TGM ENVIRONMENTAL SERVICES

DRAFT BASIC ASSESSMENT REPORT

FOR

PROPOSED UPGRADE OF ACCESS ROAD AND BRIDGE LEADING TO CLOVER HILL CLUB

REF: GAUT 002/18-19/E0051

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September 2018

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DEFINITIONS

Activity (Development)	An action either planned or existing that may result in environmental impacts through pollution or resource use. For the purpose of this report, the terms 'activity' and 'development' are freely interchanged.
Alternatives	Different means of meeting the general purpose and requirements of the activity, which may include site or location alternatives; alternatives to the type of activity being undertaken; the design or layout of the activity; the technology to be used in the activity and the operational aspects of the activity.
Applicant	The project proponent or developer responsible for submitting an environmental application to the relevant environmental authority for environmental authorisation.
Biodiversity	The diversity of animals, plants and other organisms found within and between ecosystems, habitats, and the ecological complexes.
Construction	The building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity but excludes any modification, alteration or expansion of such a facility, structure or infrastructure and excluding the reconstruction of the same facility in the same location, with the same capacity and footprint.
Cumulative impact	The impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.
Decommissioning	The demolition of a building, facility, structure or infrastructure.
Direct Impact	Impacts that are caused directly by the activity and generally occur at the same time and at the same place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally quantifiable.
Ecosystem	A dynamic system of plant, animal (including humans) and micro-organism communities and their non-living physical environment interacting as a functional unit. The basic structural unit of the biosphere, ecosystems are characterised by interdependent interaction between the component species and their physical surroundings. Each ecosystem occupies a space in which macro-scale conditions and interactions are relatively homogenous
Environment	In terms of the National Environmental Management Act (NEMA) (No 107 of 1998)(as amended), "Environment" means the surroundings within which humans exist and that are made up of: a) the land, water and atmosphere of the earth; b) micro-organisms, plants and animal life; c) any part or combination of (i) of (ii) and the interrelationships among and between them; and d) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.
Environmental Assessment	The generic term for all forms of environmental assessment for projects, plans, programmes or policies and includes methodologies or tools such as environmental impact assessments, strategic environmental assessments and risk assessments.
Environmental Authorisation	An authorisation issued by the competent authority in respect of a listed activity, or an activity which takes place within a sensitive environment.]
Environmental Assessment Practitioner (EAP)	The individual responsible for planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental management programmes or any other appropriate environmental instrument introduced through the EIA Regulations.
Environmental Management	Ensuring that environmental concerns are included in all stages of development, so that development is sustainable and does not exceed the carrying capacity of the environment.
Environmental Management	A detailed plan of action prepared to ensure that recommendations for enhancing or ensuring positive impacts and limiting or preventing negative

Programme (EMPr)	environmental impacts are implemented during the life cycle of a project. This EMPr focuses on the construction phase, operation (maintenance) phase and decommissioning phase of the proposed project.
Environmental Impact	Change to the environment (biophysical, social and/ or economic), whether adverse or beneficial, wholly or partially, resulting from an organisation's activities, products or services.
Environmental Issue	A concern raised by a stakeholder, interested or affected parties about an existing or perceived environmental impact of an activity.
Fatal Flaw	Issue or conflict (real or perceived) that could result in developments being rejected or stopped. In the context of an environmental impact assessment a fatal flaw can be termed as an environmental issue that cannot be mitigated by any means
General Waste	Household waste, construction rubble, garden waste and certain dry industrial and commercial waste, which does not pose an immediate threat to man or the environment.
Groundwater	Water in the ground that is in the zone of saturation from which wells, springs, and groundwater run-off are supplied.
Hazardous Waste	Waste that may cause ill health or increase mortality in humans, flora and fauna.
Hydrology	The science encompassing the behaviour of water as it occurs in the atmosphere, on the surface of the ground, and underground.
Important areas	Sites that are important for the conservation of biodiversity in Gauteng; (Gauteng C-Plan Version 3)
Indirect Impacts	Indirect or induced changes that may occur as a result of the activity. These types if impacts include all of the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity.
Interested and Affected Party (I&AP)	Any person, group of persons or organisation interested in or affected by an activity; and any organ of state that may have jurisdiction over any aspect of the activity.
Irreplaceable areas	Sites, which are essential in meeting targets set for the conservation of biodiversity in Gauteng; (Gauteng C-Plan Version 3)
Mitigate	The implementation of practical measures designed to avoid, reduce or remedy adverse impacts or enhance beneficial impacts of an action.
No-Go Option	In this instance the proposed activity would not take place, and the resulting environmental effects from taking no action are compared with the effects of permitting the proposed activity to go forward.
Public Participation Process	A process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to, specific matters.
Rehabilitation	A measure aimed at reinstating an ecosystem to its original function and state (or as close as possible to its original function and state) following activities that have disrupted those functions.
Sensitive Environments	Any environment identified as being sensitive to the impacts of the development.
Significance	Significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. magnitude, intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of significance and acceptability). It is an anthropocentric concept, which makes use of value judgements and science-based criteria (i.e. biophysical, social and economic).
Stakeholder Engagement	The process of engagement between stakeholders (the proponent, authorities and I&APs) during the planning, assessment, implementation and/or management of proposals or activities.
Sustainable Development	Development which meets the needs of current generations without hindering future generations from meeting their own needs.
Undeveloped	means that no facilities, structures or infrastructure have been effected upon the land or property during the preceding 10 years
Urban areas	means areas situated within the urban edge (as defined or adopted by the

	competent authority), or in instances where no urban edge or boundary has been defined of adopted, it refers to areas situated within the edge of built-up areas
Vacant	Means not occupied for the purpose of its lawful land use during the preceding ten year period
Watercourse	Means (a) a river or spring; (b) a natural depression in which water flows regularly or intermittently; (c) a wetland, lake or dam into which, or from which, water flows; and (d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and bank
Wetland	Means land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil

ABBREVIATIONS

BID	Background Information Document
BSc	Bachelor of Science
CC	Close Corporation
C- Plan	Gauteng Conservation Plan Version 3.3
COJ	City of Johannesburg
DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation
GDARD	Gauteng Department of Agriculture and Rural Development
EAP	Environmental Assessment Practitioner
EDGE	Environment and Dog Group of Emmarentia
EIA	Environmental Impact Assessment
EISD	Environment and Infrastructure Services Department
EMPr	Environmental Management Programme
ERA	Emmarentia Residents Association
Ha	Hectares
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IDP's	Integrated Development Plans
Km	Kilometers
LDO	Land Development Objectives
m	Meters
NEMA	National Environmental Management Act
NDP	The National Development Plan
NGO's	Non-Governmental Organisations
OHSA	Occupational Health and Safety Act
PES	Present Ecological State
PHRA-G	Provincial Heritage Resources Authority - Gauteng
(Pty) Ltd	Proprietary Limited
RDL	Red Data List
RDP	Reconstruction and Development Programme
SAHRA	South African Heritage Resources Agency

GAUTENG PROVINCE
AGRICULTURE AND RURAL DEVELOPMENT
REPUBLIC OF SOUTH AFRICA

Basic Assessment Report in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014 (Version 1)

Kindly note that:

1. This **Basic Assessment Report** is the standard report required by GDARD in terms of the EIA Regulations, 2014.

2. This application form is current as of 8 December 2014. It is the responsibility of the EAP to ascertain whether subsequent versions of the form have been published or produced by the competent authority.

3. **A draft Basic Assessment Report must be submitted, for purposes of comments within a period of thirty (30) days, to all State Departments administering a law relating to a matter likely to be affected by the activity to be undertaken.**

4. **A draft Basic Assessment Report (1 hard copy and two CD's) must be submitted, for purposes of comments within a period of thirty (30) days, to a Competent Authority empowered in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended to consider and decide on the application.**

5. Five (5) copies (3 hard copies and 2 CDs-PDF) of the final report and attachments must be handed in at offices of the relevant competent authority, as detailed below.

6. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.

7. Selected boxes must be indicated by a cross and, when the form is completed electronically, must also be highlighted.

8. An incomplete report may lead to an application for environmental authorisation being refused.

9. **Any report that does not contain a titled and dated full colour large scale layout plan of the proposed activities including a coherent legend, overlain with the sensitivities found on site may lead to an application for environmental authorisation being refused.**

10. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the application for environmental authorisation being refused.

11. No faxed or e-mailed reports will be accepted. Only hand delivered or posted applications will be accepted.

12. Unless protected by law, and clearly indicated as such, all information filled in on this application will become public information on receipt by the competent authority. The applicant/EAP must provide any interested and affected party with the information contained in this application on request, during any stage of the application process.

13. Although pre-application meeting with the Competent Authority is optional, applicants are advised to have these meetings prior to submission of application to seek guidance from the Competent Authority.

DEPARTMENTAL DETAILS

Gauteng Department of Agriculture and Rural Development
Attention: Administrative Unit of the of the Environmental Affairs Branch
P.O. Box 8769
Johannesburg
2000

Administrative Unit of the of the Environmental Affairs Branch
Ground floor Diamond Building
11 Diagonal Street, Johannesburg

Administrative Unit telephone number: (011) 240 3377
Department central telephone number: (011) 240 2500

(For official use only)

NEAS Reference Number:						
File Reference Number:						
Application Number:						
Date Received:						

If this BAR has not been submitted within 90 days of receipt of the application by the competent authority and permission was not requested to submit within 140 days, please indicate the reasons for not submitting within time frame.

N/A

Is a closure plan applicable for this application and has it been included in this report? **NO**

if not, state reasons for not including the closure plan.

The Activity applied for does not relate to the decommissioning or closure of a facility and it is not envisaged that the development will be decommissioned.

Has a draft report for this application been submitted to a competent authority and all State Departments administering a law relating to a matter likely to be affected as a result of this activity? **YES**

Is a list of the State Departments referred to above attached to this report including their full contact details and contact person? **YES**

If no, state reasons for not attaching the list.

Please refer to Appendix I

Have State Departments including the competent authority commented? **NO**

If no, why?

Comment from the State Departments and the competent authority on the Draft Report is awaited.

SECTION A: ACTIVITY INFORMATION

1. PROPOSAL OR DEVELOPMENT DESCRIPTION

Project title (must be the same name as per application form):

Proposed Upgrade of Access Road and Bridge leading to Clover Hill Club

Select the appropriate box

The application is for an upgrade of an existing development		The application is for a new development	X	Other, specify	

Does the activity also require any authorisation other than NEMA EIA authorisation?

YES	NO

If yes, describe the legislation and the Competent Authority administering such legislation

A Water Use Licence is required in terms of the National Water Act, 1998 (Act No 36 of 1998) as part of the project.

The competent authority is the Department of Water and Sanitation.

If yes, have you applied for the authorisation(s)?	YES	**NO**
If yes, have you received approval(s)? (attach in appropriate appendix)	YES	NO

2. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations:

Title of legislation, policy or guideline:	Administering authority:	Promulgation Date:
National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended).	**National & Provincial**	**27 November 1998**
NEMA EIA Regulations, 2014 (Government Notice Nos. GN R982, R983, R984, R985) as amended 2017. **<u>Activities listed under GN R983:</u>** **<u>Activity 19</u> – 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 a watercourse.** **<u>Activity 56</u> – The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre - (i) where the existing reserve is wider than 13,5 meters; or (ii) where no reserve exists, where the existing road is wider than 8 metres; excluding where widening or lengthening occur inside urban areas.**	**National Department of Environmental Affairs and GDARD**	**2014**

<u>Activities listed under GN R985:</u> **<u>Activity 12</u> - The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. c. Gauteng: i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans; or iii. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.** **<u>Activity 14</u> - The development of – (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs - (a) within a watercourse; c. Gauteng: i. A protected area identified in terms of NEMPAA, excluding conservancies; ii. National Protected Area Expansion Strategy Focus Areas; iii. Gauteng Protected Area Expansion Priority Areas; iv. Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans; v. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004); vi. Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority; vii. Sites or areas identified in terms of an international convention; viii. Sites managed as protected areas by provincial authorities, or declared as nature reserves in terms of the Nature Conservation Ordinance (Ordinance 12 of 1983) or the NEMPAA; ix. Sites designated as nature reserves in terms of municipal Spatial Development Frameworks; or x. Sites zoned for conservation use or public open space or equivalent zoning.**		
National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	**National Department of Environmental**	**2004**

	Affairs and GDARD	
National Environmental Management: Waste Act (Act No. 59 of 2008) (NEM:WA)	**National Department of Environmental Affairs and GDARD**	**2008**
National Water Act (Act No. 36 of 1998)	**Department of Water and Sanitation**	**1998**
National Heritage Resources Act (Act No. 25 of 1999)	**SAHRA**	**1999**
Occupational Health & Safety Act (Act No. 85 of 1993) (OHSA) as amended in July 2001, Including Major Hazard Installation Regulation, GNR 692, 30 July 2001.	**National Government**	**2001**
Conservation of Agricultural Resources Act (Act No. 43 of 1983)	**Department of Agriculture Forestry and Fisheries**	**1983**
Reconstruction and Development Programme	**National & Provincial**	**1995**
National Development Plan	**National Planning Commission**	**2011**
Gauteng Conservation Plan (C-Plan Version 3.3)	**GDARD**	**2011**
Gauteng Provincial Environmental Management Framework	**GDARD**	**2015**
Gauteng Spatial Development Framework	**Provincial**	**2011**
The Gauteng Department of Agriculture and Rural Development's (GDARD) Requirements for Biodiversity Assessments (Version 3)	**Gauteng Department of Agriculture and Rural Development**	**March 2014**
Gauteng Spatial Development Framework	**Provincial**	**2011**
Gauteng Planning and Development Act (Act No. 3 of 2003)	**Gauteng Provincial Legislature**	**2003**
City of Tshwane: Draft 2017/21 Integrated Development Plan	**City of Tshwane Metropolitan Municipality**	**2017**
City of Tshwane: Metropolitan Spatial Development Framework (MSDF)	**City of Tshwane Metropolitan Municipality**	**June 2012**
City of Tshwane: Regional Spatial Development Framework (RSDF): Region 7	**City of Tshwane Metropolitan Municipality**	**2017**
City of Tshwane By-Laws	**City of Tshwane Metropolitan**	**-**

	Municipality	

Description of compliance with the relevant legislation, policy or guideline:

Legislation, policy of guideline	Description of compliance
National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended).	**NEMA establishes the basis for environmental governance and sets out the principles for decision-making on matters affecting the environment. The principles of the Act are provided in Section 2 and it is the responsibility of all organs of state to take these principles into account when making decisions that could affect the environment.** **In terms of the NEMA principles, the following are of particular relevance to the development:** • **Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interest equitably (section 2(2)).** • **Development must be socially, environmentally and economically sustainable (section 2(3)).** • **Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option (section 2(4)(b)).** • **Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (section 2(4)(c)).** • **Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination (section 2(4)(d)).** • **The participation of all Interested and Affected Parties in environmental governance must be promoted, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured (section 2(4)(f)).** • **Decisions must take into account the interests, needs and values of all Interested and Affected Parties, and this includes recognizing all forms of knowledge, including traditional and ordinary knowledge (section 2 (4)(g)).** • **The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment (section 2(4)(i)).** • **Sensitive, vulnerable, highly dynamic or stressed**

	ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure (section 2(4)(r)). **The proposed development does not occur in contrast with the principles and main objective of the Act.**
NEMA EIA Regulations, 2014 (Government Notice Nos. GN R982, R983, R984, R985) as amended 2017.	**The EIA process, applicable to this application, is determined by the Environmental Impact Regulations published in Government Notice R982 in Government Gazette No 38282 of 4 December 2014 promulgated under Chapter 5 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and amended in 2017.** **The EIA regulations inter alia describe the procedure for EIA and provide a description of activities that would require authorisation through either 1) a Basic Assessment (in terms of Government Notices R983 and R985 of 2014) or 2) Scoping and Environmental Impact Assessment (in terms of Government Notice R984 of 2014).** **An application is submitted in terms of Chapter 4 of the EIA Regulations as the proposed development triggers activities that require a Basic Assessment.**
National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	**The objectives of this Act are:** **Within the framework of the National Environmental Management Act, to provide for –** **(i) the management and conservation of biological diversity within the Republic and of the components of such biological diversity;** **(ii) the use of indigenous biological resources in a sustainable manner and** **(ii) the fair and equitable sharing among stakeholders of benefits arising from bioprospecting involving indigenous biological resources.** **The proposed development does not occur in contrast with the objectives of the Act.**
National Environmental Management: Waste Act (Act No. 59 of 2008) (NEM:WA)	**The objective of this act is to protect health, well-being, and the environment by providing measures for-** • **Minimising consumption of natural resources;** • **Avoiding and minimising the generation of waste;** • **Reducing, reusing, recycling and recovering waste;** • **Treating and safely disposing of waste as last resort;** • **Preventing pollution and ecological degradation;** • **Securing ecologically sustainable development while promoting justifiable economic and social development.** **The proposed development does not occur in contrast with the objectives of the Act.**
National Water Act (Act No. 36 of 1998)	**The purpose of this Act is to ensure that the nation's water resources are protected, used, developed, conserved,**

	managed and controlled in ways that takes into account amongst other factors: • **Promoting equitable access to water** • **Redressing the results of past racial and gender discrimination;** • **Promoting the efficient, sustainable and beneficial use of water in the public interest;** • **Facilitating social and economic development;** • **Providing for growing demand for water;** • **Protecting aquatic and associated ecosystems and their biological diversity;** • **Reducing and preventing pollution and degradation of water resources;** • **Meeting international obligations** • **Promoting dam safety;** • **Managing floods and drought.** **The proposed development does not occur in contrast with the objectives of the Act.** **A Water Use Licence is required in terms of Section 21(c) and Section 21(i) of the Act, and a Water Use Licence Application will be submitted to DWS.**
National Heritage Resources Act (Act No. 25 of 1999)	**Heritage resources have lasting value in their own right and provide evidence of the origins of South African society and, as they are valuable, finite, non-renewable and irreplaceable, they must be carefully managed to ensure their survival.** **A Heritage Impact Assessment is being conducted and will be included in the final BAR.**
Occupational Health & Safety Act (Act No. 85 of 1993) (OHSA) as amended in July 2001, Including Major Hazard Installation Regulation, GNR 692, 30 July 2001.	**The main objective of the Act is to provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of in connection with the activities of persons at work; to establish an advisory council for occupational health and safety; and to provide for matters connected herewith.** **The proposed development site and crew are to be managed in strict accordance with the Occupational Health and Safety Act (Act No. 85 of 1993) (OHSA) and the National Building Regulations.**
Conservation of Agricultural Resources Act (Act No. 43 of 1983)	**The proposed development will ensure that no agricultural resources are impacted upon.**
Reconstruction and Development Programme	**One of the six principles of the Reconstruction and development programme is meeting basic needs and building the infrastructure.** **The RDP integrates growth, development, reconstruction, redistribution and reconciliation into a unified programme.**

	The key link is an infrastructural programme that will provide access to modern and effective services such as electricity, water, telecommunications, transport, health, education and training for all our people. **The proposed development does not contrast with one of the six principles of the RDP.**
National Development Plan	**The National Development Plan (NDP) offers a long-term perspective. It defines a desired destination and identifies the role different sectors of society need to play in reaching that goal.** **As a long-term strategic plan, it serves four broad objectives:** • **Providing overarching goals for what the nation want to achieve by 2030.** • **Building consensus on the key obstacles to us achieving these goals and what needs to be done to overcome those obstacles.** • **Providing a shared long-term strategic framework within which more detailed planning can take place in order to advance the long-term goals set out in the NDP.** • **Creating a basis for making choices about how best to use limited resources.** **The Plan aims to ensure that all South Africans attain a decent standard of living through the elimination of poverty and reduction of inequality. The core elements of a decent standard of living identified in the Plan are:** • **Housing, water, electricity and sanitation** • **Safe and reliable public transport** • **Quality education and skills development** • **Safety and security** • **Quality health care** • **Social protection** • **Employment** • **Recreation and leisure** • **Clean environment** • **Adequate nutrition** **The proposed development does not occur in contrast with the NDP.**
Gauteng Conservation Plan (C-Plan Version 3.3)	**GDARD's (Gauteng Department of Agriculture and Rural Development) C-Plan (Gauteng Conservation Plan Version 3.3) was used to determine the sensitivities of the site and is provided in the figure below.** **Conservation planning was started in Gauteng in the year 2000 and the aim was to revise the C-Plan at least every 5 years. C-Plan Version 1 was produced in 2001 and was followed by version 2 in 2005. Version 2 was refined in 2007 and was named Version 2.1. The small size of the province made it feasible to conduct an extensive biodiversity survey, named BGAP, which aimed to provide the**

information on spatial occurrence of biodiversity necessary for rigorous conservation planning. C-Plan 3 represents priority areas for biodiversity conservation in the Gauteng province.

