magnitude with a local extent and medium-term duration • High magnitude with a regional extent and construction period or a site-specific extent and long-term duration • High magnitude with either a local extent and construction period duration or a site-specific extent and medium-term duration • Medium magnitude with any combination of extent and duration except site specific and construction period or regional and long term • Low magnitude with a regional extent and long-term duration
Low	• High magnitude with a site-specific extent and construction period duration • Medium magnitude with a site-specific extent and construction period duration • Low magnitude with any combination of extent and duration except site specific and construction period or regional and long term • Very low magnitude with a regional extent and long-term duration
Very low	• Low magnitude with a site-specific extent and construction period duration • Very low magnitude with any combination of extent and duration except regional and long term
Neutral	• Zero magnitude with any combination of extent and duration

Once the significance of an impact has been determined, the **PROBABILITY** and **CONFIDENCE** of this impact are determined using the rating systems outlined in **Table 4** and **Table 5.** The significance of an impact should always be considered in concert with the probability of that impact occurring. Lastly, the **REVERSIBILITY** of the impact is estimated using the rating system outlined in **Table 6.**

TABLE 4: DEFINITION OF PROBABILITY RATINGS

Probability ratings	Criteria
Definite	Estimated greater than 95 % chance of the impact occurring.
Probable	Estimated 5 to 95 % chance of the impact occurring.

Unlikely	Estimated less than 5 % chance of the impact occurring.

TABLE 5: DEFINITION OF CONFIDENCE RATINGS

Confidence ratings	Criteria
Certain	Wealth of information on and sound understanding of the environmental factors potentially influencing the impact.
Sure	Reasonable amount of useful information on and relatively sound understanding of the environmental factors potentially influencing the impact.
Unsure	Limited useful information on and understanding of the environmental factors potentially influencing this impact.

TABLE 6: DEFINITION OF REVERSIBILITY RATINGS

Reversibility ratings	Criteria
Irreversible	The activity will lead to an impact that is in all practical terms permanent.
Reversible	The impact is reversible within 2 years after the cause of the impact is removed.

7. ENVIRONMENTAL IMPACT ASSESSMENT

The biophysical and social environment will be impacted during the establishment and operational phases of the agricultural activities. For this reason, the impacts below are assessed for both phases.

7.1 Impacts during the construction process

The construction activities are likely to result in environmental and socio-economic impacts. The identified impacts are listed below and discussed thereafter:

- *Impact on biodiversity;*
- *Generation of dust;*
- *Impact on soil;*
- *Impact on water resources;*
- *Socio-economic impact.*

7.1.1. Impact on biodiversity

Description of the potential impact
During the construction process, the existing gravel road will be rehabilitated and upgraded to a standard Asphalt surfaced area inclusive of the ancillary works and layer works. Culverts will also be constructed at respective water crossings. Machinery will be used during these activities. The area to be disturbed will however be restricted to the surfacing of the exiting gravel road and areas already previously disturbed.

Currently, the drainage lines are invested with alien invasive species.

Significance of the impact
The proposed road and water crossings are limited to the existing gravel road and already disturbed footprint. As mentioned, the proposed project site falls within an area which has been characterised as "*Moderately/Heavily Modified"* in accordance with the MBSP, 2014. Such areas offer the most flexibility regarding potential land-uses, but these should be managed in a biodiversity-sensitive manner, aiming to maximize ecological functionality.

The drainage lines are invested with alien invasive species. It is not anticipated that the activity will compromise biodiversity or ecological functions and therefore the impact is of low significance.

