WATER USE LICENCE APPLICATION

River Walk Development

External Services and Open Space Area

WATER USE LICENSE APPLICATION TO THE DEPARTMENT OF WATER AND SANITATION IN TERMS OF SECTION 21 OF NWA (ACT 36 OF 1998) WATER USE AUTHORISATION

Section 21 (c)
Impeding or diverting the flow of water in a watercourse
Section 21 (i)
Altering the bed, banks, course or characteristics of a watercourse

DECEMBER 2016

PREPARED BY:

Bokamoso Environmental Consultants & Landscape Architects
Contact Person:
Ronell Kuppen
012 346 3810
ronell@bokamso.net

PREPARED FOR:

Balwin Properties Limited
Contact Person:
Rodney Gray
0114502818
Rodney@balwin.co.za

AUTHORS

Prepared by Bokamoso Landscape Architects and Environmental Consultants CC

Lizelle Gregory — Director

Tertiary Education:

- Qualified as Landscape Architect at UP 1991;
- Qualified as Professional Landscape Architect in 1997;
- A Registered Member at The South African Council for the Landscape Architect Profession (SACLAP) with Practise Number: PrLArch97078;
- A Registered Member at the International Association for Impact Assessment Practitioners (IAIA);
- Qualified as an Environmental Auditor in July 2008 and also became a Member of the International Environmental Management Association (IEMAS) in 2008;
- Currently enrolled at the University of Pretoria for a Masters Degree in Wetlands

Work Experience:

- Worked part time at Eco-Consult – 1988-1990;
- Worked part time at Plan Associates as Landscape Architect in training – 1990-1991;
- Worked as Landscape Architect at Environmental Design Partnership (EDP) from 1992 - 1994
- Practised under Lizelle Gregory Landscape Architects from 1994 until 1999;
- Lectured at Part-Time at UP (1999) – Landscape Architecture and TUT (1998- 1999)- Environmental Planning and Plant
- Material Studies;
- Worked as part time Landscape Architect and Environmental Consultant at Plan Associates and managed their environmental division for more than 10 years – 1993 – 2008 (assisted the PWV Consortium with various road planning matters which amongst others included environmental Scans, EIA's, Scoping reports etc.)
- Renamed business as Bokamoso in 2000 and is the only member of Bokamoso Landscape Architects and Environmental Consultants CC;
- More than 23 years' experience in the compilation of Environmental Reports, which amongst others included the compilation of various DFA Regulation 31 Scoping Reports, EIA's for EIA applications in terms of the applicable environmental legislation, Environmental Management Plans, Inputs for Spatial Development Frameworks, DP's, EMF's, EMS Development, Environmental Policy Development, ECO Reports, Environmental Auditing Reports etc. Also included EIA Application on and adjacent to mining land and slimes dams (i.e. Brahm Fisherville, Doornkop)

Ronell Kuppen BSc (Hons) — Senior WULA Consultant and Public Participation Consultant

Tertiary Education:

- University of South Africa: BSc (Hons) – Geography
- University of KwaZulu Natal: BA- Environment and Development

Work Experience:

- June 2016 to present: WULA Consultant for Bokamoso Landscape Architects and Environmental Consultants CC
- 2013 –June 2016: Project and Public Participation Manager for Kerry Seppings Environmental Management Specialists
- 2012 – 2013: Public Participation and Junior Environmental Consultant for Kerry Seppings Environmental Management Specialists cc

Table of Contents

Appendices

EXECUTIVE SUMMARY

1. INTRODUCTION

Bokamoso Landscape Architects and Environmental Consultants CC have been appointed by Balwin Properties Limited as the independent Environmental Assessment Practitioner (EAP) to undertake a Water Use License Application (WULA) in terms of the National Water Act (No 36 of 1998) (NWA). In terms of the Section 40 of the NWA, each party proposing water usage, as defined in Section 21 of the Act, must apply to the responsible authority for authorisation before such water use can commence. This document aims to provide the Department of Water and Sanitation (DWS) with the necessary information associated with the proposed project in order to approve the water uses in terms of the NWA related to the proposed development.

2. PROJECT BACKGROUND

Balwin Properties Limited proposes to develop the Remainder of Portion 6 of the Farm Zwartkoppies No 364-JR, Portion 241 of the Farm Zwartkoppies No 364-JR, Portion 138 of the Farm Zwartkoppies No 364-JR, City of Tshwane Metropolitan Municipality, Gauteng Province. An Environmental Authorisation for the proposed development is currently underway conducted by Bokamoso Environmental. The current environmental authorisation will entail the installation of services within the 1:100 year flood line. The wetland buffer demarcated during the initial application will include a water pipeline, storm water infrastructure, sewer pipeline as well as roads, specifically with a bridge crossing a tributary. A cycling track is also proposed along the Pienaars River in the open space area. In addition Balwin Properties Limited proposes to upgrade the current sewer pipeline in-situ within the existing 2m servitude.

A Record of Decision was issued on the 22nd July 2008 (Ref No: 006/10-11/N0047) for the initial development footprint, which included the following activities:

- The establishment of 3355 dwelling units;
- An eighteen (18) hole championship golf course;
- A nine (9) hole mashie course with a driving range;
- A four storey club house with corporate suite and penthouse;
- A conference centre with a theatre and a wellness centre;
- A hotel with 200 rooms with a swimming pool;
- A Créche;
- A fully equipped gymnasium;
- Squash courts;
- A soccer field;
- Basketball courts;
- Tennis courts;
- A convenience store within the estate;
- A laundromat and cleaning services;
- Self storage space and offices; and
- An office park/ restaurant at the entrance.

On the 3rd of September 2010 an amendment application was undertaken and approved by GDARD. The amendment entailed layout upgrades with entailed the authorisation of the construction of a road within the development footprint.

A further Amendment to the existing Authorisation is currently underway. This amendment application proposes to exclude the golf course and subsequently amend the layout of the development. The new layout will include the following land-uses:

- "Education/ Private School" (± 8,5ha);
- "Residential 4" (7 erven ± 90-95 units per hectare) – size of area to be covered with residential units is ±70ha;
- "Private Open Space" (± 33 ha);
- A low impact cycling track and on-going rehabilitation and open space management are planned for the natural private open space areas;
- Roads and associated landscaped areas and sidewalks (± 8ha); and
- Gatehouse, Club House and Entrance Gate (± 0,5ha).

The 2016 Amendment Application is also to reduce the study area and exclude a section.

The R104 is also being upgraded and this falls under an Environmental Authorisation issued by the Department of Environmental Affairs on 29th March 2012 with DEA Reference 12/12/20/2238.

3. REGIONAL SETTING, LOCATION OF ACTIVITY AND PROPERTY DESCRIPTION

The development is located within the City of Tshwane Metropolitan Municipality, Gauteng Province. The property on which the activity is to be undertaken is on the Remainder of Portion 6 of the Farm Zwartkoppies No 364-JR, Portion 241 of the Farm Zwartkoppies No 364-JR, Portion 138 of the Farm Zwartkoppies No 364-JR (location coordinates shown in **Table 1** below).

The town centre of Hillcrest is located approximately 8 km north of the site. The site is currently zoned agriculture and used for commercial sugarcane farming. The site is located on the southern side of the N3 Highway and is bounded on the east by J.B. McIntosh Drive (extension of Kassier Road). Sugarcane forms the south and west boundaries.