An extract of the sensitivities that could affect the site in terms of the C-Plan is provided below for ease of reference.

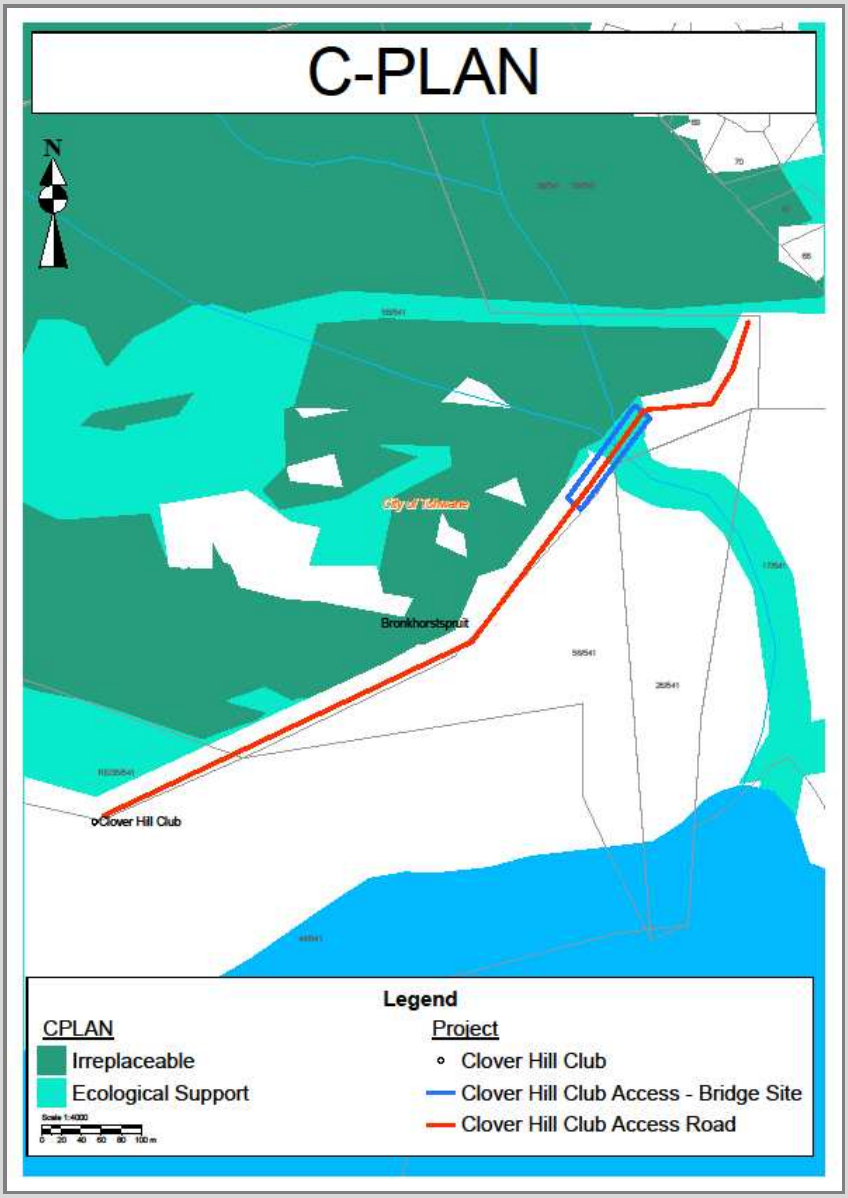
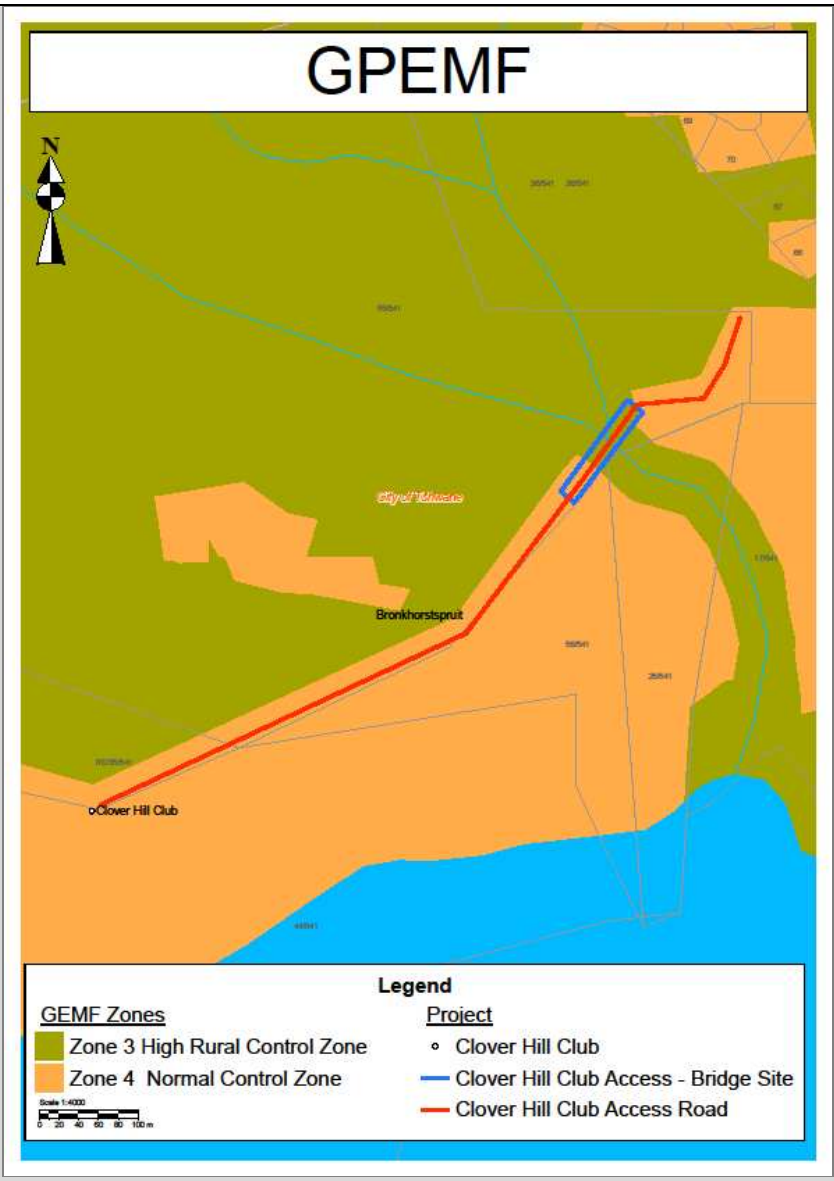


Figure 1: C-Plan

According to GDARD's conservation plan (C-Plan version 3.3) the study site is situated on the edge of a critical biodiversity area (CBA) and passes through an ecological support area (ESA). The CBA is demarcated as CBA – Irreplaceable and is the ridge area adjacent to the western boundary of the road. The ESA is the extent of the stream and riparian zone over which the road and bridge are constructed.

Gauteng Provincial Environmental Management Framework	**The guiding objectives that emerged during the course of the developed of the GEMF are:** • **To facilitate the optimal use of current industrial, mining land and other suitable derelict land for the development of non-polluting industrial and large commercial developments.** • **To protect Critical Biodiversity Areas (CBAs as defined in C-Plan 3.3) within urban and rural environments.** • **To ensure the proper integration of Ecological Support Areas (ESAs as defined in C-Plan 3.3) into rural land use change and development.** • **To use ESAs as defined in municipal bioregional plans in spatial planning of urban open space corridors and links within urban areas.** • **To focus on the sustainability of development through the implementation of initiatives such as:** ➢ **Energy efficiency programmes, plans and designs;** ➢ **Waste minimisation, reuse and recycling;** ➢ **Green infrastructure in urban areas; and** ➢ **Sustainable Drainage Systems (SuDS).** **The Environmental Management Zones (EMZ) were derived from the desired state, the environmental sensitivity as well the unique control areas as identified in sections 1, 2 and 3. The EMZs were also presented to the Gauteng Planning Forum 6 where it was generally accepted as a suitable contribution to facilitate appropriate development in Gauteng. The EMZs also took the Gauteng Growth and Management Perspective, 2014, into account and is therefore aligned to the general development policy for Gauteng.** **Five EMZs were identified and overlaying those a further six Special Management Areas were identified where specific planning and policy measures are necessary to achieve the development objective of those areas.** **According to the GPEMF, the site is identified as the following Environmental Management Zones:** ➢ **Zone 3: High Rural Control Zone** ➢ **Zone 4: Normal Control Zone** **An extract of the zones that could affect the site in terms of the GPEMF is provided below for ease of reference.**

	 **Figure 2: GPEMF** **This means that the proposed development is compatible with the intention of Zone 4 and conditionally compatible with the intention of Zone 3.**
Gauteng Spatial Development Framework	**The GSDF are in pursuit of planning for shared, equitable, sustainable and inclusive growth and development in the country. The Gauteng Provincial Government (GPG) seeks to:** • **provide a clear future provincial spatial structure that is robust to accommodate growth and sustainability;** • **specify a clear set of spatial objectives for municipalities to achieve in order to ensure realisation of the future provincial spatial structure;** • **propose a set of plans that municipalities have to prepare in their pursuit of these objectives;** • **provide a common language and set of shared planning**

	constructs for municipalities to use in their planning processes and plans; and • **enable and direct growth.** **The proposed development does not occur in contrast with the objectives of the GPG.**
The Gauteng Department of Agriculture and Rural Development's (GDARD) Requirements for Biodiversity Assessments (Version 3)	**The document provides guidelines for the minimum requirements for all biodiversity assessments when development is proposed.** **The Biodiversity Assessment conducted concluded the following:** **The natural environment within the study area is highly transformed and no pristine bushveld or grassland is present. The northern section of the site is badly invaded by alien trees and the southern section has been all but completely transformed by farming practices on the western side (cultivated lands and orchards) and urban developments on the eastern side (Clover Hill Club).** **The ridges to the immediate north and west of the road (study site) are moderately degraded to seriously degraded. It is however, still these ridge areas that are in reality the most sensitive in terms of fauna and flora.** **There is one watercourse in the study area, which is a small, semi-perennial stream that flows down off the ridge and into the Bronkhorstspruit Dam** **The road itself is not a sensitive area because it has been totally transformed and is an existing gravel road. This is also relevant to the bridge. The southern section of the study site, which is situated in the original extent of grassland, but that has all but been totally transformed or highly degraded is also not a sensitive area in terms of the ecological assessment. The ridge and watercourse areas are however sensitive. The northern section of the road and bridge are within demarcated ridges. The ridge is especially prominent on the western side of the road. The ridge and watercourse have therefore been demarcated as sensitive, even though they are seriously degraded in the area of the road and road reserve. This degradation is almost entirely due to excessive invasion and encroachment by alien tree species. Along the ridge / rocky area the alien specie is almost entirely the highly invasive Australian blackwattle (*Acacia mearnsii*), while the watercourse and kloof (ravine) is a mix of pine, poplar, syringa and blackwattle on the edges. The entire study site is seen as having a sensitivity rating of 'Low', except for the demarcated watercourse and ridge areas that are demarcated as 'High'.**
City of Tshwane: Draft 2017/21 Integrated	**According to Section 25 of the Local Government: Municipal Systems Act, 2000 (Act 32 of 2000), each municipal council must, after the start of its elected term,**

Development Plan	**adopt a single, inclusive and strategic plan (Integrated Development Plan or IDP) for the development of the municipality which links, integrates and coordinates plans and takes into account proposals for the development of the municipality and which aligns the resources and capacity of the municipality with the implementation of the said plan.** **An Integrated Development Plan is a super plan for an area that gives an overall framework for development. It aims to co-ordinate the work of local and other spheres of government in a coherent plan to improve the quality of life for all the people living in an area. It takes into account the existing conditions and problems and resources available for development. It looks at economic and social development for the area as a whole. It is used by municipalities as a tool to plan short and long term future development.** **The 2017/21 IDP is the first IDP for the 2017–2021 term of office. It sets the agenda for the term of office, which will focus on the following three strategic framers: stabilisation, revitalisation and delivery.** **The following are the strategic pillars that will guide the development in the term of office:** • **City that facilitates economic growth and job creation** • **City that cares for residents and promotes inclusivity** • **City that delivers excellent services and protects the environment** • **City that keeps residents safe** • **City that is open, honest and responsive** **The proposed development does not occur in contrast with the IDP.**
City of Tshwane: Metropolitan Spatial Development Framework (MSDF)	**Every great city has a vision. In order to realise that vision, a strategy that responds to the various elements of that vision is required. The vision of the CoT is to become the African Capital City of Excellence.** **The purpose of a spatial framework for the city is to provide a spatial representation of the City Vision and to be a tool to integrate all aspects of spatial (physical) planning such as land use planning; planning of a pedestrian, vehicular and other movement patters; planning regarding buildings and built-up areas; planning of open space systems; planning of roads and other service infrastructure; as well as to guide all decision-making processes regarding spatial (physical) development.** **The MSDF aims to address the following towards the achievement of the City vision:** • **Addressing social need** • **Restructuring of a spatially inefficient City**

	• **Promotion of sustainable use of land resources** • **Strategic direction around infrastructure provision** • **Creating opportunities for both rural and urban areas** • **Guiding developers and investors as to appropriate investment localities** • **Rural management programmes to improve livelihoods and stimulate employment.** **The proposed development does not occur in contrast with the MSDF.**
City of Tshwane: Regional Spatial Development Framework (RSDF): Region 7	**The City of Tshwane (COT) embarked on processes to compile seven Regional Spatial Development Frameworks (RSDF's) for the administrative planning regions of the metropolitan area in 2011.** **The RSDF's needed to be inter-linked and also support the Tshwane Metropolitan Spatial Development Framework (MSDF) of 2017 as well as the Tshwane City Development Strategy (CDS), Tshwane Densification and Compaction Strategy (2005) and Tshwane Open Space Framework.** **The RSDF for Region 7 was therefore prepared within the context of the MSDF, the City Development Strategy and in support of the other RSDF's.** **A Spatial Development Framework must:** • **Indicate where public and private development infrastructure investment should take place.** • **Indicate desired development and land use patterns for different areas.** • **Indicate where development of particular land uses should be discouraged or restricted.** • **Provide broad indication of the areas where priority spending should take place.** • **Shall provide guidelines for development and land use decision-making by the municipality.** **The proposed development does not occur in contrast with the RSDF.**
City of Tshwane By-Laws	**The proposed development will be constructed to comply with the City of Tshwane By-Laws**

3. ALTERNATIVES

Describe the proposal and alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished. The determination of whether the site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment.

The no-go option must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. **Do not** include the no go option into the alternative table below.

Note: After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Please describe the process followed to reach (decide on) the list of alternatives below

TGM was provided with 2 different options for the proposed upgrade of the bridge that have been used for the alternatives.