TABLE 7: SIGNIFICANCE OF BIODIVERSITY IMPACT

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Significance	Probability	Confidence	Reversibility	Impact Rating	Impact Rating
Impact on biodiversity [NEGATIVE]	**High**	**Definite**	**Sure**	**Reversible**	**Low**	**Very Low**

Mitigation measures

- The footprint of activities associated with construction activities must be restricted to the existing gravel road and alignment.
- It must be ensured that the materials used during construction activities are located far away from any other watercourse or drainage lines.
- All disturbed areas must be rehabilitated, however, as the activity is restricted to the surfacing of the road and the construction of the culverts, the area affected is very restricted.
- Stipulations of the Environmental Management Program (EMPr) should be adhered to during the construction phases of the project.

7.1.2. Generation of dust

Description of the potential impact

Soil will be disturbed during the construction phase of the proposed project. Heavy moving vehicles used to surface the gravel road and construction of the culverts on site, could generate dust affecting adjacent owners and road users.

Significance of the impact

The construction site is located within a township. There are many residents living along the existing gravel road which could be affected by the generation of dust. The impacts associated with the generation of dust is also of short duration and therefore of medium significance prior to the implementation of mitigation measures.

Mitigation measures must however be implemented to minimise the generation of dust.

TABLE 8: DUST GENERATION

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Significance	Probability	Confidence	Reversibility	Impact Rating	Impact Rating
Dust generation [NEGATIVE]	**Medium**	**Definite**	**Sure**	**Reversible**	**Medium**	**Low**

Mitigation measures

- Areas may not be disturbed and left for unattended for long periods of time;
- Heavy moving vehicles and other vehicles must adhere to a speed limit of 40km/h;
- Construction site must be sprayed with water to limit the generation of dust of the surfaces.

7.1.3 Impact on soil

Description of the potential impact

The construction process will disturb the soil surface and increase the possibility of soil erosion. The topography of the site is however flat and therefore the possibility of erosion occurring during the construction phase is relatively low.

Other activities which could have an impact on soil, include any spillage of hazardous substances. Hazardous substances such as oil, diesel etc., could be spilled while refuelling or using machinery, leading to the pollution of soil which can alter microbial processes and be toxic to soil organisms.

Significance of the impact

During establishment, soil could be impacted by the following:

- Erosion; and
- Contamination with the use and possible spillage of hazardous substances.

This impact soil pollution is of medium magnitude, site specific and short duration and for this reason the impact is of also of low significance prior to the implementation of mitigation measures.

The area where construction is proposed is relatively flat and therefore the impact of erosion is of low significance.

TABLE 9: IMPACT ON SOIL

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Significance	Probability	Confidence	Reversibility	Impact Rating	Impact Rating
Soil pollution [NEGATIVE]	**Medium**	**Likely**	**Sure**	**Reversible**	**Medium**	**Low**
Erosion [NEGATIVE]	**Medium**	**Unlikely**	**Sure**	**Reversible**	**Low**	**Very Low**

Mitigation measures

- To minimise the possibility of erosion, it is recommended that no disturbed areas be left unattended. Disturbance and removal must be restricted to the proposed footprint.
- Measures to reduce the velocity of water, must be taken on areas prone to erosion.
- Should there be any spillage of hazardous substances during the desilting activities, soil must be removed up to a depth of 300mm and be disposed of at a registered hazardous waste disposal facility. Proof of such disposal must be kept on file.

7.1.4 Impact on water resources

Description of the potential impact

The area where activities are to take places falls within the three respective watercourse/drainage lines. This requires that activities are focused on maintaining water quality and the integrity of natural habitat.

Currently, there is no water within these drainage lines and these areas have already been heavily disturbed. Should construction within these drainage lines be restricted to the low flow periods, the impact on the water resources would be limited with the implementation of mitigation measures.

Significance of the impact

Any spillages within these drainage lines will have an impact on the water quality of the watercourse and therefore special care must be taken when works are conducted within these watercourses. The impact is however of low significance with the implementation of mitigation measures.