The site is approximately 114 hectares in total and will be incorporate the following land uses; education/ private school (± 8,5ha, 85000m^2); residential 4 (7 erven (± 90-95 units per hectare) – size of area to be covered with residential units is ±70ha, 70000m^2); Private Open Space (± 33 ha, 330000m^2); A low impact cycling track and on-going rehabilitation and open space management are planned for the natural private open space areas; road networks and associated landscaped areas and sidewalks (± 8ha, 80000m^2); and Gatehouse, Club House and Entrance Gate (± 0,5ha, 5000m^2).

The site is approximately 19km from Pretoria Central. Green open space is located to minimise the potential impact that the proposed development will have on the drainage line that transverses the site in a north east - south west orientation.

Table 1: Location of the Riverwalk Development within in this WULA

Riverwalk Development Co-ordinates			
1	25°45'32.64"S	28°22'46.88"E	Central point of the proposed RiverWalk Development

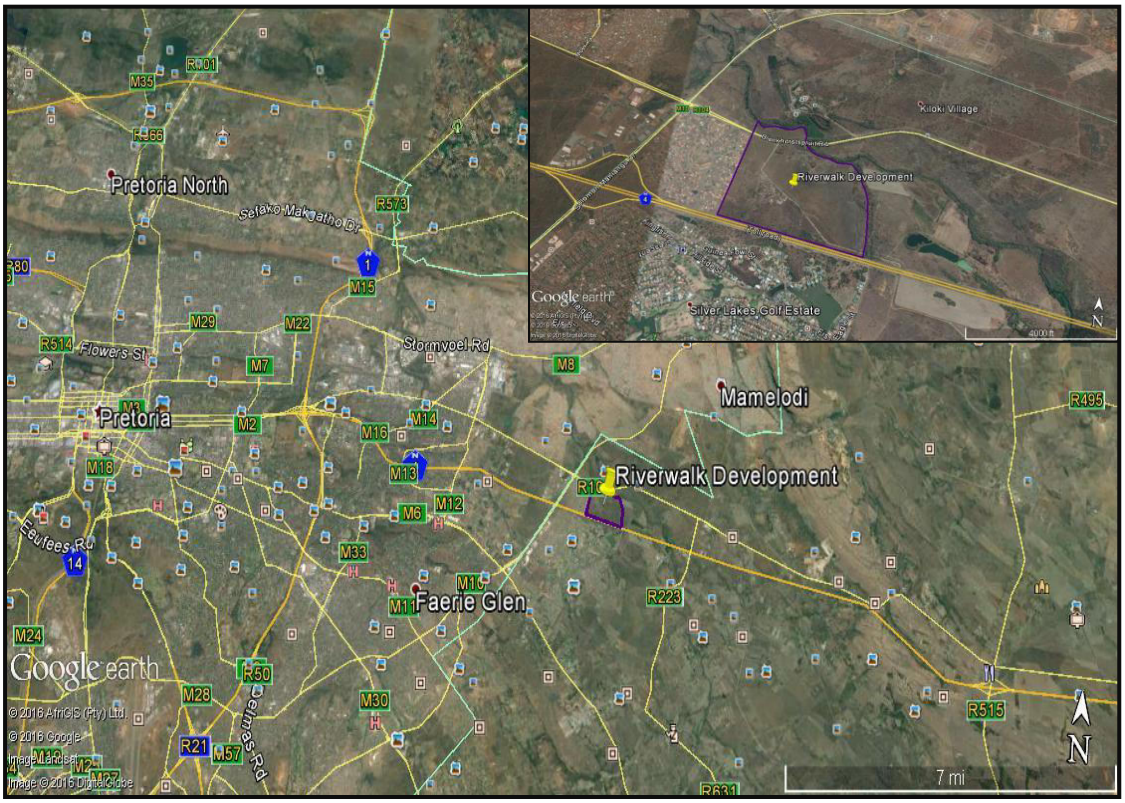


Figure 1: Locality map showing the location of the proposed development.

4. SUMMARY OF THE SOCIO-ECONOMICS OF THE PROPOSED DEVELOPMENT

The proposed development will create a significant number of employment and training opportunities, not only during the construction phase but also during the operational phase of the project. The developer intends to make use of local casual and unskilled labour to stimulate job creation. The proposed development will provide housing to 6 650 households. The target market is the middle income group although some accommodation will be specifically for lower and higher income groups. It is also recommended that more focus be given to employ woman in the commercial environment.

5. WATER USES BEING APPLIED FOR

The water uses for which authorisation are being applied for includes the following:

- **Section 21 (c):** *Impeding or diverting the flow of water in a watercourse by means of constructing the proposed development*
    - Sewer Pipeline: Balwin Properties proposes the construction of a 940m long 675mm outfall sewer pipeline. The new pipe will be installed parallel to the existing pipe within the same servitude. The new pipeline will connect to an existing bulk sewer line located within the 1:100 year flood line. Approximately 9 manhole will be located within the flood line.

- Water pipeline: the water pipeline will cross the Tributary of the Pienaars River.
- Stormwater outlets: Multiple outlet structures will be necessary for each phase of the development using energy dissipation measures at each outlet to the natural stream.
- Construction of a New Bridge: A new bridge is required for the continuation of the road which will link to the new proposed development east of the property.
- Development within 500m of a wetland: Balwin Properties proposes the development of a development within 500m of a wetland.

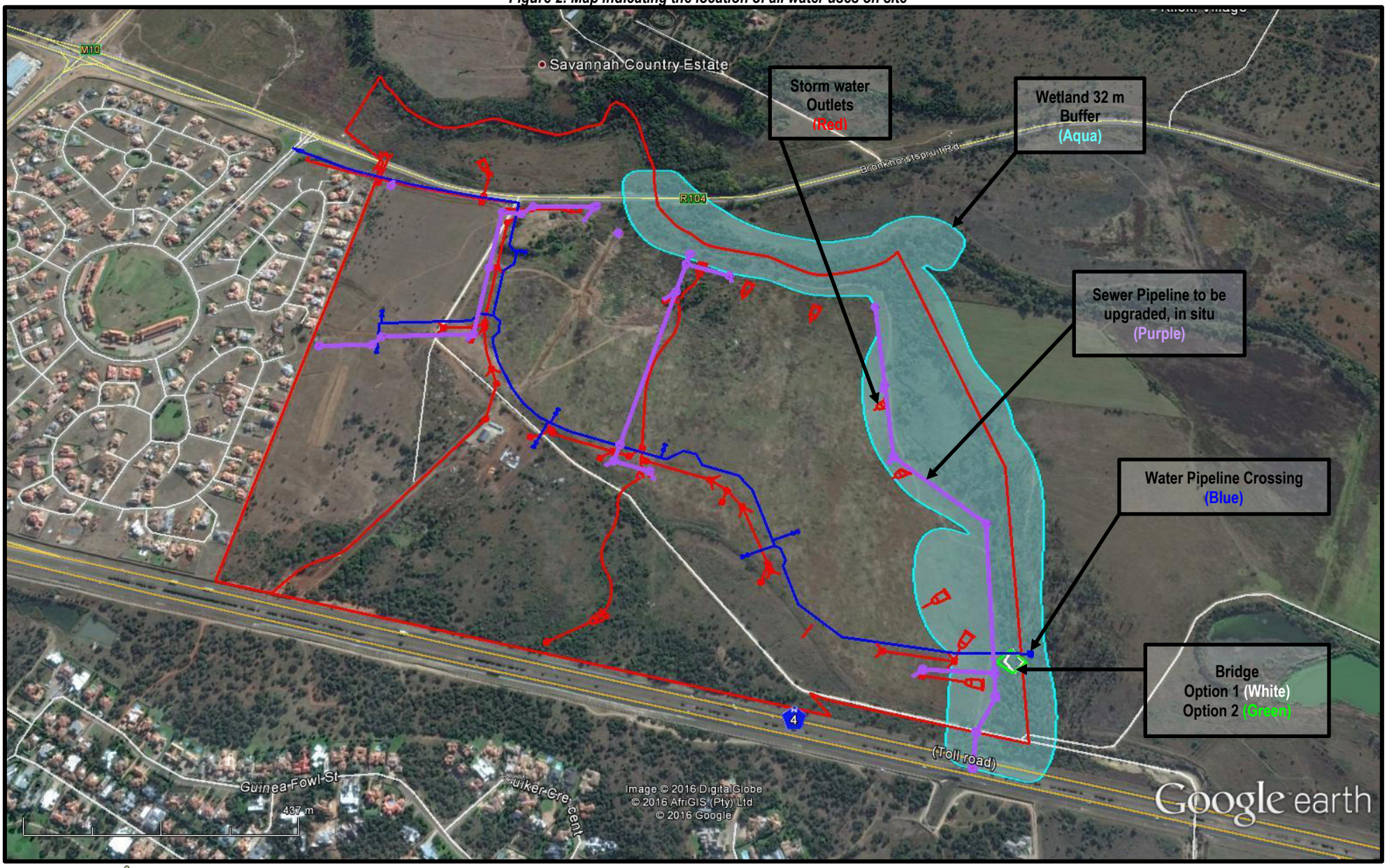
- **Section 21 (i):** *Alteration altering the bed, banks, course or characteristics of a watercourse by means of constructing the proposed development*
    - Sewer Pipeline: Balwin Properties proposes the construction of a 940m long 675mm outfall sewer pipeline. The new pipe will be installed parallel to the existing pipe within the same servitude. The new pipeline will connect to an existing bulk sewer line located within the 1:100 year flood line. Approximately 9 manhole will be located within the flood line.
    - Water pipeline: the water pipeline will cross the Tributary of the Pienaars River.
    - Stormwater outlets: Multiple outlet structures will be necessary for each phase of the development using energy dissipation measures at each outlet to the natural stream.
    - Construction of a New Bridge: A new bridge is required for the continuation of the road which will link to the new proposed development east of the property.
    - Development within 500m of a wetland: Balwin Properties proposes the development of a development within 500m of a wetland.