Provide a description of the alternatives considered

No.	**Alternative type**, either alternative: site on property, properties, activity, design, technology, energy, operational or other(provide details of "other")	**Description**
1	Proposal	**The project entails the proposed upgrading of the access road and bridge leading to the Clover Hill Club at the Bronkhorstspruit Dam.** **The existing gravel road will be upgraded to a surfaced road of approximately 871m in length, with a proposed road reserve of 16 metres. The upgraded road will consist of two lanes of 3.4 metres each, two bicycle lanes of 0.6 metres each, a 1 metre paved walkway in one direction and a 1 metre gravel shoulder in the other. The storm water drainage infrastructure associated with the upgraded road will include storm water pipes, side kerbs, natural channels and where necessary, concrete lined drains and cross culverts.** **The upgraded bridge will consist of a reinforced concrete voided slab. Both shoulders will be paved as walkways at the bridge section.** **The study site is located along the western / north-western side of the Bronkhorstspruit Dam. The study site is the main access road to the Clover Hill Club, and runs from just short of the Club's entrance gate northwards to Kilimanjaro Street.**

Figure 3: Locality of the proposed project

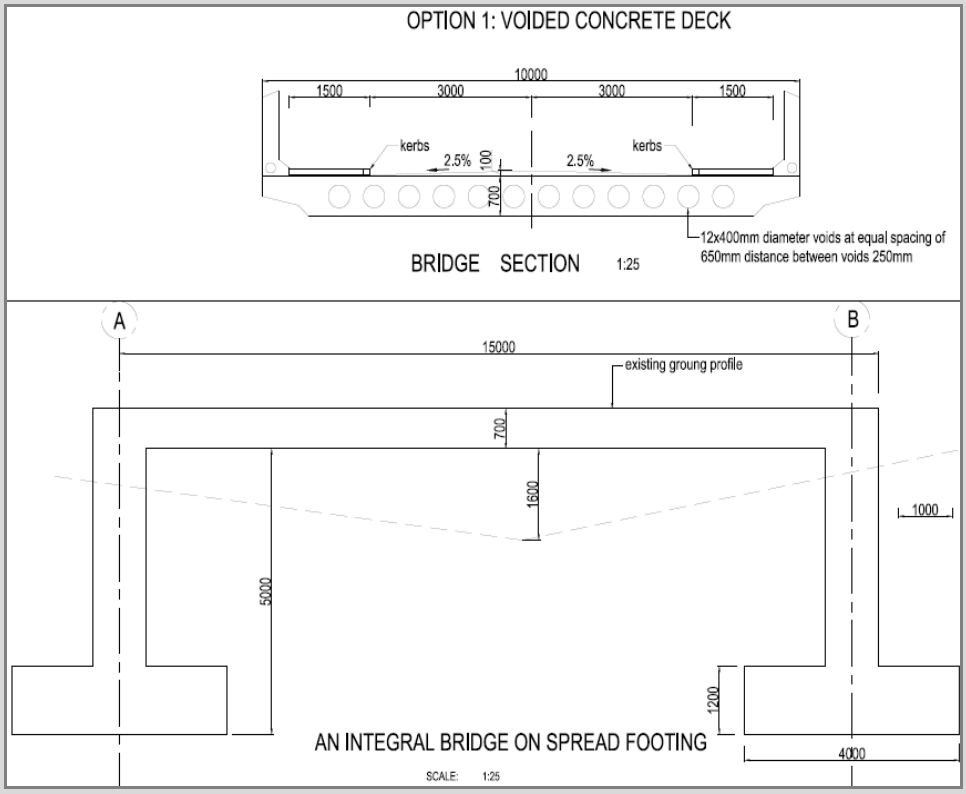
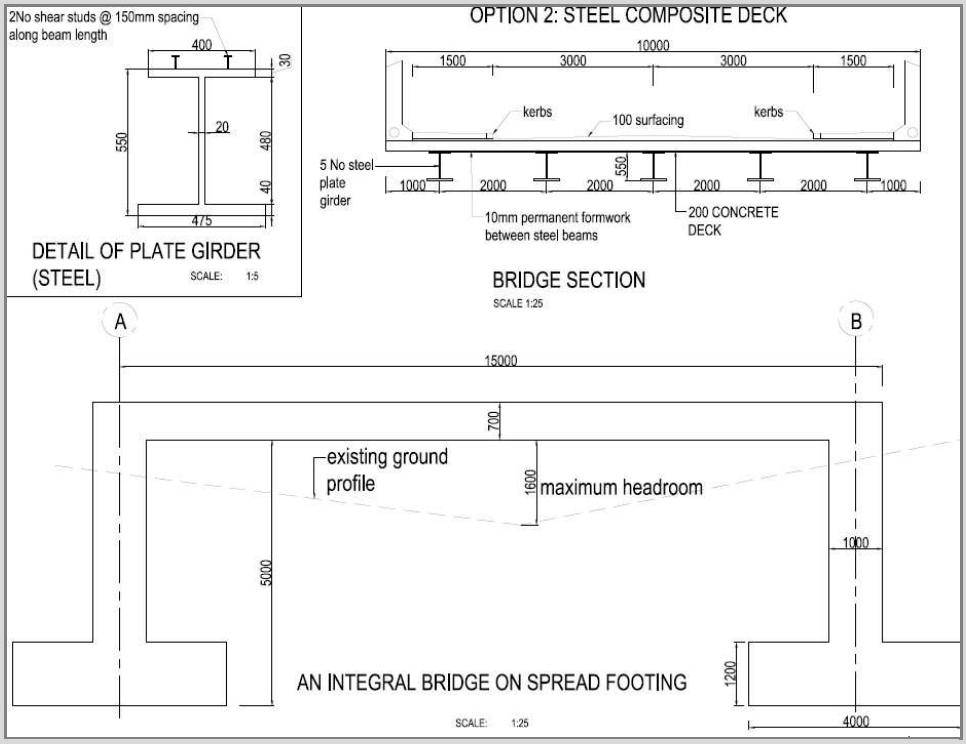


Figure 4: Typical bridge consisting of a reinforced concrete voided slab

2	Alternative 1	**Alternative 1 will be similar to the Proposal except that the upgraded bridge will consist of a steel composite deck.**  **Figure 5: Typical bridge consisting of a steel composite deck**
3	Alternative 2	**No other alternative presented.**
	Etc.	

In the event that no alternative(s) has/have been provided, a motivation must be included in the table below.

4. PHYSICAL SIZE OF THE ACTIVITY

Indicate the total physical size (footprint) of the proposal as well as alternatives. Footprints are to include all new infrastructure (roads, services etc), impermeable surfaces and landscaped areas:

	Size of the activity:
Proposed activity ***(Total environmental (landscaping, parking, etc.) and the building footprint)***	
Alternatives:	
Alternative 1 (if any)	
Alternative 2 (if any)	
	Ha/ m^2

or, for linear activities:

	Length of the activity:
Proposed activity	**± 871 m**
Alternatives:	
Alternative 1 (if any)	**± 871 m**
Alternative 2 (if any)	
	m/km

Indicate the size of the site(s) or servitudes (within which the above footprints will occur):

	Size of the site/servitude:
Proposed activity	**± 871 m**
Alternatives:	
Alternative 1 (if any)	**± 871 m**
Alternative 2 (if any)	
	Ha/m^2

5. SITE ACCESS

Proposal

Does ready access to the site exist, or is access directly from an existing road?	**YES**	NO
If NO, what is the distance over which a new access road will be built		m

Describe the type of access road planned:

Include the position of the access road on the site plan (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

Alternative 1

Does ready access to the site exist, or is access directly from an existing road?	**YES**	NO
If NO, what is the distance over which a new access road will be built		m

Describe the type of access road planned:

Include the position of the access road on the site plan. (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

~~Alternative 2~~

~~Does ready access to the site exist, or is access directly from an existing road?~~	~~YES~~	~~NO~~
~~If NO, what is the distance over which a new access road will be built~~		~~m~~

~~Describe the type of access road planned:~~

Include the position of the access road on the site plan. (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

PLEASE NOTE: Points 6 to 8 of Section A must be duplicated where relevant for alternatives

Section A 6-8 has been duplicated [ ] Number of times

(only complete when applicable)

6. LAYOUT OR ROUTE PLAN

A detailed site or route (for linear activities) plan(s) must be prepared for each alternative site or alternative activity. It must be attached to this document. The site or route plans must indicate the following:

- the layout plan is printed in colour and is overlaid with a sensitivity map (if applicable);
- layout plan is of acceptable paper size and scale, e.g.
  - A4 size for activities with development footprint of 10sqm to 5 hectares;
  - A3 size for activities with development footprint of > 5 hectares to 20 hectares;
  - A2 size for activities with development footprint of >20 hectares to 50 hectares);
  - A1 size for activities with development footprint of >50 hectares);

- The following should serve as a guide for scale issues on the layout plan:
  - A0 = 1: 500
  - A1 = 1: 1000
  - A2 = 1: 2000
  - A3 = 1: 4000
  - A4 = 1: 8000 (±10 000)
- shapefiles of the activity must be included in the electronic submission on the CD's;
- the property boundaries and Surveyor General numbers of all the properties within 50m of the site;
- the exact position of each element of the activity as well as any other structures on the site;
- the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, sewage pipelines, septic tanks, storm water infrastructure;
- servitudes indicating the purpose of the servitude;
- sensitive environmental elements on and within 100m of the site or sites (including the relevant buffers as prescribed by the competent authority) including (but not limited thereto):
  - Rivers and wetlands;
  - the 1:100 and 1:50 year flood line;
  - ridges;
  - cultural and historical features;
  - areas with indigenous vegetation (even if it is degraded or infested with alien species);
- Where a watercourse is located on the site at least one cross section of the water course must be included (to allow the position of the relevant buffer from the bank to be clearly indicated)

FOR LOCALITY MAP (NOTE THIS IS ALSO INCLUDED IN THE APPLICATION FORM REQUIREMENTS)

- the scale of locality map must be at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map;
- the locality map and all other maps must be in colour;
- locality map must show property boundaries and numbers within 100m of the site, and for poultry and/or piggery, locality map must show properties within 500m and prevailing or predominant wind direction;
- for gentle slopes the 1m contour intervals must be indicated on the map and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the map;
- areas with indigenous vegetation (even if it is degraded or infested with alien species);
- locality map must show exact position of development site or sites;
- locality map showing and identifying (if possible) public and access roads; and
- the current land use as well as the land use zoning of each of the properties adjoining the site or sites.

7. SITE PHOTOGRAPHS

Colour photographs from the center of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under the appropriate Appendix**.** It should be supplemented with additional photographs of relevant features on the site, where applicable.

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity to be attached in the appropriate Appendix.

SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT

Note: Complete Section B for the proposal and alternative(s) (if necessary)

Instructions for completion of Section B for linear activities

1) For linear activities (pipelines etc) it may be necessary to complete Section B for each section of the site that has a significantly different environment.
2) Indicate on a plan(s) the different environments identified
3) Complete Section B for each of the above areas identified
4) Attach to this form in a chronological order
5) Each copy of Section B must clearly indicate the corresponding sections of the route at the top of the next page.

Section B has been duplicated for sections of the route **2** times

Instructions for completion of Section B for location/route alternatives

1) For each location/route alternative identified the entire Section B needs to be completed
2) Each alterative location/route needs to be clearly indicated at the top of the next page
3) Attach the above documents in a chronological order

Section B has been duplicated for location/route alternatives **0** times (complete only when appropriate)

Instructions for completion of Section B when both location/route alternatives and linear activities are applicable for the application

Section B is to be completed and attachments order in the following way

- All significantly different environments identified for Alternative 1 is to be completed and attached in a chronological order; then
- All significantly different environments identified for Alternative 2 is to be completed and attached chronological order, etc.

Section B - Section of Route **Section of Route 1** (complete only when appropriate for above)

Section B – Location/route Alternative No. (complete only when appropriate for above)

1. PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)

- **Portion 55 of the Farm Tweefontein 541 JR**
- **Portion 56 of the Farm Tweefontein 541 JR**

Figure 6: Area pertaining to section 1 of the route

2. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in decimal degrees. The degrees should have at least six decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

Alternative:	Latitude (S):	Longitude (E):
Proposal & Alternative 1: Bridge Site	**-25.891549°**	**28.683783°**

In the case of linear activities:

Alternative:	Latitude (S):	Longitude (E):
Proposal & Alternative 1		
• Starting point of the activity	**-25.889974°**	**28.685428°**
• Middle point of the activity	**-25.891437°**	**28.683868°**
• End point of the activity	**-25.892997°**	**28.682330°**

For route alternatives that are longer than 500m, please provide co-ordinates taken every 250 meters along the route and attached in the appropriate Appendix

Addendum of route alternatives attached	**Refer to Appendix D - Route position information**

The 21 digit Surveyor General code of each cadastral land parcel

Proposal & Alternative 1	**T**	**0**	**J**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**4**	**1**	**0**	**0**	**0**	**5**	**5**
	T	**0**	**J**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**4**	**1**	**0**	**0**	**0**	**5**	**6**

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Flat	**1:50 – 1:20**	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

4. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site.

Ridgeline	Plateau	**Side slope of hill/ridge**	Valley	Plain	**Undulating plain/low hills**	**River front**

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

a) Is the site located on any of the following?

Shallow water table (less than 1.5m deep)	**YES**	NO
Dolomite, sinkhole or doline areas	YES	**NO**
Seasonally wet soils (often close to water bodies)	**YES**	NO
Unstable rocky slopes or steep slopes with loose soil	**YES**	NO
Dispersive soils (soils that dissolve in water)	YES	**NO**
Soils with high clay content (clay fraction more than 40%)	YES	**NO**
Any other unstable soil or geological feature	YES	**NO**
An area sensitive to erosion	**YES**	NO

(Information in respect of the above will often be available at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

b) are any caves located on the site(s) YES **NO**

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S):	**Longitude (E):**
°	°

c) are any caves located within a 300m radius of the site(s) YES **NO**

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S):	**Longitude (E):**
°	°

d) are any sinkholes located within a 300m radius of the site(s) YES **NO**

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S):	**Longitude (E):**
°	°

If any of the answers to the above are “YES” or “unsure”, specialist input may be requested by the Department

6. AGRICULTURE

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?	YES	**NO**

Please note: The Department may request specialist input/studies in respect of the above.

7. GROUNDCOVER

To be noted that the location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Indicate the types of groundcover present on the site and include the estimated percentage found on site

Natural veld - good condition % =	Natural veld with scattered aliens % =	Natural veld with heavy alien infestation % =	**Veld dominated by alien species % = 10**	Landscaped (vegetation) % =
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % =	Building or other structure % =	**Bare soil % = 90**

Please note: The Department may request specialist input/studies depending on the nature of the groundcover and potential impact(s) of the proposed activity/ies.

Are there any rare or endangered flora or fauna species (including red list species) present on the site	YES	**NO**

If YES, specify and explain:

No Red Data floral species (endangered, threatened or vulnerable) were observed in the actual study area during field investigations. No Orange Data floral species or floral species of conservation concern were observed during field investigations either.

No protected tree species were observed in the study area during field investigations and none are expected to occur.

Red data Red Data Faunal Species that could possibly be present in the study area include the SA Hedgehog and the Short-eared trident bat (in terms of hunting in the area at night)

No large- or medium-sized mammals were observed during field investigations, with the exception of some common bird species and a few signs of mongoose, hares and field mice. The table below, gives a brief description of the preferred habitat of the RDL mammal species for the Gauteng Province and the likelihood of them nesting, roosting and breeding (i.e. present) in the study area.

Table 1: Likelihood of presence of RDL Mammals in Study Area

Common Name	Preferred Habitat	Found in Study Area
Juliana's Golden Mole	Rocky Highveld Grassland; Sandy soils.	No
White-tailed Mouse	Grassland, Fynbos & Karoo vegetation.	Unlikely
SA Hedgehog	Wide variety of habitats, including semiarid and sub-temperate habitats.	Possible

	Animals have generally been recorded from scrub brush, western Karoo, grassland and suburban gardens.	
Spotted-necked otter	Found in lakes and larger rivers throughout much of Africa.	Unlikely
Schreiber's long-fingered bat	Mainly caves, mine-shafts. Also roost in crevices & holes of trees.	Possible
Temminck's hairy bat	Open woodland & bushveld. Caveroosting, preferring damp caves.	No
Blasius's/Peak-Saddle Horseshoe Bat	Bushveld, Mainly caves, sometimes old, dark buildings.	No
Geoffroy's Horseshoe bat / Wing-gland bat	Bushveld, Mainly caves, sometimes old, dark buildings.	No
Darling's Horseshoe Bat	Bushveld, Mainly caves, sometimes old, dark buildings.	No
Hildebrandt's Horseshoe Bat	Bushveld, caves, will utilise tree hollows.	No

A few common bird species were observed during field investigations such as laughing dove (*Streptopelia sensegalensis*), cape turtle dove (*Streptopelia capicola*) and feral pigeon (*Columba livia*). A number of RDL bird species will be found in the area and region due to the proximity of the Bronkhorstspruit Dam and ridges.

The study area is close to, but not within any lizard hotspots and not within, or close to, any snake hotspots. The likelihood is however, rare that any priority lizard or snake species will be present in the study area, although numerous common species will be present.

During field investigations specific attention was given to priority species such as Mygalomorphae arachnids (Trapdoor and Baboon spiders) and red data butterflies. No priority invertebrate species were observed. No Red Data invertebrate species are expected to occur in the study area.

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.	**YES**	NO

If YES, specify and explain:

No Red Data floral species (endangered, threatened or vulnerable) were observed in the actual study area during field investigations. No Orange Data floral species or floral species of conservation concern were observed during field investigations either.

A Delospermum specie was recorded north of the study site in the area of the ridges and koppies. It is possible that it could have been *Delospermum leendertziae* (Near Threatened) which is found in that region. The study site itself is highly transformed, but some of the ridges and rocky outcrops in the immediate vicinity

may well have Red and Orange listed floral species.

No protected tree species were observed in the study area during field investigations and none are expected to occur.

Red data Red Data Faunal Species that could possibly be present in the study area include the SA Hedgehog and the Short-eared trident bat (in terms of hunting in the area at night)

No large- or medium-sized mammals were observed during field investigations, with the exception of some common bird species and a few signs of mongoose, hares and field mice. The table below, gives a brief description of the preferred habitat of the RDL mammal species for the Gauteng Province and the likelihood of them nesting, roosting and breeding (i.e. present) in the study area.

Table 2: Likelihood of presence of RDL Mammals in Study Area

Common Name	Preferred Habitat	Found in Study Area
Juliana's Golden Mole	Rocky Highveld Grassland; Sandy soils.	No
White-tailed Mouse	Grassland, Fynbos & Karoo vegetation.	Unlikely
SA Hedgehog	Wide variety of habitats, including semiarid and sub-temperate habitats. Animals have generally been recorded from scrub brush, western Karoo, grassland and suburban gardens.	Possible
Spotted-necked otter	Found in lakes and larger rivers throughout much of Africa.	Unlikely
Schreiber's long-fingered bat	Mainly caves, mine-shafts. Also roost in crevices & holes of trees.	Possible
Temminck's hairy bat	Open woodland & bushveld. Caveroosting, preferring damp caves.	No
Blasius's/Peak-Saddle Horseshoe Bat	Bushveld, Mainly caves, sometimes old, dark buildings.	No
Geoffroy's Horseshoe bat / Wing-gland bat	Bushveld, Mainly caves, sometimes old, dark buildings.	No
Darling's Horseshoe Bat	Bushveld, Mainly caves, sometimes old, dark buildings.	No
Hildebrandt's Horseshoe Bat	Bushveld, caves, will utilise tree hollows.	No

A few common bird species were observed during field investigations such as laughing dove (*Streptopelia sensegalensis*), cape turtle dove (*Streptopelia capicola*)

and feral pigeon (*Columba livia*). A number of RDL bird species will be found in the area and region due to the proximity of the Bronkhorstspruit Dam and ridges.

The study area is close to, but not within any lizard hotspots and not within, or close to, any snake hotspots. The likelihood is however, rare that any priority lizard or snake species will be present in the study area, although numerous common species will be present.

During field investigations specific attention was given to priority species such as Mygalomorphae arachnids (Trapdoor and Baboon spiders) and red data butterflies. No priority invertebrate species were observed. No Red Data invertebrate species are expected to occur in the study area.