TABLE 10: IMPACT ON WATER RESOURCES

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Significance	Probability	Confidence	Reversibility	Impact Rating	Impact Rating
Impact on water resources [NEGATIVE]	**Medium**	**Unlikely**	**Sure**	**Reversible**	**Low**	**Very Low**

Mitigation measures

- No material or stockpiles may be stored within 50m from the edge of a watercourse.
- It must be ensured that all machinery working within the watercourse must be in a good working condition to ensure that there are no oil leaks.
- Should vehicles be washed, it must take place on a designated area, located far from these watercourses. Washing of equipment or any vehicles are not allowed within or near any watercourse.

7.1.5 Socio-economic Impact

Description of the potential impact

During the construction activities, various temporary job opportunities will be created for the surfacing of the existing road and the construction of the culverts. In terms of safety and security, there is always risk associated when working with machinery and therefore it is essential that all workers comply with the Health and Safety Act 85 of 1993.

Significance of the impacts

Based on the methodology detailed in **Section 5**, the following ratings have been assigned to the 'employment opportunities' and impact associated with health and safety of employees, respectively.

The job opportunities during the construction phase are short-lived and therefore the impact is only of medium (+) significance. In terms of the health and safety aspects of workforce, the significance of the impact has been rated to be of low significance due to the short construction timeframe. Mitigation measures must however be adhered to.

TABLE 11: SOCIO-ECONOMIC IMPACT

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Significance	Probability	Confidence	Reversibility	Impact Rating	Impact Rating
Job opportunities **[POSITIVE]**	**Medium**	**Definite**	**Sure**	**Reversible**	**Low**	**Medium (+)**
Health and Safety **[NEGATIVE]**	**Medium**	**Probable**	**Sure**	**Reversible**	**Low**	**Very Low**

Mitigation measures

The applicant and/or project manager must ensure that local residents receive preference for job opportunities where local labour might be required.

It is imperative that all personnel adhere to the Occupational Health and Safety Act 85 of 1998 and that no personnel enter any other surrounding properties.

7.2 Operational Phase Impacts

During operation the activities are likely to result in the following environmental and socio-economic impacts:

- *Impact on dust;*
- *Impact on water resources;*
- *Socio-economic impact.*

7.2.1. Impact on Dust

Description of the potential impact

Currently, the existing road is a gravel road which generates a lot of dust when vehicles travel on this road. By surfacing the existing road, the generation of dust will be minimised during the operational phase.

Significance of the impact

There are many residents living next to the road and the surfacing of the road will reduce the generation of dust remarkably. Less dust will be generated when vehicles drive on the road or when there is heavy wind in the area, therefore the surfacing of the road will have a positive impact.

TABLE 12: IMPACT ON DUST

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Significance	Probability	Confidence	Reversibility	Impact Rating	Impact Rating
Dust generation **[POSITIVE]**	**Medium**	**Definite**	**Sure**	**Irreversible**	**Low**	**High (+)**

The improved infrastructure will have a positive impact on the local community. No mitigation measures would be required to further enhance this impact

7.2.2. Impact on water resources

Description of the potential impact

The current dirt roads have no storm water infrastructure within the drainage lines. The construction of the culverts will have a positive impact as it will ensure the flow of water within the drainage lines and ensure that the flow of water is maintained downstream. The culverts will also prevent flooding and structural damage to the roads during heavy rain downpour.

Significance of the impact

Water is a scarce resource in South Africa and therefore any change in the natural flow regime will result in lower flows of water downstream. Currently, there are no culverts ensuring the flow of water downstream and therefore the construction of the culverts will ensure the natural flow of water underneath the road. The impact during the operational phase is therefore of medium positive significance

TABLE 13: IMPACT ON WATER RESOURCES

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Significance	Probability	Confidence	Reversibility	Impact Rating	Impact Rating
Impact on water resouces **[POSITIVE]**	**Medium**	**Definite**	**Sure**	**Reversible**	**Low**	**Medium (+)**

Mitigation measures

- Ensure culverts are kept clean to ensure water flow.