Table 2: Summary of Water Uses

Water Uses	Watercourse and coordinates	Purpose	Property Descriptions	Volume or Dimension	Coordinates	
					South	East
Section 21 (c) and (i) *(c) Impeding or diverting the flow of water in a watercourse;* *(i) Altering the bed, banks, course or characteristics of a watercourse*	Tributary of the Pienaars River and associated Wetland	Installation of a sewer pipeline within a wetland	Portion 6 of Farm Zwartkoppies 364 Portion 138 of Farm Zwartkoppies 364 Portion 241 of Farm Zwartkoppies 364	Sewer Pipeline: 5.869km (in total)	**Start**	
					25°45'24.94"S	28°23'6.13"E
					End	
					25°45'52.70"S	28°23'9.87"E
Section 21 (c) and (i) (c) Impeding or diverting the flow of	Tributary of the Pienaars River and associated Wetland	The crossing of the water pipeline over the tributary	Portion 6 of Farm Zwartkoppies 364 Portion 138 of Farm	Water Pipeline: 2.573km	**Start**	
					25°45'46.55"S	28°23'11.70"E

water in a watercourse; (i) Altering the bed, banks, course or characteristics of a watercourse			Zwartkoppies 364 Portion 241 of Farm Zwartkoppies 364		**End**	
					25°45'46.57"S	28°23'14.03"E
Section 21 (c) and (i) (c) Impeding or diverting the flow of water in a watercourse; (i) Altering the bed, banks, course or characteristics of a watercourse	Tributary of the Pienaars River and associated Wetland	Construction of a bridge over a tributary of the Pienaars River	Portion 6 of Farm Zwartkoppies 364 Portion 138 of Farm Zwartkoppies 364 Portion 241 of Farm Zwartkoppies 364	**Bridge:** **Option 1:** Construction of 7/4000x1500 Precast Rectangular Portal Frame Culverts **Option 2:** Construction of 27/1500 mm via Precast Pipe Culverts;	**Option 1**	
					25’45’47.0”S	28’23’12.3”E
					25’45’47.0”S	28’23’13.4”E
					25°45'47.6"S	28°23'12.8"E
					25°45'46.3"S	28°23'12.8"E
					Option 2	
					25’45’47.0”S	28’23’11.8”E
					25’45’47.0”S	28’23’13.6”E
					25°45'47.6"S	28°23'12.7"E
					25°45'46.3"S	28°23'12.7"E
Section 21 (c) and (i) (c) Impeding or diverting the flow of water in a watercourse; (i) Altering the bed, banks, course or characteristics of a watercourse Development occurring within 500m of a Wetland	Tributary of the Pienaars River and associated Wetland	Development located within 500m of a wetland	Portion 6 of Farm Zwartkoppies 364 Portion 138 of Farm Zwartkoppies 364 Portion 241 of Farm Zwartkoppies 364		**Point 1**	
					25°45'14.10"S	28°22'30.86"E
					Point 2	
					25°45'42.32"S	28°22'23.88"E
					Point 3	
					25°45'49.88"S	28°23'1.57"E
					Point 4	
					25°45'51.31"S	28°23'13.17"E
					Point 5	
					25°45'20.89"S	28°23'7.93"E

Figure 2: Map indicating the location of all water uses on site



6. THE WATER USE LICENSE APPLICATION PROCESS FOLLOWED

6.1. Pre-Application Consultation

A pre-application consultation meeting was held with relevant officials of the Gauteng Department of Water and Sanitation (DWS) on the 31st August 2016.

The pre-application consultation meeting was held to:

- Determine the need to authorise the water use;
- Determine the applicable water use authorisation type;
- To obtain guidance from the Department in relation to the application process to be followed; and
- To obtain relevant documentation required for the application process.

Correspondence from Mr Thato Danny Mjona was received on the 1st September 2016 confirming the meeting held and the requirements for the WULA.

6.2. Information and Technical Report Collation

Relevant information, in accordance with the Departmental guidance provided at the pre-application meeting held, was sourced from the Consulting Engineers, the Client, and Specialists commissioned as part of the WULA. The information was collated, analysed and relevant sections included in this executive summary as well as the various Departmental Application forms required in support of the Water Use License Application.

6.3. Public Participation Process

The public participation processes commenced during September 2016 and will continue for a period of 60days upon the release of the Water Use Licence. (**Appendix 10**). The application has been advertised in the Beeld on the 15th September 2016. Signboards have been placed within the vicinity and along the boundary of the site on the 19th September 2016. Notices have been distributed to the local community. Written notification was given to the following authorities and interest groups have also been notified on the 19th September 2016: Department of Water Affairs and Sanitation (DWS), Gauteng Department of Agriculture and Rural Development (GDARD), Department of Transport, South Africa Heritage Resource Association (SAHRA) and the Tshwane Municipality.

6.4. Concerns Raised by I&APs

No Comments have been received to date. All comments will be consolidated and responded to and submitted to the Department for review after the completion of the **60 day** comment period.

A detailed list of comments and responses will be supplied to DWS upon completion of the Comment Period.

6.5. Submission of the Water Use License Applications

Upon completion of the executive summary and all the required License Application forms, the signed final documentation, with all the required appendices will be submitted to the Department and the application fee will be paid.