Are there any special or sensitive habitats or other natural features present on the site?	**YES**	NO

If YES, specify and explain:

There is one watercourse in the study area, which is a small, semi-perennial stream that flows down off the ridge and into the Bronkhorstspruit Dam. There are no wetlands or perennial rivers in the study area. The stream is small and not perennial, but it is situated within a fairly large and significant kloof (ravine) that is narrow upstream and in the ridge area (west of bridge and road), but then opens up into a wide area almost immediately downstream of the study site (east of the bridge and road). There is a small, but significant drainage line that also channels rain water from the ridge into the small stream in the area immediately west of the bridge and road.

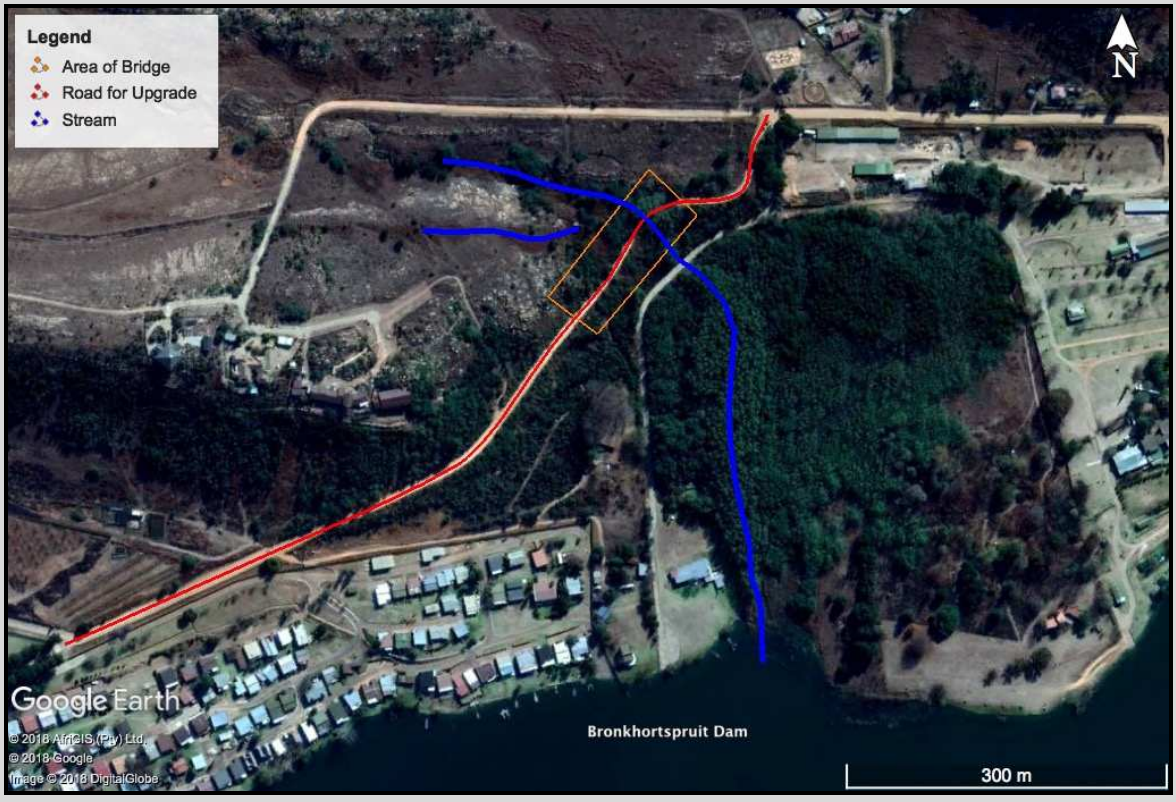


Figure 7: Watercourses in the study area

The northern section of the study site is situated within demarcated ridges in terms

of GDARD's data sets and maps. The ridge demarcation was verified as accurate during field investigations. The ridges in the study area would be classified as Class 2 ridges.

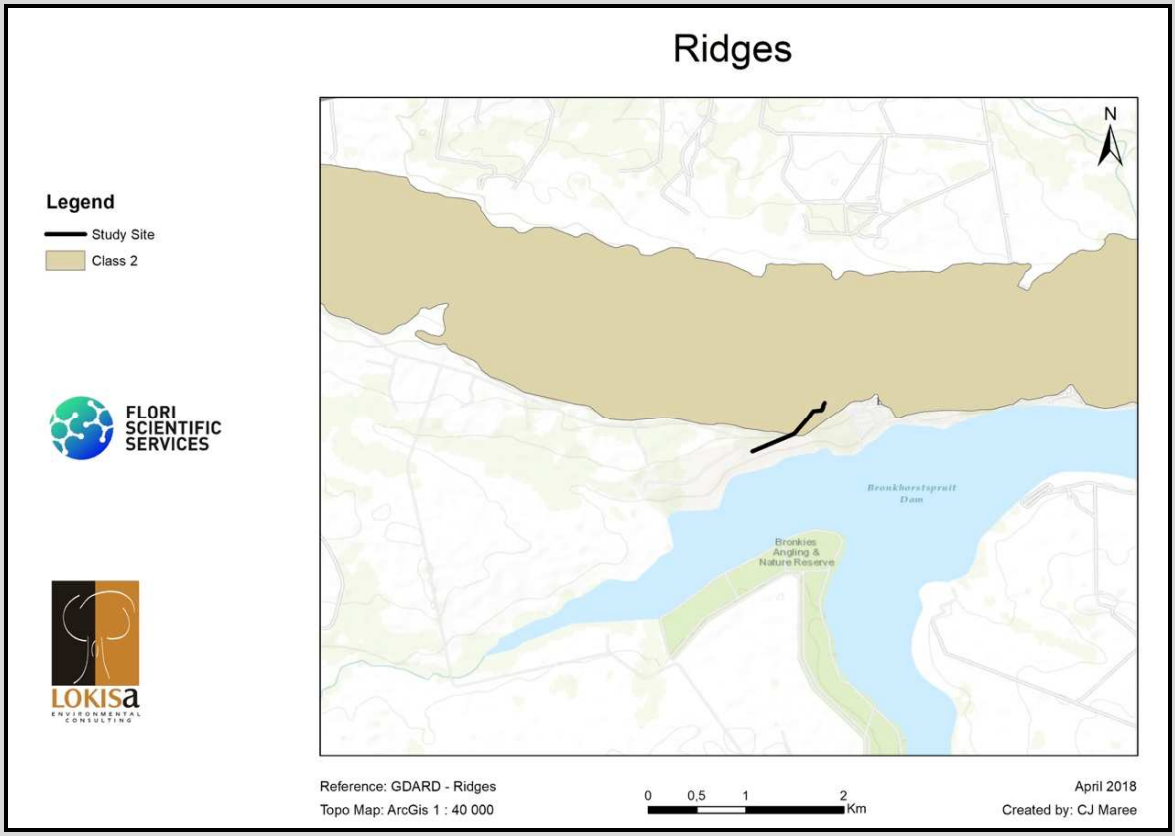


Figure 8: Ridges in the study area

Was a specialist consulted to assist with completing this section			**YES**	NO
If yes complete specialist details				
Name of the specialist:	**J.O. Maree**			
Qualification(s) of the specialist:	**MSc., MBA, *Pr. Sci. Nat.***			
Postal address:	**-**			
Postal code:	**-**			
Telephone:	**-**	Cell:	**082 564 1211**	
E-mail:	**johannes@flori.co.za**	Fax:	**-**	
Are any further specialist studies recommended by the specialist?			YES	**NO**
If YES, specify:				
If YES, is such a report(s) attached?			YES	NO
If YES list the specialist reports attached below				

Signature of specialist:	**See attached report**	Date:	**August 2018**

Please note; If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated

8. LAND USE CHARACTER OF SURROUNDING AREA

Using the associated number of the relevant current land use or prominent feature from the table below, fill in the position of these land-uses in the vacant blocks below which represent a 500m radius around the site

1. Vacant land	**2. River, stream, wetland**	3. Nature conservation area	4. Public open space	**5. Koppie or ridge**
6. Dam or reservoir	**7. Agriculture**	**8. Low density residential**	**9. Medium to high density residential**	10. Informal residential
11. Old age home	12. Retail	13. Offices	14. Commercial & warehousing	15. Light industrial
16. Heavy industrial^{AN}	17. Hospitality facility	18. Church	19. Education facilities	20. Sport facilities
21. Golf course/polo fields	22. Airport^{N}	23. Train station or shunting yard^{N}	24. Railway line^{N}	25. Major road (4 lanes or more)^{N}
26. Sewage treatment plant^{A}	27. Landfill or waste treatment site^{A}	28. Historical building	29. Graveyard	30. Archeological site
31. Open cast mine	32. Underground mine	33.Spoil heap or slimes dam^{A}	34. Small Holdings	
Other land uses (describe):				

NOTE: Each block represents an area of 250m X 250m, if your proposed development is larger than this please use the appropriate number and orientation of hashed blocks

NORTH

1, 5	**1, 2, 5**	**1, 5, 8**	**1, 5**	**1**
1, 2, 5	**1, 2, 5**	**1, 5, 8**	**1, 5**	**1**
1, 5, 7, 8	**1, 5, 8**		**1, 5**	**1**
1, 7	**1, 9**	**1, 6, 9**	**1, 2, 9**	**1**
1, 6, 9	**6, 9**	**6**	**2, 6**	**1, 6**

WEST EAST

SOUTH

Note: More than one (1) Land-use may be indicated in a block

Please note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed activity/ies. Specialist reports that look at health & air quality and noise impacts may be required for any feature above and in particular those features marked with an "^{A}" and with an "^{N}" respectively.

Have specialist reports been attached	**YES**	NO

If yes indicate the type of reports below

- **Biodiversity Assessment**

9. SOCIO-ECONOMIC CONTEXT

Describe the existing social and economic characteristics of the area and the community condition as baseline information to assess the potential social, economic and community impacts.

The site falls within Region 7 of the City of Tshwane Metropolitan Municipality.

Region 7 is the Eastern most area of the new City of Tshwane and is south east of Region 5 and north east of region 6. Furthermore, Region 7 is bordered by Mpumalanga to the East and North and Ekurhuleni Metropolitan Municipality to the South.

It is accessible via:

- **The N4 freeway which forms a dominant central mobility spine within the region. The N4 freeway runs east-west from as far as Botswana to Maputo. It links the region with the Pretoria CBD, 55km to the west, and Mpumalanga Province to the east.**
- **The R25 on the eastern side runs north-south of the Region, linking the Region with Mpumalanga Province to the north and Ekurhuleni Metropolitan Municipality to the south.**
- **Therefore, the region is accessible from a regional point of view as it is served by both north-south and east-west first order roads linking it to the rest of Gauteng and other.**

The region is 1 473km² in extent and comprises wards 102, 103, 104 and 105. This is the region with the second largest geographical area.

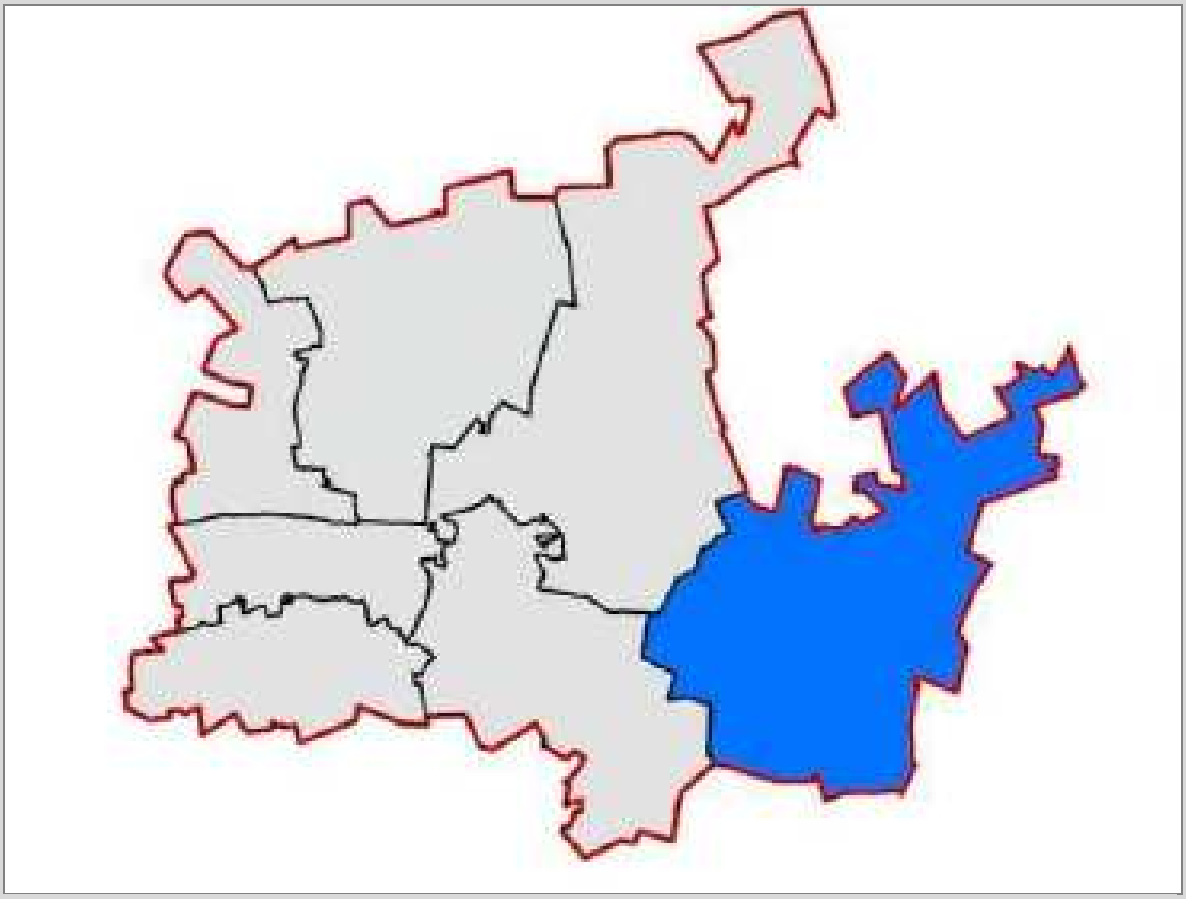


Figure 9: Region 7 within the City of Tshwane Metropolitan Municipality

Region 7 had a population of about 114 224 people according to the 2011 Census. It is projected that in 2017 Region 7 will have 136 969 people residing in the region.

The main characteristics of Region 7 are as follow:

- **The region presents a distinct and diverse character, with three dispersed urban areas and approximately 80% undeveloped rural land.**
- **The Bronkhorstspruit urban core is located at the heart of the region, with the most concentration of retail and offices uses, as well as the mid-high density developments. It is the most developed area with modern infrastructure, such as water, electricity, roads, communication networks and sanitation.**
- **Surrounding the Bronkhorstspruit urban core are suburban residential areas which include the Erasmus suburbs with its various extensions as well as Riamarpark. Here resides the middle income group.**
- **The low-no income groups reside in the Zithobeni, Ekangala and Rethabiseng Townships. Zithobeni forms part of the central urban area of the region, located just under 10km away from the Bronkhorstspruit urban core. Whereas, Ekangala and Rethabisieng are located at the northern part of the region. These are the formerly disadvantaged areas with subsidised and RDP housing with a backlog of infrastructure provision. The township economy should be encouraged and harnessed since there is limited economic and employment opportunities in these areas.**
- **South of the region is the Bronkhorstbaai and Kungwini Country Estates suburbs developed along the bank of the Bronkhorstspruit Dam. These are mid-high income properties with some of them being used as holiday houses along the edge of the Bronkhorstspruit Dam.**
- **Sokhulumi is located at the far north-eastern part of the region and it the regions rural community under tribal leadership. It posses great agricultural and tourism potential, thus needs infrastructure investment to unlock this potential.**
- **Ekandustria Industrial Park, located at the northern urban core, and Ovipropark at the central urban core are industrial areas where most manufacturing and distribution related companies are located.**
- **The region contains some of the best farming land in Gauteng, with the Tshwane Food and Energy Centre located west and south of Rethabiseng Townships and Ekandustria respectively.**
- **The region contains a number of strategic land uses such the Ekandustria Industrial Park, Bronkhorstspruit town area, Nan Hau Bhuddist Temple, Bronkhorstspruit Dam as well as the vast high agricultural potential land**
- **The most significant contributors to the Region economy are manufacturing (29%), services (28%), financial (17%) and trade (12%).**

The region's strengths are as follow:

- **The region is served by both north-south and east-west first order roads linking it to the rest of Gauteng and the broader region:**
  - **The N4 / Maputo Corridor forms a dominant central east-west mobility spine, linking the region with the capital core further west along the N4 and other key areas further east along the N4 such as Witbank, Mbombela / Nelspruit, the Kruger National Park and the expanding ocean port at Maputo;**
  - **The R25 runs north-south of the region, linking it with Ekurhuleni Metropolitan Municipality and Mpumalanga province.**
- **The region has vast parcels of vacant land with high agriculture potential for both crop and livestock farming.**
- **The vacant land with the urban edge also provides an opportunity for future expansion.**

The region's weaknesses are as follow:

- **The region is spatially fragmented, with both the formerly disadvantaged townships of Ekangala and Rethabiseng, along with the high income Kungwini**

Country Estate and Bronkhorstbaai located approximately 20km north and south of the Bronkhorstspruit town respectively;

- **In addition, the Sokhulumi Rural Community and Vlakfontein-A are remotely located, approximately 35km northeast of the Bronkhorstspruit town and it is difficult to provide both social and municipal services to those rural communities;**
- **Backlog in the provision of bulk services to the former disadvantaged townships of Ekangala;**
- **Limited job opportunities for the unskilled.**

(Source: Spatial Development Framework Region 7, 2017)

10. CULTURAL/HISTORICAL FEATURES

Please be advised that if section 38 of the National Heritage Resources Act 25 of 1999 is applicable to your proposal or alternatives, then you are requested to furnish this Department with written comment from the South African Heritage Resource Agency (SAHRA) – Attach comment in appropriate annexure

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

(b) the construction of a bridge or similar structure exceeding 50m in length;

(c) any development or other activity which will change the character of a site-

(i) exceeding 5 000 m2 in extent; or

(ii) involving three or more existing erven or subdivisions thereof; or

(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

(d) the re-zoning of a site exceeding 10 000 m2 in extent; or

(e) 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.

Are there any signs of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site? If YES, explain:	YES	**NO**

If uncertain, the Department may request that specialist input be provided to establish whether there is such a feature(s) present on or close to the site.

Briefly explain the findings of the specialist if one was already appointed:

A Heritage Impact Assessment is being undertaken and the results thereof will be included in the Final BAR.