7.2.3. Socio-economic Impact

Description of the potential impact

The improved infrastructure will enable easy movement for the community that will facilitate economic development and result in improved quality of life.

Significance of the impact

Based on the methodology detailed in **Section 6**, the following ratings have been assigned to the 'Socio-economic' impact before and after mitigation.

TABLE 14: SOCIO-ECONOMIC IMPACT

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Significance	Probability	Confidence	Reversibility	Impact Rating	Impact Rating
Socio-economic **[POSITIVE]**	**High**	**Definite**	**Sure**	**Reversable**	**Very Low**	**High (+)**

The improved infrastructure will have a positive impact on the local community. No mitigation measures would be required to further enhance this impact

7.3 Environmental Impact Statement

The table below summarises the impacts identified and assessed for the construction activities proposed for the project:

TABLE 15: ENVIRONMENTAL IMPACT STATEMENT

IMPACT	SIGNIFICANCE BEFORE MITIGATION MEASURES	SIGNIFICANCE AFTER MITIGATION MEASURES
Construction Phase Impacts		
Biodiversity Impact	Low	Very Low
Generation of dust	Medium	Low
Erosion	Low	Very Low
Soil Pollution	Medium	Low
Impact on water resources	Low	Very Low
Job opportunities	Low (+)	Medium (+)
Health and Safety	Low	Very Low
Operational Phase Impacts		
Impact on Dust	Low	High (+)
Impact on water resources	Low	Medium (+)
Socio-economic Impact	Very Low	High (+)

8. CONCLUSION AND WAY FORWARD

8.1 Assumptions and Limitations

In undertaking this investigation and compiling the Draft Basic Assessment Report, the following has been assumed:

- The information provided by the proponent is accurate and unbiased, and no information that could change the outcome of the Environmental Authorisation process has been withheld.
- The scope of this investigation is limited to assessing the environmental impacts associated with the establishment and operation of the agricultural area.
- The conclusion and recommendations proposed are based solely on the information, scope of works as agreed with the proponent.

8.2 Conclusion

The essence of all environmental assessment processes is aimed at ensuring informed decision-making and environmental accountability. Furthermore, it assists in achieving environmentally sound and sustainable development. The impact assessment for this project has been undertaken in line with the requirements prescribed in the NEMA regulations.

The assessment of the possible impacts associated with the construction and operational activities, concluded that the impact on the surrounding environment is of **low significance** and as the road is currently existing, the construction of the road and culverts will actually have a positive impact on they biophysical and social environment if mitigation measures are adhered to. Recommendations have however been made to address the impacts which could affect the biophysical and socio-economic environment. Recommendations for the mitigation of impacts are included within Section 6 and also the Draft Environmental Management Plan attached.

The significance of the potential environmental (biophysical and social) impacts associated with the proposed project are discussed in detail under **Section 6**.

It is the opinion of the EAP that the EA for this project should be granted, and the proposed mitigation included as the conditions of the authorisation.

8.2 Way Forward

The next steps for the Basic Assessment process will be to distribute the Draft Basic Assessment Report and make it available to the public (including the registered I&APs) and Organs of State for a period of 30 days, during which the Competent Authority (DARDLEA) will also be given the opportunity to provide comments on the report. After the 30-day comment period, all comments will be addressed by the EAP and incorporated within the Final Basic Assessment Report to be

submitted to the DARDLEA for decision making. All registered I&APs will be notified of the decision and will be given an opportunity to appeal as per the NEMA requirements.

9. REFERENCES

Bushbuckridge Local Municipality Final Integrated Development Plan 2021/2022

National Environmental Management Act 107 of 1998 (NEMA 107, 1998)

General Notice Regulation 982, 983, 984 and 985 of 2014 (as amended in 2017)

Mpumalanga Biodiversity Conservation Plan, 2014

Mucina, L. and Rutherford, M.C. (eds.) 2006. The vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. South African Biodiversity Institute, Pretoria.