7. OPTION ANALYSES

Route Alternative

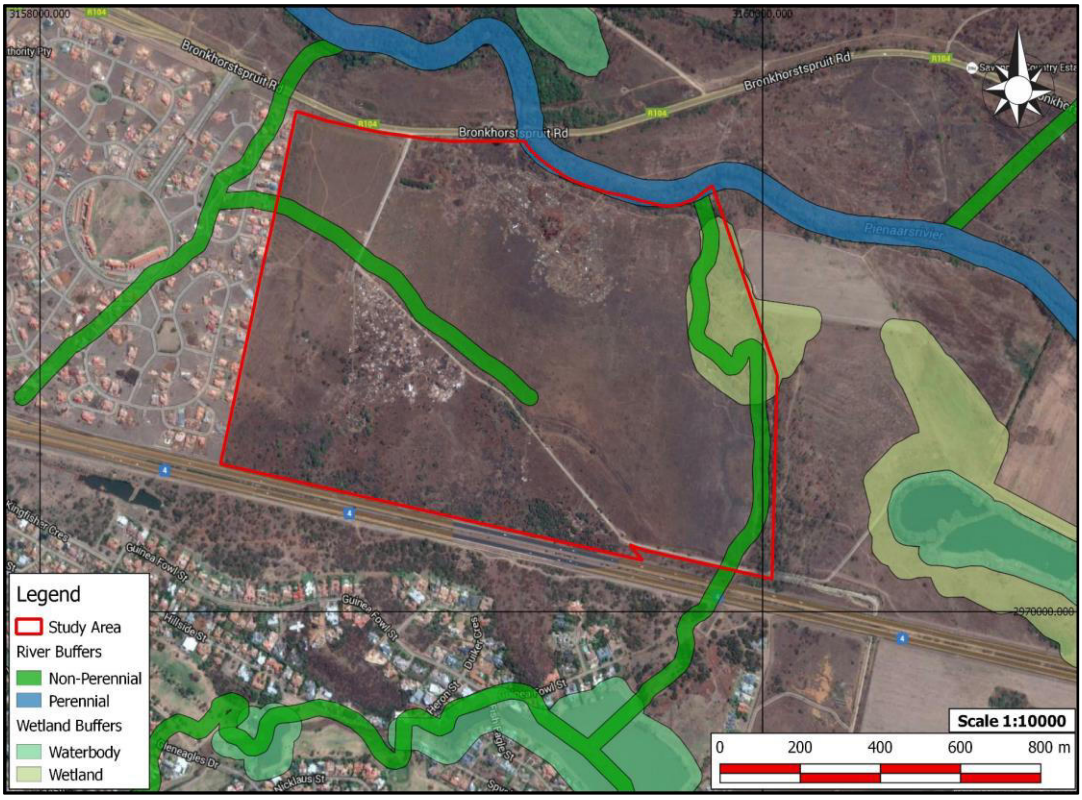
The route for the services was determined based on the existing approved layout.

As the study area already has an approved layout the best route for the various services was determined based on the layout. Due to the development already being approved there is not an option for alternative routes for the services infrastructure.

8. SURFACE WATER

The site is located between the R104 and the N4 within the Crocodile (West) which forms part of the larger Mokolo Catchment.

Mr J.H. van der Waals conducted a Hydropedology Wetland Impact Assessment and Management Report for the development, has determined using the topographic wetness index (TWI) to determine the current surface water on the site. It was concluded from the terrain unit indicator it is evident that the site is not characterised by any other watercourses or concentrated water flow areas that may form wetlands. The only area that qualifies as a distinct watercourse (from the site investigation) exhibits no signs of concentrated flow emanating from the specific site. This leads to the conclusion that the water flowing in the watercourse / stream emanates from upslope areas to the south of the site.



8.1. Surface Water Quality

Rivers

The Pienaars River is located North and North East of the site, with in the quaternary catchment A23A. Two non-perennial rivers run along the western and eastern boundaries of the site. Both non-perennial rivers intersect the site. The river towards the eastern boundary has an associated wetland with it. Water bodies are located approximately 333m east of the site and 444m south of the site. The water body located to the east of the site have associated wetlands.

Wetlands

The Hydropedology Wetland Impact Assessment and Management Report has identified a wetland within the development footprint is limited to the tributary of the Pienaars River (Figure 2). The wetland onsite is limited to the tributary of the Pienaars River, kindly refer to Figure 3 for the extent of the wetland on site.

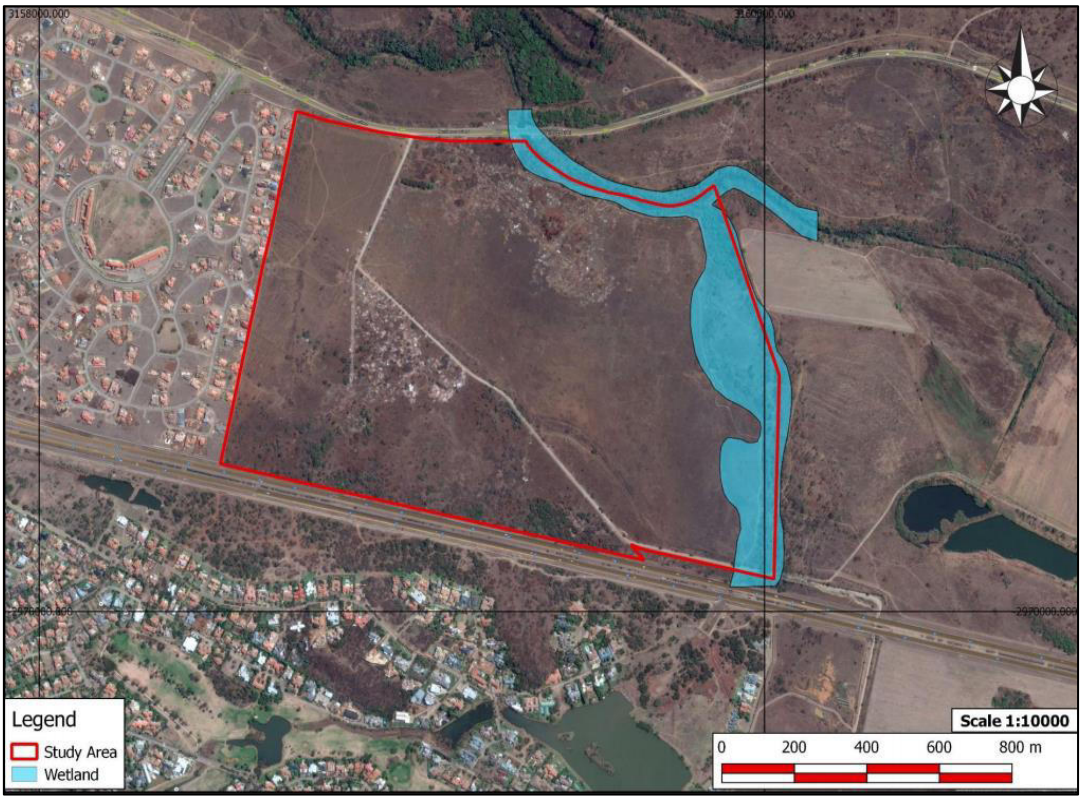


Figure 3: View of the study site and the various sources of surface water located within the area.

The National Freshwater Ecosystem Priority Areas (NFEPA) project provides strategic spatial priorities for conserving South Africa's freshwater ecosystems and supports sustainable use of water resources. These priority areas are called Freshwater Ecosystem Priority Areas, or 'FEPAs'. Upon further investigation three (3) NFEPA wetlands have been identified within a 500m radius from the development (Figure 4).