Will any building or structure older than 60 years be affected in any way?	YES	**NO**
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)? If yes, please attached the comments from SAHRA in the appropriate Appendix	YES	NO

Section B - Section of Route | **Section of Route 2** | (complete only when appropriate for above)

Section B – Location/route Alternative No. | | (complete only when appropriate for above)

1. PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)

- **Portion 55 of the Farm Tweefontein 541 JR**
- **Portion 56 of the Farm Tweefontein 541 JR**
- **Re of Portion 35 of the Farm Tweefontein 541 JR**

Figure 10: Area pertaining to section 2 of the route

2. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in decimal degrees. The degrees should have at least six decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

Alternative:	Latitude (S):	Longitude (E):
Proposal & Alternative 1: Bridge Site	**-25.891549°**	**28.683783°**

In the case of linear activities:

Alternative:	Latitude (S):	Longitude (E):
Proposal & Alternative 1		
• Starting point of the activity	**-25.892997°**	**28.682330°**
• Middle point of the activity	**-25.893710°**	**28.680705°**
• End point of the activity	**-25.894437°**	**28.678981°**

For route alternatives that are longer than 500m, please provide co-ordinates taken every 250 meters along the route and attached in the appropriate Appendix

Addendum of route alternatives attached **Refer to Appendix D - Route position information**

The 21 digit Surveyor General code of each cadastral land parcel

Proposal & Alternative 1	**T**	**0**	**J**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**4**	**1**	**0**	**0**	**0**	**5**	**5**
	T	**0**	**J**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**4**	**1**	**0**	**0**	**0**	**5**	**6**
	T	**0**	**J**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**4**	**1**	**0**	**0**	**0**	**3**	**5**

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Flat	**1:50 – 1:20**	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

4. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site.

Ridgeline	Plateau	Side slope of hill/ridge	Valley	Plain	**Undulating plain/low hills**	River front

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

a) Is the site located on any of the following?

Shallow water table (less than 1.5m deep)	YES	**NO**
Dolomite, sinkhole or doline areas	YES	**NO**
Seasonally wet soils (often close to water bodies)	YES	**NO**
Unstable rocky slopes or steep slopes with loose soil	YES	**NO**
Dispersive soils (soils that dissolve in water)	YES	**NO**
Soils with high clay content (clay fraction more than 40%)	YES	**NO**
Any other unstable soil or geological feature	YES	**NO**
An area sensitive to erosion	YES	**NO**

(Information in respect of the above will often be available at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

b) are any caves located on the site(s) YES **NO**

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S):	Longitude (E):
°	°

c) are any caves located within a 300m radius of the site(s)

YES	**NO**

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S):	Longitude (E):
°	°

d) are any sinkholes located within a 300m radius of the site(s)

YES	**NO**

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S):	Longitude (E):
°	°

If any of the answers to the above are "YES" or "unsure", specialist input may be requested by the Department

6. AGRICULTURE

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?

YES	NO

Please note: The Department may request specialist input/studies in respect of the above.

7. GROUNDCOVER

To be noted that the location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Indicate the types of groundcover present on the site and include the estimated percentage found on site

Natural veld - good condition % =	Natural veld with scattered aliens % =	Natural veld with heavy alien infestation % =	**Veld dominated by alien species % = 10**	Landscaped (vegetation) % =
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % =	Building or other structure % =	**Bare soil % = 90**

Please note: The Department may request specialist input/studies depending on the nature of the groundcover and potential impact(s) of the proposed activity/ies.

Are there any rare or endangered flora or fauna species (including red list species) present on the site

YES	**NO**

If YES, specify and explain:

No Red Data floral species (endangered, threatened or vulnerable) were observed in the actual study area during field investigations. No Orange Data floral species or floral species of conservation concern were observed during field investigations either.

No protected tree species were observed in the study area during field investigations and none are expected to occur.

Red data Red Data Faunal Species that could possibly be present in the study area include the SA Hedgehog and the Short-eared trident bat (in terms of hunting in the area at night)

No large- or medium-sized mammals were observed during field investigations, with the exception of some common bird species and a few signs of mongoose, hares and field mice. The table below, gives a brief description of the preferred habitat of the RDL mammal species for the Gauteng Province and the likelihood of

them nesting, roosting and breeding (i.e. present) in the study area.

Table 3: Likelihood of presence of RDL Mammals in Study Area

Common Name	Preferred Habitat	Found in Study Area
Juliana's Golden Mole	Rocky Highveld Grassland; Sandy soils.	No
White-tailed Mouse	Grassland, Fynbos & Karoo vegetation.	Unlikely
SA Hedgehog	Wide variety of habitats, including semiarid and sub-temperate habitats. Animals have generally been recorded from scrub brush, western Karoo, grassland and suburban gardens.	Possible
Spotted-necked otter	Found in lakes and larger rivers throughout much of Africa.	Unlikely
Schreiber's long-fingered bat	Mainly caves, mine-shafts. Also roost in crevices & holes of trees.	Possible
Temminck's hairy bat	Open woodland & bushveld. Caveroosting, preferring damp caves.	No
Blasius's/Peak-Saddle Horseshoe Bat	Bushveld, Mainly caves, sometimes old, dark buildings.	No
Geoffroy's Horseshoe bat / Wing-gland bat	Bushveld, Mainly caves, sometimes old, dark buildings.	No
Darling's Horseshoe Bat	Bushveld, Mainly caves, sometimes old, dark buildings.	No
Hildebrandt's Horseshoe Bat	Bushveld, caves, will utilise tree hollows.	No

A few common bird species were observed during field investigations such as laughing dove (*Streptopelia sensegalensis*), cape turtle dove (*Streptopelia capicola*)
and feral pigeon (*Columba livia*). A number of RDL bird species will be found in the area and region due to the proximity of the Bronkhorstspruit Dam and ridges.

The study area is close to, but not within any lizard hotspots and not within, or close to, any snake hotspots. The likelihood is however, rare that any priority lizard or snake species will be present in the study area, although numerous common species will be present.

During field investigations specific attention was given to priority species such as Mygalomorphae arachnids (Trapdoor and Baboon spiders) and red data butterflies. No priority invertebrate species were observed. No Red Data invertebrate species are expected to occur in the study area.

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site. If YES, specify and explain:	**YES**	NO

No Red Data floral species (endangered, threatened or vulnerable) were observed in the actual study area during field investigations. No Orange Data floral species or floral species of conservation concern were observed during field investigations either.

A Delospermum specie was recorded north of the study site in the area of the ridges and koppies. It is possible that it could have been *Delospermum leendertziae* (Near Threatened) which is found in that region. The study site itself is highly transformed, but some of the ridges and rocky outcrops in the immediate vicinity may well have Red and Orange listed floral species.

No protected tree species were observed in the study area during field investigations and none are expected to occur.

Red data Red Data Faunal Species that could possibly be present in the study area includes the SA Hedgehog and the Short-eared trident bat (in terms of hunting in the area at night)

No large- or medium-sized mammals were observed during field investigations, with
the exception of some common bird species and a few signs of mongoose, hares and field mice. The table below, gives a brief description of the preferred habitat of the RDL mammal species for the Gauteng Province and the likelihood of them nesting, roosting and breeding (i.e. present) in the study area.

Table 4: Likelihood of presence of RDL Mammals in Study Area

Common Name	Preferred Habitat	Found in Study Area
Juliana's Golden Mole	Rocky Highveld Grassland; Sandy soils.	No
White-tailed Mouse	Grassland, Fynbos & Karoo vegetation.	Unlikely
SA Hedgehog	Wide variety of habitats, including semiarid and sub-temperate habitats. Animals have generally been recorded from scrub brush, western Karoo, grassland and suburban gardens.	Possible
Spotted-necked otter	Found in lakes and larger rivers throughout much of Africa.	Unlikely
Schreiber's long-fingered bat	Mainly caves, mine-shafts. Also roost in crevices & holes of trees.	Possible
Temminck's hairy bat	Open woodland & bushveld. Caveroosting, preferring damp caves.	No

Blasius's/Peak-Saddle Horseshoe Bat	Bushveld, Mainly caves, sometimes old, dark buildings.	No
Geoffroy's Horseshoe bat / Wing-gland bat	Bushveld, Mainly caves, sometimes old, dark buildings.	No
Darling's Horseshoe Bat	Bushveld, Mainly caves, sometimes old, dark buildings.	No
Hildebrandt's Horseshoe Bat	Bushveld, caves, will utilise tree hollows.	No

A few common bird species were observed during field investigations such as laughing dove (*Streptopelia sensegalensis*), cape turtle dove (*Streptopelia capicola*) and feral pigeon (*Columba livia*). A number of RDL bird species will be found in the area and region due to the proximity of the Bronkhorstspruit Dam and ridges.

The study area is close to, but not within any lizard hotspots and not within, or close to, any snake hotspots. The likelihood is however, rare that any priority lizard or snake species will be present in the study area, although numerous common species will be present.

During field investigations specific attention was given to priority species such as Mygalomorphae arachnids (Trapdoor and Baboon spiders) and red data butterflies. No priority invertebrate species were observed. No Red Data invertebrate species are expected to occur in the study area.

Are there any special or sensitive habitats or other natural features present on the site?	**YES**	NO

If YES, specify and explain:

There is one watercourse in the study area, which is a small, semi-perennial stream that flows down off the ridge and into the Bronkhorstspruit Dam. There are no wetlands or perennial rivers in the study area. The stream is small and not perennial, but it is situated within a fairly large and significant kloof (ravine) that is narrow upstream and in the ridge area (west of bridge and road), but then opens up into a wide area almost immediately downstream of the study site (east of the bridge and road). There is a small, but significant drainage line that also channels rain water from the ridge into the small stream in the area immediately west of the bridge and road.

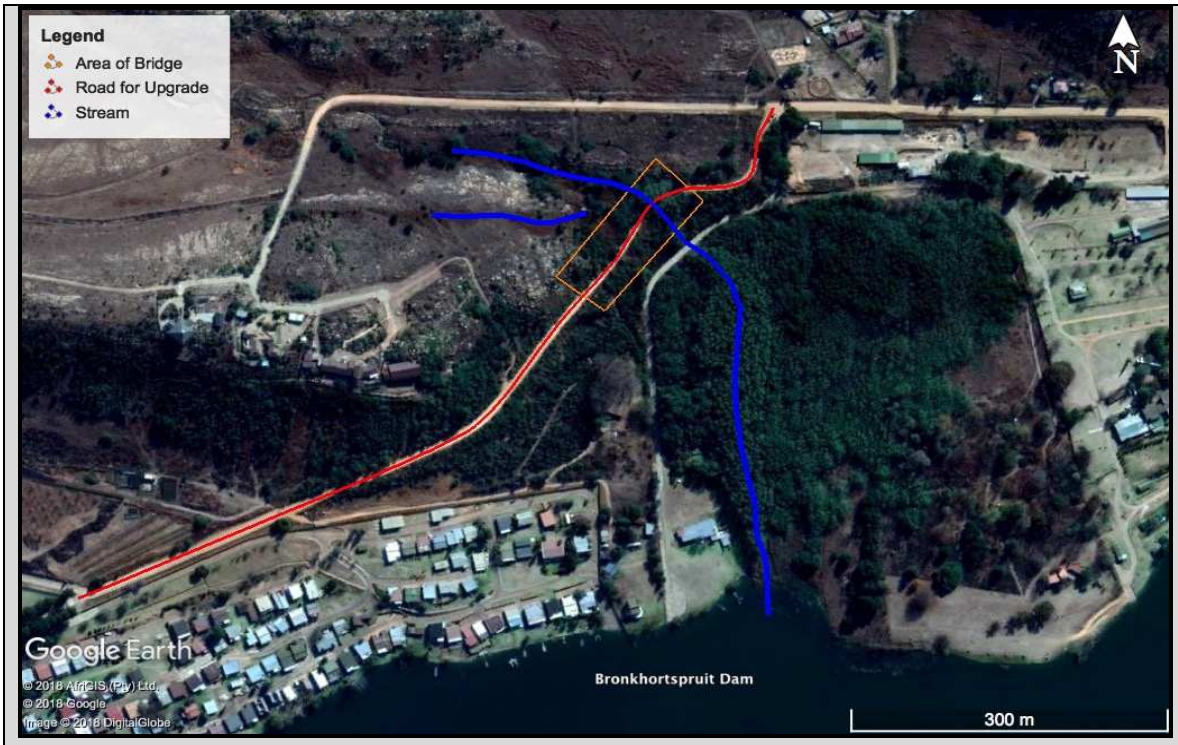


Figure 11: Watercourses in the study area

The northern section of the study site is situated within demarcated ridges in terms of GDARD's data sets and maps. The ridge demarcation was verified as accurate during field investigations. The ridges in the study area would be classified as Class 2 ridges.

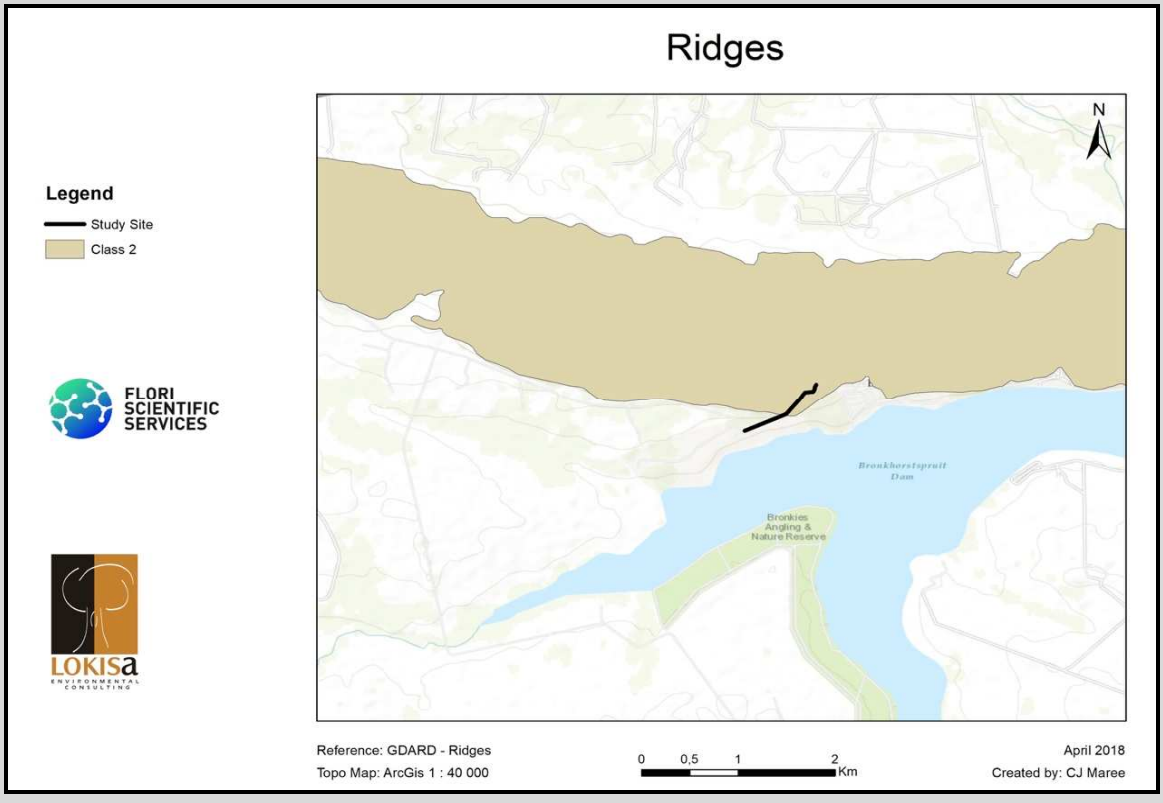


Figure 12: Ridges in the study area

Was a specialist consulted to assist with completing this section		**YES**	NO
If yes complete specialist details			
Name of the specialist:	**J.O. Maree**		
Qualification(s) of the specialist:	**MSc., MBA, *Pr. Sci. Nat.***		
Postal address:	**-**		
Postal code:	**-**		
Telephone:	**-**	Cell:	**082 564 1211**
E-mail:	**johannes@flori.co.za**	Fax:	**-**
Are any further specialist studies recommended by the specialist?		YES	**NO**
If YES, specify:			
If YES, is such a report(s) attached?		YES	NO
If YES list the specialist reports attached below			

Signature of specialist:	**See attached report**	Date:	**August 2018**

Please note; If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated

8. LAND USE CHARACTER OF SURROUNDING AREA

Using the associated number of the relevant current land use or prominent feature from the table below, fill in the position of these land-uses in the vacant blocks below which represent a 500m radius around the site

1. Vacant land	**2. River, stream, wetland**	3. Nature conservation area	4. Public open space	**5. Koppie or ridge**
6. Dam or reservoir	**7. Agriculture**	**8. Low density residential**	**9. Medium to high density residential**	10. Informal residential
111. Old age home	12. Retail	13. Offices	14. Commercial & warehousing	15. Light industrial
16. Heavy industrial[AN]	17. Hospitality facility	18. Church	19. Education facilities	20. Sport facilities
21. Golf course/polo fields	22. Airport[N]	23. Train station or shunting yard[N]	24. Railway line[N]	25. Major road (4 lanes or more)[N]
26. Sewage treatment plant[A]	27. Landfill or waste treatment site[A]	28. Historical building	29. Graveyard	30. Archeological site
31. Open cast mine	32. Underground mine	33.Spoil heap or slimes dam[A]	34. Small Holdings	
Other land uses (describe):				

NOTE: Each block represents an area of 250m X 250m, if your proposed development is larger than this please use the appropriate number and orientation of hashed blocks

NORTH

	1, 5	1, 5	1, 2, 5	1, 2, 5	1, 2
	1, 5, 8	1, 5, 8	1, 5	1, 5	
WEST	1, 7	1, 7		6, 9	6	EAST
	7	9	6, 9	6, 9	6
	7	9	6	6	6

SOUTH

Note: More than one (1) Land-use may be indicated in a block

Please note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed activity/ies. Specialist reports that look at health & air quality and noise impacts may be required for any feature above and in particular those features marked with an "A" and with an "N" respectively.

Have specialist reports been attached	**YES**	NO

If yes indicate the type of reports below

- **Biodiversity Assessment**

9. SOCIO-ECONOMIC CONTEXT

Describe the existing social and economic characteristics of the area and the community condition as baseline information to assess the potential social, economic and community impacts.

The site falls within Region 7 of the City of Tshwane Metropolitan Municipality.

Region 7 is the Eastern most area of the new City of Tshwane and is south east of Region 5 and north east of region 6. Furthermore, Region 7 is bordered by Mpumalanga to the East and North and Ekurhuleni Metropolitan Municipality to the South.