FEPAs were identified based on:

- Representation of ecosystem types and flagship free-flowing rivers
- Maintenance of water supply areas in areas with high water yield
- Identification of connected ecosystems
- Representation of threatened and near-threatened fish species and associated migration corridors

Preferential identification of FEPAs that overlapped with:

- Any free-flowing river
- Priority estuaries identified in the National Biodiversity Assessment 2011
- Existing protected areas and focus areas for protected area expansion identified in the National Protected Area Expansion Strategy.

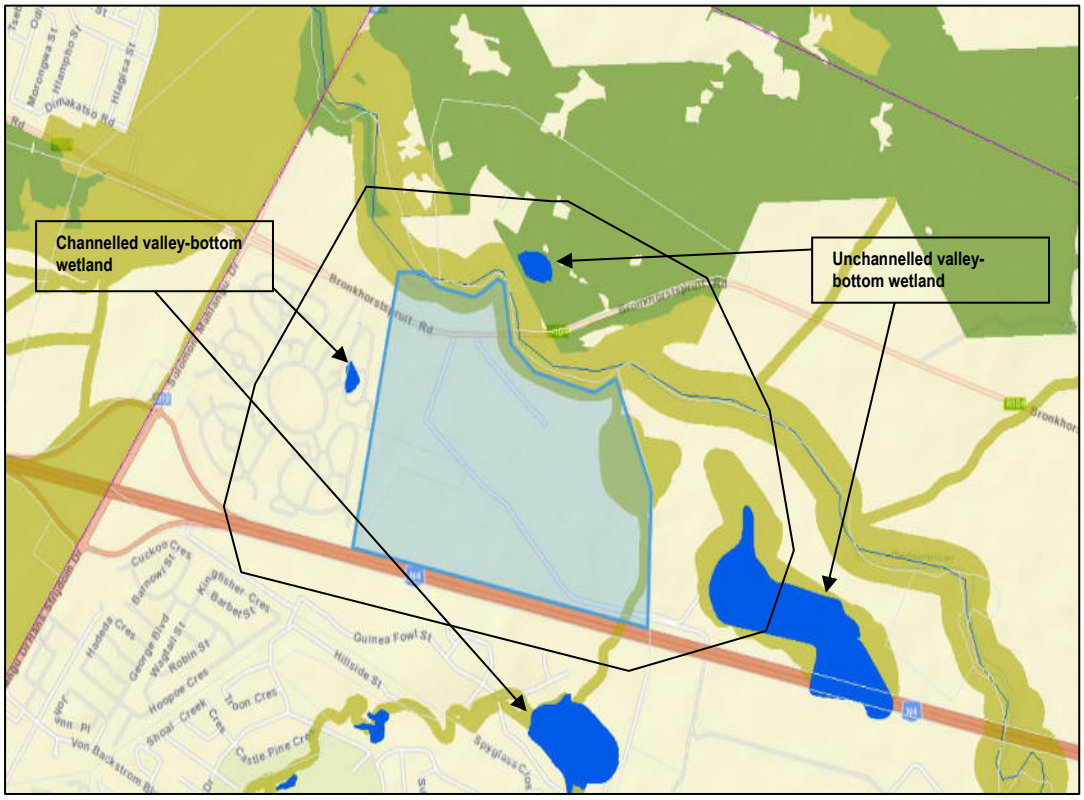


Figure 4: View of all NFEPA wetlands within an estimated 500m delineation of the site (SANBI GIS).

Each of the NFEPA wetlands located within the 500m delineation of the site is classified as artificial wetlands of the central bushveld group 2. The two (2) wetlands located North and East of the site are currently classified as unchannelled valley-bottom wetland and the two (2) wetlands located west and south of the site are classified as channelled valley-bottom wetlands. (SANBI GIS).

8.2. Present Ecological State (PES)

The channelled and unchannelled valley bottom wetland was assessed in terms of ecological integrity for each of the driving processes, namely:

- Hydrology
- Geomorphology, and
- Vegetation.

Table 4 presents a summary of the impacts that are considered to be undermining the wetland's ecological integrity. The scores obtained from the Wet-Health assessment are a reflection of the magnitude of the respective impacts.

Table 3: Summary of Criteria for assessment of Habitat Integrity

Unchannelled and Channelled Valley Bottom Wetland	Impact	Score	Confidence
Hydrology	• **Flow Modification:** Large modification due to urban infrastructure in the catchment with significant erosion in the channel and on the banks.	• **2 (Largely Modified)**	• **4 (Very high confidence)**
	• **Permanent Inundation:** Permanent inundation not possible due to the extensive modification as well as the rainfall and catchment	• **2 (Largely Modified)**	• **4 (Very high confidence)**
Biological	• **Terrestrial Encroachment:** Consequence of desiccation of wetland and encroachment of terrestrial plant species due to changes in hydrology or geomorphology. Change from wetland to terrestrial habitat and loss of wetland functions.	• **2 (Largely Modified)**	• **3 (High confidence)**
	• **Overutilization of Biota:** Overgrazing, Over-fishing, etc	• **1 (Seriously modified)**	• **4 (Very high confidence)**
	• **Alien Fauna:** Presence of alien fauna affecting faunal community structure.	• **2 (Largely modified)**	• **3 (High confidence)**
Vegetation	• **Indigenous Vegetation Removal:** Direct destruction of habitat through farming activities, grazing or firewood collection affecting wildlife habitat and flow attenuation functions, organic matter inputs and increases potential for erosion.	• **2 (Largely modified)**	• **4 (Very high confidence)**
	• **Invasive Plant Encroachment:** Affect habitat characteristics through changes in community structure and water quality changes (oxygen reduction and shading).	• **1 (Seriously modified)**	• **3 (High confidence)**
Water Quality	• **Water Quality Modification:** From point or diffuse sources. Measure directly by laboratory analysis or assessed indirectly from upstream agricultural activities, human settlements and industrial activities. Aggravated by volumetric decrease in flow delivered to the wetland	• **2 (Largely modified)**	• **4 (Very high confidence)**
	• **Sediment Load Modification:** Consequence of reduction due to entrapment by impoundments or increase due to land use practices such as overgrazing. Cause of unnatural rates of	• **2 (Largely modified)**	• **4 (Very high confidence)**

	erosion, accretion or infilling of wetlands and change in habitats.		
Hydraulic/Geomorphic	• **Canalisation:** Results in desiccation or changes to inundation patterns of wetland and thus changes in habitats. River diversions or drainage. • **Topographic Alteration:** Consequence of infilling, ploughing, dykes, trampling, bridges, roads, railway lines and other substrate disruptive activities which reduces or changes wetland habitat directly or through changes in inundation patterns.	• **2** **(Largely modified)** • **3** **(Moderately modified)**	• **4** **(Very high confidence)** • **4** **(Very high confidence)**
PES Category: D (largely modified) -E (seriously modified)			

9. ANALYSIS AND CHARACTERISATION OF ACTIVITY

9.1. Process Water

Full waterborne sewage reticulation will be provided for the proposed development. The proposed development will require an upgrade of the current services within the area. The current waterborne sewage reticulation system is below the capacity requirements for the proposed development. Balwin Developments are in the process of obtaining authorisation for the upgrade of the current sewer reticulation system.

9.2. Storm Water

A Stormwater Management Plan (SWMP) has been developed for the proposed development. The purpose of this document is to provide a guideline policy for the holistic management of stormwater for the development of the site.
This developed SWMP has the following purposes:

- To ensure compliance of the overall site with relevant legislation from a stormwater runoff perspective;
- To provide a practical, achievable & sustainable plan and methodology of managing stormwater runoff from site;
- To protect the health, welfare and safety of the public from damage by stormwater and floods;
- To protect against property damage from stormwater and floods;
- To prevent erosion of soil by runoff;
- To conserve the fauna and flora of the natural environment including wetland and riparian zones;
- To protect and enhance the natural water resources in the sub catchments from pollution and siltation; and
- To develop a conceptual surface water runoff management policy.

The Stormwater Management Plan has provided detailed information for the design philosophy of the development, site establishment and preliminary activities, construction stage activities and operational maintenance. The Stormwater Management Plan for the development has been include in **Appendix 7** of the WULA.

9.3. Surface Water

The only surface water visible on site is from the tributary from the Pienaars River. An analysis of the water has not been conducted. However it is recommended that monitoring of the water within the tributary be undertaken on an annual basis for the next 3 years, during which reports are to be submitted to the DWS for evaluation in conjunction with the ECO reports.

9.4. Ground Water

During the field visit by the qualified geohydrologist, 8 boreholes inside the development boundaries and 16 outside the development boundaries were visited during the hydro census done within a 2 km radius. Nine of the 16 boreholes outside the boundaries were not in use while the other seven are in use by a windmill, submersible or monotype pumps. The abstraction figures in general in the area can be considered as low and is mainly for domestic use or small scale farming. The geohydrological results shown that the average daily demand (1 010m³/day) is well below the minimum groundwater recharge volume of 3 424m³/day for the area. Furthermore it must be remembered that the borehole abstraction will only be 244 464m³ per annum or 670m³/day due to the use of surface water resources. Storm water channelling to the open spaces is recommended to enhance groundwater recharge. The results of the 2 km hydro census showed that abstraction in the area by other users is minimal.

10. RISK/ IMPACT ASSESSMENT/ BEST PRACTICE ASSESSMENT

Site specific risk (impact) assessment has been assessed for all phases of the development. The professional judgment of the EAP based on previous EIA/WULA experience in the construction and ecological fields has been used. The potential impacts associated with the proposed development have been identified and rated in terms of their significance.

The risk assessment has been split into the number of different potential impact categories these are as follows:

- Soil
- Stormwater
- Surface Water
- Flora
- Fauna
- Sensitive environmental areas
- Waste
- Hazardous chemical/fuels
- Noise
- Resource use & conservation
- Traffic
- Infrastructure and services
- Socio-economic
- Cultural
- Health and Safety

Current impacts affecting the study area have been identified are:

- Alien invasive plants – Areas along the tributary are invaded by alien plants to some degree, particularly forest ecotones and to a lesser extent wetland areas. This has no doubt resulted in decreased ecological functionality and integrity of vegetation within these areas, which in turn reduces the capability of the area to support biodiversity, particularly conservation important species.
- Altered hydrology – The hydrology of the river system, has been altered by instream dams, water abstraction and drainage of wetland areas. These hydrological issues have no doubt impacted the riparian and wetland habitats within the study area.
- Catchment transformation – Majority of the terrestrial catchment areas have been transformed by agriculture and residential development. This transformation not only alters the natural hydrological regime of the River system, but is also likely to contribute significantly in terms of water pollution (e.g. sedimentation, herbicide/pesticide application, etc.).
- Solid waste dumping – Certain areas are affected by localised dumping of solid waste. These areas of disturbance encourage growth of ruderal and alien invasive plant species.

The following impacts, typical of residential developments, may potentially occur as a consequence of the proposed Riverwalk Development:

- Habitat loss and transformation – poorly planned and constructed developments may result in unnecessary degradation and loss of habitat supporting biodiversity, potentially including frog species of conservation important
- Increased stormwater runoff – Introduction of hardened, impervious surfaces (e.g. roofs, driveways, parking areas, roads, etc.) to the catchment areas with construction of a shopping centre and office, business, and residential areas will increase stormwater runoff.
- Pollution from runoff – Stormwater runoff may incorporate a wide variety of pollutants such as the plant nutrients (nitrogen and phosphorus), oxygen demanding organic compounds, toxic heavy metals, hydrocarbons and pesticides. These pollutants can adversely affect aquatic biota and ecosystems downstream.

The following recommendations provided by the specialist are require to be considered to avoid and/or mitigate impacts that may arise from the proposed development:

- The development footprint must avoid riparian and wetland habitat areas, including the aquatic habitats associated with all watercourses draining into the Pienaars Tributary. The aquatic habitat provided by the watercourses are also considered important in terms of filtering impacts before entering the River system.

- A buffer zone of at least 32m should be adopted to preserve and protect the riparian areas and any associated wetland habitat from the proposed development. The buffer zone would need to be maintained and managed indefinitely with integration into other local/regional ecological corridors.
- Ensure minimal or no disturbance outside of the development footprint area during construction. Buffer areas should preferably be re-vegetated with indigenous vegetation prior to construction to reduced impacts on wetland/riparian systems during the construction phase.
- Rehabilitate areas containing solid waste and remove all refuse/waste which has accumulated on the property, and thereafter maintaining the property in a refuse/litter-free state.
- Develop and implement a comprehensive alien weed control programme to eradicate and control problematic plant species and prevent further spread.
- Ensuring that landscaping within the development comprises indigenous species appropriate to the regional vegetation.
- Ensure that the stormwater management plan for the development minimises flow-related impacts to the aquatic environment and associated buffers.
- Pollutants, potentially carried in surface water runoff, should be limited through the use of best management practises and designs (e.g. first-flush pollutant traps and filters, permeable paving in driveways and parking areas, etc.).
- Monitoring of riparian habitats, natural corridors and other open spaces to be implemented during both construction and operation phases.
- Implement a biennial or triennial fire burning regime in both grassland and wetland areas to increase grassland vigour. A fire management plan will therefore needed to be compiled for the system.

11. IMPACT AND MITIGATION ASSESSMENT

Table 4: Impacts and Mitigation measures

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Control measure*
DESIGN AND PLANNING	***Stormwater design***	To prevent and restrict erosion, siltation and groundwater pollution	Stormwater **attenuation facilities** shall be correctly designed to offset the effect of increased runoff. Construction guidelines shall be provided for the prevention and restriction of erosion and siltation.
			Should stormwater be intended to flow into a watercourse, the storm water must be treated to an acceptable, prior being discharged into the Jukskei River.
			A detailed **storm water management plan** must be approved by the relevant authorities prior to construction activities commencing.
			Flow reduction techniquies should be adopted to esure the slow release of stormwater into the system.

			Adequate surface and subsurface **drainage** should be provided prior or during development of the site to ensure that no build-up of storm water will occur.
			Storm water outlets shall be correctly designed with energy dissipaters to prevent soil erosion.
			Bio- Attenutation features should be designed to ensure a natural look to the stormwater features as well as the filtration of water prior to release into the natural system.
	Waste generation and water, air and noise pollution	Best practice to minimise environmental impacts and ensure efficient management	Coordinate with **other trades working on site** regarding: site management, timing of works and waste management (recycling and reuse potential).
			Plan for the following site facilities before construction commences: **Access, deliveries, construction areas, washout area, waste storage facilities, stockpiles, and chemicals and hazardous materials storage facilities**.
CONSTRUCTION PHASE	**Geology and Soils**	Seasonally/temporarily waterlogged soils	**Approval must be obtained from the ECO and relevant authority** for the use of vechiles within the buffer zone of a wetland area for the laying of the sewer pipeline. Rehabilitation works must be done immediately after the involved works are completed.
	Stockpile area for construction material and topsoils		Remove vegetation only in designated areas for construction. Rehabilitation works must be done immediately after the involved works are completed. All compacted areas should be ripped prior to them being rehabilitated and/ or landscaped. The top layer of all areas to be excavated must be stripped and stockpiled in areas where this material will not be damaged, removed or compacted. This stockpiled material should be used for the rehabilitation of the site and for landscaping purposes. Strip topsoil at beginning of works and store in stockpiles no more than 1,5 m high in a designated material storage area. Stockpiles should be covered correctly. Stockpiles should not be stored in any watercourses, drainage lines or within the flood plain or below the 1:100 year flood line.
	Hydrology	Prevent pollution of groundwater and	Chemical **toilets** shall not be in close proximity of the drainage lines and wetland, and should be atleast 100m away from the watercourse or outside the 1:100 year flood line or whichever is furthest.