It is accessible via:

- **The N4 freeway which forms a dominant central mobility spine within the region. The N4 freeway runs east-west from as far as Botswana to Maputo. It links the region with the Pretoria CBD, 55km to the west, and Mpumalanga Province to the east.**
- **The R25 on the eastern side runs north-south of the Region, linking the Region with Mpumalanga Province to the north and Ekurhuleni Metropolitan Municipality to the south.**
- **Therefore, the region is accessible from a regional point of view as it is served by both north-south and east-west first order roads linking it to the rest of Gauteng and other.**

The region is 1 473km² in extent and comprises wards 102, 103, 104 and 105. This is the region with the second largest geographical area.

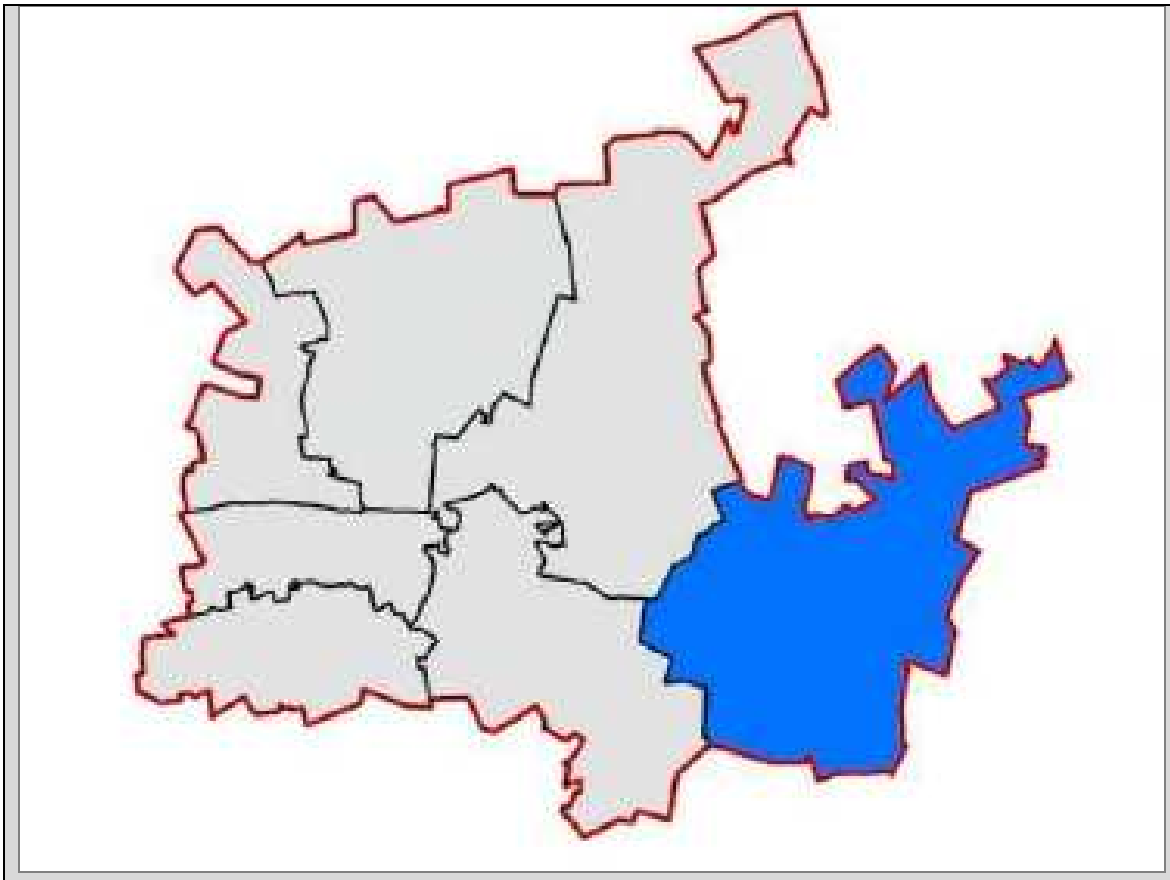


Figure 13: Region 7 within the City of Tshwane Metropolitan Municipality

Region 7 had a population of about 114 224 people according to the 2011 Census. It is projected that in 2017 Region 7 will have 136 969 people residing in the region.

The main characteristics of Region 7 are as follow:

- **The region presents a distinct and diverse character, with three dispersed urban areas and approximately 80% undeveloped rural land.**
- **The Bronkhorstspruit urban core is located at the heart of the region, with the most concentration of retail and offices uses, as well as the mid-high density developments. It is the most developed area with modern infrastructure, such as water, electricity, roads, communication networks and sanitation.**
- **Surrounding the Bronkhorstspruit urban core are suburban residential areas which include the Erasmus suburbs with its various extensions as well as Riamarpark. Here resides the middle income group.**
- **The low-no income groups reside in the Zithobeni, Ekangala and Rethabiseng Townships. Zithobeni forms part of the central urban area of the region, located just under 10km away from the Bronkhorstspruit urban core. Whereas, Ekangala and Rethabisieng are located at the northern part of the region. These are the formerly disadvantaged areas with subsidised and RDP housing with a backlog of infrastructure provision. The township economy should be encouraged and harnessed since there is limited economic and employment opportunities in these areas.**
- **South of the region is the Bronkhorstbaai and Kungwini Country Estates suburbs developed along the bank of the Bronkhorstspruit Dam. These are mid-high income properties with some of them being used as holiday houses along the edge of the Bronkhorstspruit Dam.**

- **Sokhulumi is located at the far north-eastern part of the region and it the regions rural community under tribal leadership. It posses great agricultural and tourism potential, thus needs infrastructure investment to unlock this potential.**
- **Ekandustria Industrial Park, located at the northern urban core, and Ovipropark at the central urban core are industrial areas where most manufacturing and distribution related companies are located.**
- **The region contains some of the best farming land in Gauteng, with the Tshwane Food and Energy Centre located west and south of Rethabiseng Townships and Ekandustria respectively.**
- **The region contains a number of strategic land uses such the Ekandustria Industrial Park, Bronkhorstspruit town area, Nan Hau Bhuddist Temple, Bronkhorstspruit Dam as well as the vast high agricultural potential land**
- **The most significant contributors to the Region economy are manufacturing (29%), services (28%), financial (17%) and trade (12%).**

The region's strengths are as follow:

- **The region is served by both north-south and east-west first order roads linking it to the rest of Gauteng and the broader region:**
  - **The N4 / Maputo Corridor forms a dominant central east-west mobility spine, linking the region with the capital core further west along the N4 and other key areas further east along the N4 such as Witbank, Mbombela / Nelspruit, the Kruger National Park and the expanding ocean port at Maputo;**
  - **The R25 runs north-south of the region, linking it with Ekurhuleni Metropolitan Municipality and Mpumalanga province.**
- **The region has vast parcels of vacant land with high agriculture potential for both crop and livestock farming.**
- **The vacant land with the urban edge also provides an opportunity for future expansion.**

The region's weaknesses are as follow:

- **The region is spatially fragmented, with both the formerly disadvantaged townships of Ekangala and Rethabiseng, along with the high income Kungwini Country Estate and Bronkhorstbaai located approximately 20km north and south of the Bronkhorstspruit town respectively;**
- **In addition, the Sokhulumi Rural Community and Vlakfontein-A are remotely located, approximately 35km northeast of the Bronkhorstspruit town and it is difficult to provide both social and municipal services to those rural communities;**
- **Backlog in the provision of bulk services to the former disadvantaged townships of Ekangala;**
- **Limited job opportunities for the unskilled.**

(Source: Spatial Development Framework Region 7, 2017)

10. CULTURAL/HISTORICAL FEATURES

Please be advised that if section 38 of the National Heritage Resources Act 25 of 1999 is applicable to your proposal or alternatives, then you are requested to furnish this Department with written comment from the South African Heritage Resource Agency (SAHRA) – Attach comment in appropriate annexure

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

(b) the construction of a bridge or similar structure exceeding 50m in length;

(c) any development or other activity which will change the character of a site-

(i) exceeding 5 000 m2 in extent; or
(ii) involving three or more existing erven or subdivisions thereof; or
(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

(d) the re-zoning of a site exceeding 10 000 m2 in extent; or

(e) 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.

Are there any signs of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site? If YES, explain:	YES	**NO**

If uncertain, the Department may request that specialist input be provided to establish whether there is such a feature(s) present on or close to the site.

Briefly explain the findings of the specialist if one was already appointed:

A Heritage Impact Assessment is being undertaken and the results thereof will be included in the Final BAR.

Will any building or structure older than 60 years be affected in any way?	YES	**NO**
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)? If yes, please attached the comments from SAHRA in the appropriate Appendix	YES	NO

SECTION C: PUBLIC PARTICIPATION (SECTION 41)

1. The Environmental Assessment Practitioner must conduct public participation process in accordance with the requirement of the EIA Regulations, 2014.

2. LOCAL AUTHORITY PARTICIPATION

Local authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least thirty (30) calendar days before the submission of the application to the competent authority.

Was the draft report submitted to the local authority for comment?	**YES**
If yes, has any comments been received from the local authority?	YES / **NO**

If "YES", briefly describe the comment below (also attach any correspondence to and from the local authority to this application):

If "NO" briefly explain why no comments have been received or why the report was not submitted if that is the case.

Comments from the City of Tshwane are awaited.

3. CONSULTATION WITH OTHER STAKEHOLDERS

Any stakeholder that has a direct interest in the activity, site or property, such as servitude holders and service providers, should be informed of the application at least **thirty (30) calendar days** before the submission of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?	**YES** / NO

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

Transnet Pipelines
Not Affected

SASOL
Not Affected

If "NO" briefly explain why no comments have been received

4. GENERAL PUBLIC PARTICIPATION REQUIREMENTS

The Environmental Assessment Practitioner must ensure that the public participation process is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees and ratepayers associations. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was flawed.

The EAP must record all comments and respond to each comment of the public / interested and affected party before the application report is submitted. The comments and responses must be captured in a Comments and Responses Report as prescribed in the regulations and be attached to this application.

5. APPENDICES FOR PUBLIC PARTICIPATION

All public participation information is to be attached in the appropriate Appendix. The information in this Appendix is to be ordered as detailed below

Appendix 1 – Proof of site notice

Appendix 2 – Written notices issued as required in terms of the regulations

Appendix 3 – Proof of newspaper advertisements

Appendix 4 –Communications to and from interested and affected parties

Appendix 5 – Minutes of any public and/or stakeholder meetings

Appendix 6 - Comments and Responses Report

Appendix 7 –Comments from I&APs on Basic Assessment (BA) Report

Appendix 8 –Comments from I&APs on amendments to the BA Report

Appendix 9 – Copy of the register of I&APs

SECTION D: RESOURCE USE AND PROCESS DETAILS

Note: Section D is to be completed for the proposal and alternative(s) (if necessary)

Instructions for completion of Section D for alternatives

1) For each alternative under investigation, where such alternatives will have different resource and process details (e.g. technology alternative), the entire Section D needs to be completed
4) Each alterative needs to be clearly indicated in the box below
5) Attach the above documents in a chronological order

Section D has been duplicated for alternatives **0** times (complete only when appropriate)

Section D Alternative No. "insert alternative number" (complete only when appropriate for above)

1. WASTE, EFFLUENT, AND EMISSION MANAGEMENT

Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase? **YES** / NO

If yes, what estimated quantity will be produced per month? **± 12 m^3**

How will the construction solid waste be disposed of (describe)?

It will be transported to a nearby designated waste disposal site.

Where will the construction solid waste be disposed of (describe)?

It will be disposed of at a nearby waste disposal site.

Will the activity produce solid waste during its operational phase? YES / **NO**

If yes, what estimated quantity will be produced per month? `m^3

How will the solid waste be disposed of (describe)?

Has the municipality or relevant service provider confirmed that sufficient air space exists for treating/disposing of the solid waste to be generated by this activity? YES / NO

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

Note: If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation? YES / NO

If yes, inform the competent authority and request a change to an application for scoping and EIA.

Is the activity that is being applied for a solid waste handling or treatment facility? YES / **NO**

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Describe the measures, if any, that will be taken to ensure the optimal reuse or recycling of materials:

Liquid effluent (other than domestic sewage)

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system? YES / **NO**

If yes, what estimated quantity will be produced per month? m^3

If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the liquid effluent to be generated by this activity(ies)? YES / NO

Will the activity produce any effluent that will be treated and/or disposed of on site?	YES	**NO**
If yes, what estimated quantity will be produced per month?		m^3

If yes describe the nature of the effluent and how it will be disposed.

Note that if effluent is to be treated or disposed on site the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA

Will the activity produce effluent that will be treated and/or disposed of at another facility?			YES	**NO**
If yes, provide the particulars of the facility:				
Facility name:				
Contact person:				
Postal address:				
Postal code:				
Telephone:		Cell:		
E-mail:		Fax:		

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

Liquid effluent (domestic sewage)

Will the activity produce domestic effluent that will be disposed of in a municipal sewage system?	YES	**NO**
If yes, what estimated quantity will be produced per month?		m^3
If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the domestic effluent to be generated by this activity(ies)?	YES	NO

Will the activity produce any effluent that will be treated and/or disposed of on site?	YES	**NO**

If yes describe how it will be treated and disposed off.

Emissions into the atmosphere

Will the activity release emissions into the atmosphere?	YES	**NO**
If yes, is it controlled by any legislation of any sphere of government?	YES	NO

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.
If no, describe the emissions in terms of type and concentration:

2. WATER USE

Indicate the source(s) of water that will be used for the activity

municipal	Directly from water board	groundwater	river, stream, dam or lake	other	**the activity will not use water**

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month: liters

If Yes, please attach proof of assurance of water supply, e.g. yield of borehole, in the appropriate Appendix

Does the activity require a water use permit from the Department of Water Affairs?	**YES**	NO

If yes, list the permits required

The following water related issues also form part of the project and an authorisation in terms of the National Water Act, 1998 (Act No 36 of 1998) will be applied for:
Section 21(c) Impeding or diverting the flow of water in a watercourse;
Section 21(i) Altering the bed, banks or characteristics of a watercourse (including stream crossings for services).

If yes, have you applied for the water use permit(s)?	YES	**NO**
If yes, have you received approval(s)? (attached in appropriate appendix)	YES	NO

3. POWER SUPPLY

Please indicate the source of power supply eg. Municipality / Eskom / Renewable energy source

The activity will not make use of power.

If power supply is not available, where will power be sourced from?

4. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

Not Applicable as the activity is not energy intensive.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

None

SECTION E: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts as well as the impacts of not implementing the activity (Section 24(4)(b)(i).

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summarise the issues raised by interested and affected parties.

Issue	Name	Date
Requested to be registered as an I&AP.	P. Myburgh	14 February 2018
	J. De Bruyne	14 February 2018
	D. Malan	15 February 2018
	J. Jacobs	16 February 2018
	S. Van Gils	16 February 2018
	A. Roux	19 February 2018
	R. Venter	19 February 2018
	C. Engelbrecht	28 February 2018
	V. Sinovich	28 February 2018
	D. Rudolph	28 February 2018
	S. Friswell	20 June 2018

Summary of response from the practitioner to the issues raised by the interested and affected parties (including the manner in which the public comments are incorporated or why they were not included)
(A full response must be provided in the Comments and Response Report that must be attached to this report):

Transnet Pipelines
No response required.

SASOL
No response required.

I&APs
Registered as I&APs. The Draft BAR will be made available for comment once finalised.

2. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION AND OPERATIONAL PHASE

Briefly describe the methodology utilised in the rating of significance of impacts

Criteria used to determine the Consequence of an Impact

Table 5: Methodology

Rating	Definition of Rating	Score
A. Extent – *the area in which the impact will be expected*		
None		0
Local	Confined to project or study area or part thereof (eg. site)	1
Regional	The region, which may be defined in various ways, eg. Cadastral, catchment, topographic	2
(Inter) national	Nationally or beyond	3
B. Intensity – *the magnitude or size of the impact*		
None		0

Low	Natural and/or social functions and processes are negligibly altered	1
Medium	Natural and/or social functions and processes continue albeit in a modified way	2
High	Natural and/or social functions or processes are severely altered	3
C. Duration – *the time frame for which the impact will be experienced*		
None		0
Short term	Up to 2 years	1
Medium term	2 – 15 years	2
Long Term	More than 15 years	3

The combined score of these three criteria corresponds to a Consequence Rating, as set out in Table below:

Table 6: Methods used to determine the Consequence Score

Combined score (A+B+C)	**0 - 2**	**3 - 4**	**5**	**6**	**7**	**8-9**
Consequence Rating	Not significant	Very low	Low	Medium	High	Very high

Once the consequence is derived, the probability of the impact occurring is considered, using the probability classifications indicated in table below:

Table 7: Probability Classification

Probability of impact – the likelihood of the impact occurring	
Improbable	< 40% chance of occurring
Possible	40% - 70% chance of occurring
Probable	> 70% - 90% chance of occurring
Definite	> 90% chance of occurring

The overall significance of impacts is determined by considering consequence and probability using the rating system indicated in table below:

Table 8: Impact Significance Rating

Significance Rating	**Consequence**		**Probability**
Insignificant	Very low	&	Improbable
	Very low	&	Possible
Very Low	Very low	&	Probable
	Very low	&	Definite
	Low	&	Improbable
	Low	&	Possible
Low	Low	&	Probable
	Low	&	Definite
	Medium	&	Improbable
	Medium	&	Possible
Medium	Medium	&	Probable
	Medium	&	Definite
	High	&	Improbable
	High	&	Possible
High	High	&	Probable

	High	&	Definite
	Very high	&	Improbable
	Very high	&	Possible
Very High	Very high	&	Probable
	Very high	&	Definite

In conclusion the impacts are also considered in terms of their status (positive or negative impact) and the confidence in the ascribed impact significance rating. The prescribed system for considering impacts status and confidence (in assessment) is indicated in table below.