SITE CLEAN UP	**Stormwater pollution/erosion/siltation**	To prevent erosion silting and pollution	The site, water system and attenuation ponds shall be left **free from erosion, silting, pollution** and/ or unwanted material. The attenuation features should be able to trap silt and sediments and can be cleaned and maintained on a regular basis.
		Minimise waste	Decontaminate and collect waste in storage area ready for **off-site recycling or disposal.** Ensure that the waste will be delivered to a **registered waste disposal site.**

12. MONITORING AND CONTROL

Successful monitoring and review ensures effective functioning and identification and implementation of corrective measures in a timely manner. Monitoring for non-compliance must be done a daily basis by the contractors under the guidance of the project manager / engineer. Paramount to the reporting of non-conformance and incidents is that appropriate corrective and preventative action plans are developed and adhered to. Photographic records of all incidents and non-conformances must be retained.

The aim of a monitoring programme is to track environmental changes over time in response to a particular influence. Once a certain threshold is reached, remedial intervention is triggered that seeks to mitigate the impact and prevent further environmental damage. The monitoring programme advocated consists of the following components:

- The likely impacts most relevant to the development;
- The effective location of monitoring points;
- The parameters to be measured;
- The frequency of sampling;
- The analysis of the data; and
- The outcome.

Monitoring Requirements:

Preconstruction:

- Monthly inspections by the on-site ECO are required during the earthworks

Construction

- ECO must conduct a minimum of one (01) site visits per month during the construction phase of the activity.
- Monthly monitoring to be done by ECO for the development – minimum 6 months post construction
- Water quality monitoring must be conducted every four (04) months i.e. on a quarterly basis in order to track any changes in the water quality and ultimately to determine the source of contamination should water quality deteriorate.

Post Construction/Operational:

- Two (02) post construction audits should be conducted to ensure that the development and rehabilitation is in order.
- Wetland assessment on a quarterly basis to ensure suitability of habitat until the specialist is satisfied that the system is in equilibrium.

Wetland Rehabilitation:

- Specialist to conduct water quality monitoring to track any changes in the water quality of the dam and wetland conservation area and ultimately to determine the source of contamination should water quality deteriorate.
- Wetland assessment on a quarterly basis to ensure suitability of habitat until the specialist is satisfied that the system is in equilibrium

13. SECTION 27

Table 5: Section 27

Water Use License Application Section 27	
Section 27	**Description**
(a) Existing lawful water uses	The following existing lawful water uses were identified under Section 35 (4) of the NWA: **Existing lawful water use:** **Property:** 364JR/6 **Taking of water (m³/annum):** 161 546 **Storing of water:** 8 028 **Water resource:** Pienaars River **Existing impeding/weir:** Two weirs existed on the property situated within the Pienaars River. Table 5 provides information for these structures. **Property:** 364JR/6 **Structure name:** Weir and Road Crossing **South coordinate:** Weir: 25.7530; Road Crossing: 25.7560 **East coordinate:** Weir: 28.3773; Road Crossing: 28.3829 **Length (m):** Weir: 14; Road Crossing: 30 **Width (m):** Weir: 0.4; Road Crossing: 2.5 **Height (m):** Weir: 1;Road Crossing: 1 **Type:** Weir: Rock; Road Crossing: Concrete pipes
(b) The need to redress the results of past racial and gender discrimination	The proposed development will create a significant number of employment and training opportunities, not only during the construction phase but also during the operational phase of the project. The developer intends to make use of local casual and unskilled labour to stimulate job creation. The proposed development will provide housing to approximately 6000 households. The target market is the middle income group although some accommodation will be specifically for lower and higher income groups. It is also recommended that more focus be given to employ woman in the commercial environment.
(c) The efficient and beneficial use of water in the public interest	The applicant has undertaken the public participation process for developing the area, and that the public's opinion had to be requested, allows for the public opinion to be assessed by the response and the comments and concerns received. As public trustee of the water resources, the Department of Water and Sanitation (DWS), must ensure that the water is protected,

	used, developed, conserved, managed and controlled in a sustainable and equitable manner for the benefit of all users. The Minister, through the Department, has to ensure that the water is allocated equitably and used beneficially in the public interest, while promoting environmental values.
(d) The socio-economic impact	The development will create both permanent and temporary jobs. 450 permanent jobs generated by the commercial activities. The use of local contractors and labour is strongly recommended. It will establish a desperately needed source of employment for the local communities. Balwin Investments aims to upgrade various services within the area in the attempt to improve the existing infrastructure in the area.
(e) Any Catchment Management Strategy applicable to the water resource	No Catchment Strategy available for the area.
(f) The likely effect of the water use to be authorised on the water resource and other water users	The water uses applied for will not have a negative impact on other water users. The sewer pipeline laid within the wetland buffer area will be in situ and replace the exisiting pipeline, it therefore benefits the community by the upgrade of the existing pipeline. The water pipeline with also be of benefit to all future development in the area as it provides access to water. Therefore the development and the proposed water uses will not have a negative impact on other water users.
(g) The class and resource quality objectives of the water resource	As part of the general water management intentions the developer intends to sustain the water quality by the installation of bio attenuation features for stormwater control to ensure that the water released into the system is not harmful to the natural environment.
(h) Investments already made and to be made by the water user in respect of the water use in question	To date the developer has already invested a large amount of funds to ensure the completion of this project. Including the upgrade of infrastructure within the surrounding areas.
(i) The strategic importance of the water use to be authorised	The use to be authorised has no strategic importance but is important in terms of the upliftment of the current services within the area.
(j) The quality of water in the water resource which may be required for the Reserve and for meeting international obligations	No International Obligations be affected by the proposed water uses. The sewer pipeline will be monitored to ensure that there are no leaks that could possibly impact downstream water quality.
(k) The probable duration of any undertaking for which the water use is to be authorised	It is proposed that the licence be granted for the maximum period of 40 years with a review every five years.

14. CONCLUSION

Bokamoso Environmental Consultants & Landscape Architects recommends that the licence be supported by DWS for approval for the following reasons:

- The water required for the development for construction and operation will be obtained from municipal sources with no impact on existing users.
- The development will contribute positively to wetland establishment/rehabilitation and maintenance of the river system within the development area as the rehabilitation and maintenance plan will ensure that the area is maintained.
- The sewer pipeline situated within the buffer zone of the wetland will be placed in situ of the existing pipeline. the pipeline will be managed and maintained and a plan put into place to ensure that the should there be any leaks these will be managed and reported to the municipality immediately.

- The development itself will have a positive upliftment for the community by the construction of houses, the upgrade of infrastructure and the creation of jobs.

It is therefore recommended that the WUL be granted for the abovementioned project as per the information contained in this Water Use Licence Report.