Table 9: Impact status and confidence classification

Status of Impact	
Indication of where the impact is adverse (negative) or beneficial (positive)	+ ve (positive – a 'benefit')
	- ve (negative – a 'cost')
	Neutral
Confidence of assessment	
The degree of confidence in predictions based on available information, EAP's judgement and/or specialist knowledge	Low
	Medium
	High

The impact significance rating should be considered by GDARD in their decision-making process based on the implications of ratings ascribed below:

- **Insignificant: the potential impact is negligible and will not have an influence on the decision regarding the proposed activity / development;**
- **Very low: the potential impact should not have any meaningful influence on the decision regarding the proposed activity / development;**
- **Low: the potential impact may not have any meaningful influence on the decision regarding the proposed activity / development;**
- **Medium: the potential impact should influence the decision regarding the proposed activity / development;**
- **High: the potential impact will affect the decision regarding the proposed activity / development;**
- **Very high: The proposed activity should only be approved under special circumstances.**

Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the construction phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

Potential Impacts for the construction and operational phase

Proposal

Table 10: Potential Impacts for the construction and operational phase - Proposal

Potential Impact	Extent A	Intensity B	Duration C	Consequence A+B+C	Probability	Impact Significance	Status	Confidence
CONSTRUCTION PHASE								
1. ISSUE: AIR QUALITY								
1.1 Dust/Air pollution - The generation of fugitive dust associated with construction	**Local (1)**	**Low (1)**	**Short term (1)**	**Very low (3)**	**Definite**	**Very Low & Definite = Very Low**	**-ve**	**High**

Potential Impact	Extent A	Intensity B	Duration C	Consequence A+B+C	Probability	Impact Significance	Status	Confidence
activities & earthworks.								
2. ISSUE: TOPOGRAPHY								
2.1 Visual Impacts	**Local (1)**	**Low (1)**	**Short term (1)**	**Very Low (3)**	**Definite**	**Very Low & Definite = Very Low**	**-ve**	**High**
2.2 Bulk earthworks: Deep cuttings, high embankments, disposal of spoil and excavations cause local changes to topography	**Local (1)**	**Medium (2)**	**Short term (1)**	**Very Low (4)**	**Definite**	**Very Low & Definite = Very Low**	**-ve**	**High**
3. ISSUE: GEOLOGY AND SOILS								
3.1 Soil erosion, loss of topsoil, deterioration of soil quality	**Regional (2)**	**High (3)**	**Short term (1)**	**Medium (6)**	**Definite**	**Medium & Definite = Medium**	**-ve**	**High**
3.2 Soil pollution	**Regional (2)**	**Medium (2)**	**Short term (1)**	**Low (5)**	**Probable**	**Low & Probable = Low**	**-ve**	**High**
4. ISSUE: FAUNA AND FLORA								
4.1 Degradation, destruction of habitats/ ecosystem and loss of natural vegetation	**Local (1)**	**Medium (2)**	**Short term (1)**	**Very Low (4)**	**Probable**	**Very Low & Probable = Very Low**	**-ve**	**High**
4.2 Impacts on fauna and flora (Loss of RDL faunal and floral species)	**Regional (2)**	**Medium (2)**	**Short term (1)**	**Low (5)**	**Definite**	**Low & Definite = Low**	**-ve**	**High**
4.3 Increase in Invasive Species	**Regional (2)**	**High (3)**	**Short term (1)**	**Medium (6)**	**Definite**	**Medium & Definite = Medium**	**-ve**	**High**
5. ISSUE: HYDROLOGY								
5.1 Stormwater flow and drainage	**Regional (2)**	**Medium (2)**	**Short term (1)**	**Low (5)**	**Definite**	**Low & Definite = Low**	**-ve**	**High**
5.2 Impact on water quality	**Regional (2)**	**Medium (2)**	**Short term (1)**	**Low (5)**	**Definite**	**Low & Definite = Low**	**-ve**	**High**
5.3 Impact on functioning of the watercourse	**Regional (2)**	**High (3)**	**Short term (1)**	**Medium (6)**	**Definite**	**Medium & Definite = Medium**	**-ve**	**Medium**
SOCIO-ECONOMIC AND CULTURAL HISTORICAL ENVIRONMENT								
6. ISSUE: AESTHETICS, LANDSCAPE CHARACTER AND SENSE OF PLACE								
6.1 Noise/ vibration	**Local (1)**	**Medium (2)**	**Short term (1)**	**Very Low (4)**	**Definite**	**Very Low & Definite = Very Low**	**-ve**	**High**
6.2 Visual impact	**Local (1)**	**Medium (2)**	**Short term (1)**	**Very Low (4)**	**Definite**	**Very Low & Definite = Very Low**	**-ve**	**High**
7. ISSUE: SOCIAL WELL-BEING AND QUALITY OF THE ENVIRONMENT								
7.1 Safety and Security	**Region (2)**	**Medium (2)**	**Short term (1)**	**Low (5)**	**Probable**	**Low & Probable = Low**	-ve	**High**
7.2 Economic opportunities	**Region (2)**	**High (3)**	**Short term (1)**	**Medium (6)**	**Probable**	**Medium & Probable = Medium**	+ve	**Medium**
8. ISSUE: HISTORICAL ENVIRONMENT								
8.1 Destruction of cultural / heritage sites	**None**	**None**	**None**	**Not Significant (0)**	**Improbable**	**Not Significant & Improbable = Insignificant**	**-ve**	**Low**

Potential Impact	Extent A	Intensity B	Duration C	Consequence A+B+C	Probability	Impact Significance	Status	Confidence
9. ISSUE: SERVICES AND WASTE								
9.1 Waste	**Local (1)**	**Low (1)**	**Short term (1)**	**Very Low (3)**	**Definite**	**Very Low & Definite = Very Low**	**-ve**	**High**
9.2 Pressure on existing infrastructure and services	**Local (1)**	**Low (1)**	**Short term (1)**	**Very Low (3)**	**Definite**	**Very Low & Definite = Very Low**	**-ve**	**High**
10. ISSUE: INFRASTRUCTURE DESIGN								
10.1 Bridge design - Reinforced Concrete Voided Slab	**Local (1)**	**Medium (2)**	**Short term (1)**	**Very Low (4)**	**Definite**	**Very Low & Definite = Very Low**	**-ve**	**Medium**
OPERATIONAL PHASE								
11. ISSUE: OPERATION AND MAINTENANCE								
11.1 Alien Invasion	**Region (2)**	**Low (1)**	**Long term (3)**	**Medium (6)**	**Probable**	**Medium & Probable = Medium**	**-ve**	**High**
11.2 Erosion Control	**Region (2)**	**Low (1)**	**Long term (3)**	**Medium (6)**	**Probable**	**Medium & Probable = Medium**	**-ve**	**High**
11.3 Operation and maintenance of the road and bridge	**Region (2)**	**Low (1)**	**Long term (3)**	**Medium (6)**	**Probable**	**Medium & Probable = Medium**	**-ve**	**High**
11.4 Contribute to the provision of quality basic services and infrastructure in the area	**Region (2)**	**High (3)**	**Long term (3)**	**Very High (8)**	**Definite**	**Very High & Definite = Very High**	+ve	**High**
11.5 Bridge design - Reinforced Concrete Voided Slab	**Local (1)**	**Medium (2)**	**Long term (3)**	**Medium (6)**	**Definite**	**Medium & Definite = Medium**	**-ve**	**Medium**

Potential Impacts for the construction and operational phase

Alternative 1

The potential impacts for the construction phase and operational phase for Alternative 1 is similar to that of the proposal with the only exception being the bridge design.

Table 11: Potential Impacts for the construction and operational phase - Alternative 1

Potential Impact	Extent A	Intensity B	Duration C	Consequence A+B+C	Probability	Impact Significance	Status	Confidence
CONSTRUCTION PHASE								
10. ISSUE: INFRASTRUCTURE DESIGN								
10.1 Bridge Design – Steel Composite Deck	**Local (1)**	**High (3)**	**Short term (1)**	**Low (5)**	**Definite**	**Low & Definite = Low**	**-ve**	**Medium**
OPERATIONAL PHASE								
11. ISSUE: OPERATION AND MAINTENANCE								
11.5 Bridge Design – Steel Composite Deck	**Local (1)**	**High (3)**	**Long term (3)**	**High (7)**	**Definite**	**High & Definite = High**	**-ve**	**Medium**

Significance Rating for the construction and operational phase

Proposal

Table 12: Significance Rating for the construction and operational phase - Proposal

Potential Impacts	Significance rating of impacts	Proposed mitigation	Significance rating of impacts after mitigation
CONSTRUCTION PHASE			
1. ISSUE: AIR QUALITY			
1.1 Dust /Air pollution **The generation of dust associated with construction activities & earthworks**	**Very Low**	• Dust generation should be kept to a minimum. • Dust must be suppressed at construction areas during dry periods by the regular application of water or a biodegradable soil stabilisation agent. • Speed limits must be implemented in all areas, including public roads and private property to limit the levels of dust pollution. • It is recommended that the clearing of vegetation from the site should be selective and done just before construction so as to minimise erosion and dust. • Excavating, handling or transporting erodible materials in high wind or when dust plumes are visible shall be avoided. • All materials transported to site must be transported in such a manner that they do not fly or fall off the vehicle. This may necessitate covering or wetting friable materials. • No burning of refuse or vegetation is permitted.	**Very Low**
2. ISSUE: TOPOGRAPHY			
2.1 Visual Impacts	**Very Low**	• Site development to be limited to footprint area.	**Very Low**
2.2 Bulk earthworks	**Very Low**	• Avoid development on excessively steep slopes. • Avoid cutting steep embankments • Provide the necessary erosion protection measures. • Disturbed surface areas in the construction phase to be rehabilitated. No open trenches to be left. No mounds of soils created during construction to be left. • All construction material, equipment and any foreign objects brought into the area by contractors to be removed immediately after completion of the construction phase.	**Very Low**
3. ISSUE: GEOLOGY AND SOILS			
3.1 Soil erosion, loss of topsoil, deterioration of soil quality	**Medium**	• Top 20-50 cm of soil removed must be placed separate from other soils removed deeper down (this in areas of the road reserve and not the road itself). • During back filling of holes, etc. This same topsoil must be the final layer added and must be used in more or less the same area it was removed from. • Returned, final layer of topsoil must not be heavily compacted. • Mitigating measures above are given with the understanding that minimal soils outside of the road will be moved. • Appropriate erosion and stormwater management structures must be installed around the construction site • Erosion to be monitored at all times during the construction phase. The risk of erosion, especially after heavy rain downpours is high. Any erosion to be corrected immediately. Special attention must also be given to both sides of the gravel road, as well as the edges of the kloof at the bridge. • Erosion along the ridge, siltation of the watercourse, etc. must be monitored and correct immediately. Any erosion and / or siltation must be continually monitored and	**Low**

		immediately corrected if present and if established to be a direct result of construction activities. • A site-specific stormwater management plan must be compiled and implemented as part of the construction phase and upgrade of the road and bridge. • All construction vehicles, plant, machinery and equipment must be properly maintained to prevent leaks. • Plant and vehicles are to be repaired immediately upon developing leaks. Drip trays shall be supplied for all repair work undertaken on machinery on site or campsite area. • Drip trays are to be utilised during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants. • Drip trays are to be inspected daily for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow. • Vehicles to be used during the construction phase are to be kept in good working condition and should not be the source of excessive fumes. • Fuels and chemicals must be stored in adequate storage facilities that are secure, enclosed and bunded.	
3.2 Soil Pollution	**Low**	• Ensure correct position of construction caps, equipment yards, refueling depots, concrete batching plant etc. to avoid areas susceptible to soil and water pollution. • Ensure appropriate handling of hazardous substances. • Remediate polluted soil.	**Very Low**
4. ISSUE: FAUNA AND FLORA			
4.1 Degradation, destruction of habitats/ ecosystem and loss of natural vegetation	**Very low**	• No vegetation (even grass) to be removed unless necessary. • No temporary lay-down areas, site offices, etc. to be set up in CBA and ESA demarcated areas, or along ridges or in watercourse and kloof. • All disturbed and denuded areas (even within the study site) to be rehabilitated in terms of re-seeding and re-establishing of grasses. Only locally indigenous grasses may be used for rehabilitation purposes. There is no need to replant any trees. • No new wide access roads may be created only existing roads to be used. • Rehabilitation of denuded and work areas required after construction, but as part of the construction phase of the project.	**Very low**
4.2 Impacts on fauna and flora (Loss of RDL faunal and floral species)	**Low**	• Care should be taken not to interact with any wild animals encountered. • Any active ground nests or burrows found within the study site during the construction phase must first be cordoned off until the ECO and/or a specialist has had time to inspect and evaluate the situation and advise accordingly. • Under no circumstances may any wild animals be captured or killed by contractors. • Any unusual plants encountered during the construction phase should be photographed and sent to the ECO and / or botanist for identification and status. If, in the unlikely event, the plant is a RDL species the specialist should advise action accordingly. • A site-specific rehabilitation plan is required. It need not be a complicated or elaborate plan. All disturbed and denuded areas must be rehabilitated; soils re-contoured.	**Very Low**
4.3 Increase in Invasive species	**Medium**	• Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas. (Particular attention must be paid to imported material). • A weed control programme should be implemented to monitor and remove any invasive weeds after the construction phase. The programme can form part of the routine maintenance / inspection programme of the road and bridge. • Proper rehabilitation and re-seeding of the disturbed areas and bare soils with locally indigenous grasses will greatly reduced the probability of invasive weeds from seriously colonising the site. • No chemical herbicides in spray form may be used within 50m of the stream. • No chemical spraying of weeds may be conducted if there is any wind. There are nearby farmlands and orchards.	**Low**

		Therefore, no chemical spraying may be conducted without first consulting with the local farmer.	
5. ISSUE: HYDROLOGY			
5.1 Stormwater flow and drainage	**Low**	• A site-specific stormwater management plan must be compiled and implemented as part of the construction phase and upgrade of the road and bridge.	**Low**
5.2 Impacts on water quality	**Low**	• Locate construction camp, refueling depots, sanitation facilities and concrete batching plant 150m away from drainage area. • Utilize proper waste management practices. • Ensure handling, transport and disposal of hazardous substances are adequately controlled and managed. • Provide containment areas for potential pollutants at construction camps, refueling depot and concrete batching plants.	**Low**
5.3 Impacts on functioning of the watercourse	**Medium**	• Construction should preferably commence during the dry months. • The main channel of the stream and waterflow may not be totally blocked off during construction. • All alien tree species may be cleared. However, care must be taken not to destabilise stream banks and steep gradients of the kloof. • Clearing of alien trees and opening up of the chocked watercourse from these alien species will be a positive impact on the watercourse. • Siltation will increase, but should only be short-term. Must still be monitored during construction. • Proper rehabilitation and re-seeding of the disturbed areas and bare soils with locally indigenous grasses will greatly reduced the probability of invasive weeds, erosion and siltation of the watercourse and kloof. • No chemical herbicides in spray form may be used within 50m of the stream. • Aquatic monitoring of the watercourse must take place during the construction phase. The specialist must report any problems to contractors and main Client and must be remedied with promptness.	**Low**
SOCIO-ECONOMIC AND CULTURAL HISTORICAL ENVIRONMENT			
6. ISSUE: AESTHETICS, LANDSCAPE CHARACTER AND SENSE OF PLACE			
6.1 Noise/ vibration	**Very Low**	• Noise levels shall be kept within acceptable limits, and construction crew must abide by National Noise Laws and local by-laws regarding noise. • No sound amplification equipment such as sirens, loud hailers or hooters are to be used on site except in emergencies and no amplified music is permitted on site. • Construction / management activities involving use of the service vehicle, machinery, hammering etc, must be limited to the hours between 7:00am and 5:30pm weekdays; 7:00am and 1:30pm on Saturdays; no noisy activities may take place on Sundays or Public Holidays. • Activities that may disrupt neighbours (e.g. delivery trucks, excessively noisy activities etc.) must be preceded by notice being given to the affected neighbours at least 24 hours in advance. • Equipment that is fitted with noise reduction facilities (e.g. side flaps, silencers etc.) must be used as per operating instructions and maintained properly during site operations.	**Very Low**
6.2 Visual impact	**Very Low**	• The site must be managed appropriately and all rubbish and rubble removed to a permitted landfill site. • Excess soil and bedrock should be disposed of at an appropriate facility. • A certificate of disposal must be obtained for any waste that is disposed of. • Waste must not remain on site for more than 2 weeks. • Refuse bins must be provided by the Contractor for rubbish to be used by staff. • Excess concrete must be disposed of correctly and at an appropriate facility. • No waste may be placed in any excavations on site. • The construction camp must be located as far from other properties as possible. • The construction footprint must be minimised. • Construction / management activities must be limited to	**Very Low**

		the daylight hours between 7:00am and 5:30pm weekdays; 7:00am and 1:30pm on Saturdays. • Lighting on site is to be sufficient for safety and security purposes, but shall not be intrusive to neighbouring residents, disturb wildlife, or interfere with road traffic.	
7. ISSUE: SOCIAL WELL-BEING AND QUALITY OF THE ENVIRONMENT			
7.1 Safety and Security	**Low**	• Signs should be erected on all entrance gates to the site camp indicating that no temporary jobs are available, thereby limiting opportunistic labourers and crime. • The site and crew are to be managed in strict accordance with the Occupational Health and Safety Act (Act No. 85 of 1993) and the National Building Regulations • All structures that are vulnerable to high winds must be secured (including toilets). • Potentially hazardous areas such as trenches are to be cordoned off and clearly marked at all times. • The Contractor is to ensure traffic safety at all times, and shall implement road safety precautions for this purpose when works are undertaken on or near public roads. • Necessary Personal Protective Equipment (PPE) and safety gear appropriate to the task being undertaken is to be provided to all site personnel (e.g. hard hats, safety boots, masks etc.). • All vehicles and equipment used on site must be operated by appropriately trained and / or licensed individuals in compliance with all safety measures as laid out in the Occupational Health and Safety Act (Act No. 85 of 1993) (OHSA). • An environmental awareness training programme for all staff members shall be put in place by the Contractor. Before commencing with any work, all staff members shall be appropriately briefed about the EMP and relevant occupational health and safety issues. • All construction workers shall be issued with ID badges and clearly identifiable uniforms. • Access to fuel and other equipment stores is to be strictly controlled. • Emergency procedures must be produced and communicated to all the employees on site. This will ensure that accidents are responded to appropriately and the impacts thereof are minimised. This will also ensure that potential liabilities and damage to life and the environment are avoided. • Adequate emergency facilities must be provided for the treatment of any emergency on the site. • The nearest emergency service provider must be identified during all phases of the project as well as its capacity and the magnitude of accidents it will be able to handle. Emergency contact numbers are to be displayed conspicuously at prominent locations around the construction site and the construction crew camps at all times. • The Contractor must have a basic spill control kit available at each construction crew camp and around the construction site. The spill control kits must include absorptive material that can handle all forms of hydrocarbon as well as floating blankets / pillows that can be placed on water courses. • The Contractor shall make available safe drinking water fit for human consumption at the site offices and all other working areas. • Washing and toilet facilities shall be provided on site and in the Contractors camp. • Adequate numbers of chemical toilets must be maintained in the Contractors camp to service the staff using this area. At least 1 toilet must be available per 20 workers using the camp. Toilet paper must be provided. • The chemical toilets servicing the camp must be maintained in a good state, and any spills or overflows must be attended to immediately. • The chemical toilets must be emptied on a regular basis. • The Contractors site must be located on the high side of the site so any leakages or spillages will be contained on site.	**Low**

		• HIV AIDS awareness and education should be undertaken by all Contractor staff.	
7.2 Economic opportunities	**Positive - Medium**	• Make use of local labour • Provide clear and realistic information regarding employment opportunities and other benefits for local communities in order to prevent unrealistic expectations. • Provide skills training for construction workers.	**Positive – Medium**
8. ISSUE: HISTORICAL ENVIRONMENT			
8.1 Destruction of cultural / heritage sites	**Insignificant**	• Ensure that construction staff members are aware that heritage resources could be unearthed and the scientific importance of such finds. • Ensure that heritage objects are not to be moved or destroyed without the necessary permits from the South African Heritage Resources Agency (SAHRA) in place.	**Insignificant**
9. ISSUE: SERVICES AND WASTE			
9.1 Waste	**Very Low**	• Adequate number of waste disposal receptacles is to be positioned at strategic locations within the development. • No burning of waste. • Waste will be collected and removed off-site to a registered waste site.	**Very Low**
9.2 Pressure on existing infrastructure and services	**Very Low**	• Integrity of existing services to be ensured.	**Very Low**
10. ISSUE: INFRASTRUCTURE DESIGN			
10.1 Bridge Design – Reinforced Concrete Voided Slab	**Very Low**	• A crane will not be required offering more labour intensive work and reduction in the project costs. • Reinforced concrete construction would eliminate the need for lifting beams. • Painting would not be required and this result in low maintenance of the bridge thus reducing the whole life cost of the structure.	**Very Low**
OPERATIONAL PHASE			
11. ISSUE: OPERATION AND MAINTENANCE			
11.1 Alien Invasion	**Medium**	• Weed control should form part of the routine maintenance of the road and bridge.	**Low**
11.2 Erosion Control	**Medium**	• Erosion control and monitoring can also form part of the routine maintenance of the road and bridge.	**Low**
11.3 Operation and maintenance of the road and bridge	**Medium**	• Routine maintenance to be undertaken.	**Low**
11.4 Contribute to the provision of quality basic services and infrastructure in the area	**Positive – Very High**	• None	**Positive – Very High**
11.5 Bridge Design – Reinforced Concrete Voided Slab	**Medium**	• The reinforced concrete deck would offer a good resistance to vehicular impact. • The maintenance mainly involves the overall inspection of the bridge, repair and maintenance of provided drains	**Medium**

Significance Rating for the construction and operational phase

Alternative 1

Table 13: Significance Rating for the construction and operational phase - Alternative 1

Potential Impacts	Significance rating of impacts	Proposed mitigation	Significance rating of impacts after mitigation
CONSTRUCTION PHASE			
10. ISSUE: INFRASTRUCTURE DESIGN			
10.1 Bridge Design – Steel Composite Deck	**Low**	• Few beams (5No.) will be required and this will significantly reduce construction time of the structures	**Low**

		• Large services can be accommodated by providing a service bay between beams with access via manholes through the footway. • Steel beams are lighter and easier to handle during lift. Hence, a lighter crane will be required to lift in the beams in position and this will reduce the construction costs of the project. • Construction depth of plate girders can be selected to suit the headroom and loads requirements by proportioning the size of web and flanges accordingly. • No temporary formwork will be required. • Does not support labour intensive work	
OPERATIONAL PHASE			
11. ISSUE: OPERATION AND MAINTENANCE			
11.5 Bridge Design – Steel Composite Deck	**High**	• Maintenance would be required for steel painting and lane closures every 40 years and this would increase the whole life cost of the project. • Requires specialised kind of Maintenance Team	**High**

No Go

Potential impacts:	**Significance rating of impacts (positive or negative):**	**Proposed mitigation:**	**Significance rating of impacts after mitigation:**	**Risk of the impact** and **mitigation not being implemented**
None				

List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix.

- **Biodiversity Assessment**

Describe any gaps in knowledge or assumptions made in the assessment of the environment and the impacts associated with the proposed development.

No impact assessment can be completely certain of the exact nature and extent of the various impacts that would result from a given development activity. However, this assessment strives to limit any uncertainties by optimising the collection of base data, and by following a rigorous impact assessment methodology.

3. IMPACTS THAT MAY RESULT FROM THE DECOMISSIONING AND CLOSURE PHASE

Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the decommissioning and closure phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

Proposal

Potential impacts:	**Significance rating of impacts(positive or negative):**	**Proposed mitigation:**	**Significance rating of impacts after mitigation:**	**Risk of the impact** and **mitigation not being implemented**
No decommissioning is envisaged.				

Alternative 1

Potential impacts:	**Significance rating of impacts(positive or negative):**	**Proposed mitigation:**	**Significance rating of impacts after mitigation:**	**Risk of the impact** and **mitigation not being implemented**
No decommissioning is envisaged.				

List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix.

None

Where applicable indicate the detailed financial provisions for rehabilitation, closure and ongoing post decommissioning management for the negative environmental impacts.

No decommissioning is envisaged.

Rehabilitation costs involved will be determined as part of the tendering process.

4. CUMULATIVE IMPACTS

Describe potential impacts that, on their own may not be significant, but is significant when added to the impact of other activities or existing impacts in the environment. Substantiate response:

Surface Water Pollution

- **Spillages of oil, lubricants and fuel from construction vehicles, plant and machinery has the potential to contaminate surface water bodies.**

Increased run off of water

- **Stormwater run off has the potential to erode the topsoil and result in sedimentation of water bodies if not controlled.**

Ground Water Pollution

- **The construction phase could result in increased infiltration of contaminants into the ground water and soil.**
- **Spillages of oil, lubricants and fuel from construction vehicles, plant and machinery has the potential to contaminate the soil and groundwater.**
- **Cement mixing and the storage of fuel must be conducted so as to prevent contamination of the soil and groundwater.**

Waste

- **The construction and subsequent operational activities will be the source of various waste streams which must be managed appropriately.**

Basic services and infrastructure

- **The activity will contribute to the provision of quality basic services and infrastructure in the area.**

5. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that sums up the impact that the proposal and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Proposal

The upgrade of the access road and bridge leading to Clover Hill Club will have a short term impact ranging from very low to medium during the construction phase, and medium during the operational phase, but will result in a long term improvement to the road infrastructure during the operational phase if the correct mitigation measures are implemented during the construction phase.

Positive impacts include the Economic Opportunities during the construction phase (Positive – Medium) and the Contribution to the provision of quality basic services

and infrastructure in the area (Positive – Very High).

According to the Biodiversity Assessment conducted, the potential impacts arising from the proposed project and related activities are low-level negative impacts with short-term time periods mainly within the construction phase period. The medium- to long-term negative impacts of the project are fairly much neutral in terms of cumulative impacts. With proper mitigating measures and rehabilitation of the study area, the medium- to long-term impacts will be neutral, and the short-term negative impacts during the construction phase will be quickly neutralised. During the upgrade of the bridge and the road a number of alien trees and clean-up will take place as part of the construction activities. Removal of these highly invasive alien trees and opening up of the main channel of the stream are positive impacts arising from the project.

Please see below a summary of the identified impacts and their pre-mitigation and post-mitigation impact significance rating scores.

Table 14: Summary of identified Impacts – Proposal

Potential Impacts	Significance rating of impacts	Significance rating of impacts after mitigation
CONSTRUCTION PHASE		
1.1 Dust /Air pollution The generation of dust associated with construction activities & earthworks	Very Low	Very Low
2.1 Visual Impacts	Very Low	Very Low
2.2 Bulk earthworks	Very Low	Very Low
3.1 Soil erosion, loss of topsoil, deterioration of soil quality	Medium	Low
3.2 Soil Pollution	Low	Very Low
4.1 Degradation, destruction of habitats/ ecosystem and loss of natural vegetation	Very low	Very low
4.2 Impacts on fauna and flora (Loss of RDL faunal and floral species)	Low	Very Low
4.3 Increase in Invasive species	Medium	Low
5.1 Stormwater flow and drainage	Low	Low
5.2 Impacts on water quality	Low	Low
5.3 Impacts on functioning of the watercourse	Medium	Low
6.1 Noise/ vibration	Very Low	Very Low
6.2 Visual impact	Very Low	Very Low
7.1 Safety and Security	Low	Low
7.2 Economic opportunities	Positive - Medium	Positive - Medium
8.1 Destruction of cultural / heritage sites	Insignificant	Insignificant
9.1 Waste	Very Low	Very Low
9.2 Pressure on existing infrastructure and services	Very Low	Very Low
10.1 Bridge Design – Reinforced Concrete Voided Slab	Very Low	Very Low
OPERATIONAL PHASE		
11.1 Alien Invasion	Medium	Low
11.2 Erosion Control	Medium	Low
11.3 Operation and maintenance of the road and bridge	Medium	Low
11.4 Contribute to the provision of quality basic services and infrastructure in the area	Positive - Very High	Positive - Very High
11.5 Bridge Design – Reinforced Concrete Voided Slab	Medium	Medium

Alternative 1

The environmental impact statement for Alternative 1 is similar to that of the proposal except for the bridge design during the construction and operational phases.

Please see below a summary of the identified impacts and their pre-mitigation and post-mitigation impact significance rating scores.

Table 15: Summary of identified Impacts – Alternative 1

Potential Impacts	Significance rating of impacts	Significance rating of impacts after mitigation
CONSTRUCTION PHASE		
10.1 Bridge Design – Steel Composite Deck	Low	Low
OPERATIONAL PHASE		
11.5 Bridge Design – Steel Composite Deck	High	High

~~**Alternative 2**~~

No-go (compulsory)

The "No-go" alternative refers to the alternative of not embarking on the proposed project at all and this option would not experience any impacts during the construction or the operational phase.

The current capacity of the bridge is not adequate for the discharge from upstream. The state of the access roads are unsurfaced, giving rise to erosion activities which renders the roads uneven and difficult to use.

Should the activity not be implemented, these issues will not be addressed.

This option will therefore not assist in the provision of quality basic services and infrastructure in the area.

6. IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE

For proposal:

The impacts of the proposed activities have been summarised under Paragraph 5 above.

For alternative 1:

The impacts of the proposed activities have been summarised under Paragraph 5 above.

Having assessed the significance of impacts of the proposal and alternative(s), please provide an overall summary and reasons for selecting the proposal or preferred alternative.

The Alternatives investigated pertains to the bridge design. The Proposal entails the construction of a reinforced concrete voided slab and Alternative 1 entails the construction of a steel composite deck. Both Alternatives are discussed below and reasons for selecting the proposal are provided.

<u>Reinforced Concrete Voided Slab</u>

A full depth solid reinforced concrete slab would be too inefficient for the required span. However, a voided or 'T' section deck would be suitable and most appropriate for casting in-situ prior to excavation of the fill beneath the structure. This would reduce the cost associated with temporary support to the soffit and would reduce the safety risks. The overall deck construction depth for a voided slab would be approximately 800mm including surfacing.

On the basis of single pours or two stage pours for casting the decks, there would be a high risk that the rate of supply of concrete could be disrupted or interrupted during the concreting. If the supply of concrete during the casting of a bridge deck is affected, the result is likely to be cold joints or aborting the concrete pour. Such occurrences are likely to be structurally unacceptable and necessitate costly remedies.

Advantages

- **A crane will not be required offering more labour intensive work and reduction in the project costs.**
- **Reinforced concrete construction would eliminate the need for lifting beams.**
- **Painting would not be required and this result in low maintenance of the bridge thus reducing the whole life cost of the structure.**
- **The reinforced concrete deck would offer a good resistance to vehicular impact.**

Disadvantages

- **Complex reinforcement and associated temporary works, for the forming voids in the slab, is required as compared to other construction forms.**
- **Construction time of the project could be longer due to large volume of concrete and complex reinforcement fixing that is required.**
- **Like concrete beams, reinforced concrete bridges also need to be protected with silane or Pavix in accordance with BS EN 1992 due to proximity of the water sources and atmospheric gases.**
- **Risk of concrete pouring difficulties and receipt of deliveries on time.**

Maintenance

Maintenance of the bridge voided deck would require lane closures on the Clover Hill road. The maintenance mainly involves the overall inspection of the bridge, repair and maintenance of provided drains. It is recommended to have concrete parapets on either side of the bridge as this would blend well with the concrete deck.

<u>Steel Composite Deck</u>

The steel composite deck will be constructed from steel plate girders. The steel composite option will require 5 No. of beams, with a 200mm thick reinforced concrete deck supported on permanent formwork. This would give an overall construction depth of approximately 850mm including surfacing. Spacing of beams would be approximately 2.0m. An approved paint system with a 40 year design life would be required. Alternatives of steel construction from weathering steel could be an option.

The final choice of the steel material will be selected based on the material costs (including fabrication costs). A headroom of 1.540m will be achieved below the bridge soffit. Beams would typically be lifted into position as braced pairs (or more), thus reducing the number of lifts required.

Advantages

- **Few beams (5No.) will be required and this will significantly reduce construction time of the structures.**
- **Large services can be accommodated by providing a service bay between beams with access via manholes through the footway.**
- **Steel beams are lighter and easier to handle during lift. Hence, a lighter crane will be required to lift in the beams in position and this will reduce the construction costs of the project.**

- **Construction depth of plate girders can be selected to suit the headroom and loads requirements by proportioning the size of web and flanges accordingly.**
- **No temporary formwork will be required.**

Disadvantages
- **For most steel composite bridges, lateral bracings and temporary supports are required for erection stability and deck concreting which will be an additional cost to the structure.**
- **Maintenance would be required for steel painting and lane closures every 40 years and this would increase the whole life cost of the project.**
- **Requires specialised kind of Maintenance Team**
- **Does not support labour intensive work**

Maintenance
Maintenance of the bridge deck and steelwork would require lane closure of the Clover Hill road. There are greater health and safety issues for maintenance that would need to be considered with the option of a steel composite bridge. To minimise maintenance requirement for the steel work, it would be possible to utilise a paint system with a 40 years design life. Weathering steel would be considered to reduce maintenance issues but this was discussed with client during preliminary design of the bridge, and the client did not favour this option.

The current capacity of the bridge is not adequate for the discharge from upstream. The state of the access roads are unsurfaced, giving rise to erosion activities which renders the roads uneven and difficult to use. The implementation of the activity will address these issues.

Furthermore the ease of accessibility due to upgraded roads will increase business opportunities and new job opportunities for the local people will be created during the construction phase. This is especially true in the case of the Proposal as the construction of the Reinforced Concrete Voided Slab requires labour intensive work.

According to the Biodiversity Assessment conducted, the potential impacts arising from the proposed project and related activities are low-level negative impacts with short-term time periods mainly within the construction phase period. The medium- to long-term negative impacts of the project are fairly much neutral in terms of cumulative impacts. With proper mitigating measures and rehabilitation of the study area, the medium- to long-term impacts will be neutral, and the short-term negative impacts during the construction phase will be quickly neutralised. During the upgrade of the bridge and the road a number of alien trees and clean-up will take place as part of the construction activities. Removal of these highly invasive alien trees and opening up of the main channel of the stream are positive impacts arising from the project.

The proposal as the chosen alternative will contribute to the provision of quality basic services and infrastructure in the area.

7. SPATIAL DEVELOPMENT TOOLS

Indicate the application of any spatial development tool protocols on the proposed development and the outcome thereof.

Gauteng Spatial Development Framework, 2011

Gauteng Province adopted the Gauteng Spatial Development Framework (GSDF, 2011) as the core policy framework intended to guide decisions relating to the location and nature of physical development in the Province. The GSDF seeks to achieve the following:

- **Creation of a functionally integrated natural open space system and protection of the rural parts of the province for agricultural, recreational (walking and cycling), biodiversity and aquifer management purposes;**
- **The containment of urban sprawl by way of growth management that seeks to advance compaction, residential densification, and in-fill development, and mixed land uses within the existing urban fabric which will promote walking and cycling;**
- **The social and economic integration of disadvantaged communities into the urban system, particularly those on the urban periphery;**
- **The establishment of a hierarchy of nodes coupled with the improvement of linkages and connectivity between these nodes and areas of economic opportunity;**
- **Land use-public transport integration through nodal and corridor development;**
- **The promotion of viable public transport systems and reduction of reliance on private mobility with strong emphasis on densification along the priority public transport routes, especially rail and BRT routes which form the basis of the IRPTN movement system;**
- **Public transport routes become the priority areas for densification and infill development; and**
- **The urban system's existing and proposed road network is used to reinforce and shape the urban form as a growth management tool.**

8. RECOMMENDATION OF THE PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the Environmental Assessment Practitioner as bound by professional ethical standards and the code of conduct of EAPASA).	**YES**	NO

If "NO", indicate the aspects that require further assessment before a decision can be made (list the aspects that require further assessment):

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

- **If feasible, construction must be scheduled for the drier winter period in order to minimise the risk of sediment-laden runoff reaching the freshwater resources as a result of the construction activities;**
- **The privacy of adjacent land users should be ensured throughout the life span of the proposed development.**
- **The presence of archaeological and/or historical sites, features or artefacts is always a possibility. Care should be taken when development commences that if any of the mentioned are discovered, a qualified archaeologist should be called in to investigate**

- **Conclusions and Recommendations contained in specialist studies conducted for this development must be implemented and adhered to.**
- **Mitigation measures contained in the Environmental Management Programme (EMPr) must be implemented and adhered to.**
- **A suitably qualified Environmental Control Officer must be appointed to monitor the construction phase in terms of the EMPr**
- **All types of waste generated during each stage of the development from site preparation to final construction must be disposed of at a licensed disposal site. No waste must be dumped on open spaces. A proof of disposal at a licensed disposal landfill must be provided.**

9. THE NEEDS AND DESIREBILITY OF THE PROPOSED DEVELOPMENT (as per notice 792 of 2012, or the updated version of this guideline)

The current capacity of the bridge is not adequate for the discharge from upstream. The state of the access roads are unsurfaced, giving rise to erosion activities which renders the roads uneven and difficult to use.

Ease of accessibility due to upgraded roads will increase business opportunities.

The upgraded bridge and roads will provide new job opportunities for the local people.

10. THE PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED ***(consider when the acitivty is expected to be concluded)***

Medium term (2-15 years)

11. EVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) (must include post construction monitoring requirements and when these will be concluded.)

If the EAP answers "Yes" to Point 7 above then an EMP is to be attached to this report as an Appendix

EMPr attached	**YES**

SECTION F: APPENDIXES

The following appendixes must be attached as appropriate (this list is inclusive, but not exhaustive):

It is required that if more than one item is enclosed that a table of contents is included in the appendix

Appendix A: Site plan(s) – *(must include a scaled layout plan of the proposed activities overlain on the site sensitivities indicating areas to be avoided including buffers)*

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Route position information

Appendix E: Public participation information

Appendix F: Water use license(s) authorisation, SAHRA information, service letters from municipalities, water supply information

Appendix G: Specialist reports

Appendix H: EMPr

Appendix I: Other information

CHECKLIST

To ensure that all information that the Department needs to be able to process this application, please check that:

- Where requested, supporting documentation has been attached;
- All relevant sections of the form have been completed.