APPENDICES

Appendix 1: WULA Forms

Appendix 2: Basic Assessment

Final Basic Assessment Report for the Riverwalk External Services and Open Space Area

Remainder of Portion 6, Portion 241 and 138 of the Farm Zwartkoppies No 364-JR and the R104/K22 Road Reserve

November 2016

BOKAMOSO
LANDSCAPE ARCHITECTS &
ENVIRONMENTALCONSULTANTS
P.O. BOX 11375
MAROELANA
0161
TEL: (012) 346 3810
Fax: 086 570 5659
Email: reception@bokamoso.net

Comments received from GDARD on the Draft BAR:

GDARD Comments	Bokamoso Response
The Draft Basic Assessment Report (DBAR) regarding the above-mentioned activity by the Department on 15 September 2016 has reference. The proposal entails installation of a water pipeline, storm water infrastructure, sewer pipeline and the construction of a road, a bridge and a cycling track. The activities will occur below the flood line and in the wetland buffer. The cycling track within the wetland buffer will run for approximately 3km, the sewer line will run approximately for 1,5 km, the storm water and water line will be small sections that will run for approximately 100m. The proposed activity falls under 12(ii)(iii)(vi)(xii)(a), Activity 19(i), Activity 27 and Activity 48(ii)(a) in Listing Notice 1 of GNR 983, Activity 4 (c)(iv), Activity 12(a)(ii), Activity 14 (ii)(iii)(vi)(xii)(b) and Activity 23 (ii)(d)(xvi) in Listing Notice 3 of GNR 985.	
A. Alignment of the activity with applicable legislation and policies All relevant National, Provincial and Local legislation, policies and guidelines are mentioned in the DBAR.	A. Noted.
B. Findings of Departmental Geographical Information Systems (GIS) The Department's comments are as follows: • The proposed site is classified as Ecological Support Area in terms of the Conservation Plan Version 3.3 of 2015. • According to the Gauteng Environmental Management Framework of 2015, majority of the proposed site is classified as Zone 1 (An Urban Development Zone) and small portions are classified as Zone 2 (a High Control Zone). • The site is a confirmed habitat for Red Listed Mammal species	B. Noted.

(Spotted-necked otter) and contains suitable habitat for Orange Listed Plant species (*Argyrolobium campicola*). • A perennial river and several tributaries run through the site with a wetland at the eastern portion of the site. • Majority of the proposed site is covered by primary vegetation in the form of Marikana Thornveld.	
C. Alternatives No route alternatives were investigated and the motivation behind it is unclear. Even though a previous development on the study area and layout has already been approved this is a new application and route alternatives should be investigated to determine the route that would have the least impact on the environmental sensitivities on site.	C. Even though this is a new application, it is only an application for the services and associated activities below the floodline and within the wetland and wetland buffer. Therefore, the layout and routes of this BA application need to take in consideration the layout of the approved development. Due this the alternatives are minimal. This matter has been discussed with the engineers and this was their response: 1. Sewerage: The existing outfall sewer is located inside a registered servitude for the specific purpose. We intend to upgrade the existing sewer pipeline and therefore propose to use the same servitude rather than following a new alignment which could adversely affect the environment. No alternative is proposed as an affected area already exists and adding another is not promoted. 2. Water: The water pipeline follows the inside of the road reserve boundary as per City of Tshwane Metropolitan Municipality requirements, therefore no alternatives can be considered for the alignment. The water pipe will also cross over the river by means of the planned bridge and not affect the watercourse or wetland. 3. Stormwater outlets: We can investigate alternative positions, and also reduce the amount of outlets. This will lead to higher concentrations of stormwater at the outlets, but fewer areas will be affected. Also note that stormwater harvesting will take place prior to discharging into the river system which will reduce peak run-off generated due to development. 4. We proposed two alternatives for the road bridge, the one being much wider than the other. The wider alternative will result in lower concentration of water but

	will affect a larger area, while the narrower alternative will increase concentration but reduce the affected area. Energy breaking structures proposed downstream of the bridge will negate both alternatives' concentration effects. Please find these comments in Appendix L. Based on the above, no alternatives were assessed as there will not be any alternatives for the sewer and water, as mentioned by the engineer. There will also not be an alternative for the upgrade of the R104/K22. The cycling track alignment is not yet definite but the final alignment will be drawn up for the area where there will be the least environmental impacts. The storm water structures are not within the wetland, only within the wetland buffer, and the current layout is therefore considered best. The impact of having fewer outlets with a higher concentration of storm water being released is considered to be a much more negative impact as it will impact on the wetland itself. The two options of the bridge, from an environmental point of view, are similar as each design has its own negative and positive impacts. It is suggested that the engineer should get the go-ahead for whichever is the best option from an engineering point of view as this will limit negative impacts during the lifespan/operational phase of the bridge.
D. Locality map and layout plans or facility illustrations Facility illustrations, site photographs and site layout plans were provided for the proposal.	D. Noted.
E. Significant rating of impacts The impacts are adequate and cover all aspects in all phases of the activity with relevant and effective mitigation measures.	E. Noted.
F. Specialist inputs The following specialist reports are	F. Please note that the studies were done for the entire development site and therefore the same studies were used for

attached: • Geotechnical Report. • Fauna and Flora Assessment. • Hydropedology Wetland Impact Assessment and Management Report. • Heritage Impact Assessment. • The Flora Assessment Report dated January 2016 states that the sensitive areas such as the rocky woodland, the closed woodland, and the riverine vegetation be excluded from the construction for the transforming activities (Page 21). From the proposed layout plans, the recommendation by the Specialists was not adhered to. • The specialist studies provided are from the previous application sent through the Department (Gaut 006/16-17/E0028) and do not take into consideration the new activities applied for. The Department requests that the specialist comment on the current activities proposed on the site be specific in the FBAR.	both applications. The specialists were however aware of the various activities that is proposed on the study site and the reports were compiled accordingly. Due to the aforementioned it does not seem necessary to amend the specialist reports. HOWEVER, it was requested that the Flora Specialist amend the Flora Assessment in order to exclude the areas that are not being applied for and provide recommendations for the specific activities. This amended report will also address the other comment on the sensitive areas. The amended Wetland Report also contains mitigation measures for the services infrastructure.
G. Environmental Management Programme (EMPr) The EMPr includes must include the specific mitigation measures for impacts related to the activity. The mitigation measures recommended in the specialists' reports must be integrated into the EMPr. In the FBAR the additional following documents should be attached in the EMPr: • A Rehabilitation Plan. • An Alien and Invasive Plant Species Management Plan. • Storm water management plan.	G. Noted. These have been added to the EMPr. During a telephonic conversation with Mr. Dan Motaung he suggested that the storm water management measures given by the engineer need to be incorporated in to the EMPr. This has been done and all storm water related mitigation measures have been given in bold text.
H. Public Participation process All comments from interested and affected parties received must be included and responded to in the FBAR. The issues raised by the interested and affected parties must be addressed and integrated into the impact and	H. Please note that the Water Use License is still being compiled, however, a pre-application meeting with DWS has been held. Comments from City of Tshwane have been requested on the DBAR and copies have been submitted to CoT. The FBAR will also be submitted to CoT and such comments will be requested once

mitigation measures in the EMPr. In the FBAR, the following should be attached as part of the public participation process: • Comments from the City of Tshwane on the project. • A letter of confirmation of services from the City of Tshwane. • A comment and Response report. • A water use licence.	again. The comments and issues report has again been added to the Public Participation appendices. The township has already been approved and attached as Appendix M is the approval together with the comments from the various sections. These documents serves as confirmation of services as the township would have not been approved if services are not available.

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.

Not applicable

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.

Not applicable

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.

Have State Departments including the competent authority commented? **YES**

If no, why?

Not applicable

SECTION A: ACTIVITY INFORMATION

1. PROPOSAL OR DEVELOPMENT DESCRIPTION

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

Riverwalk External Services and Open Space Area

The proposed development is situated between the N4 and the R014/K22 road east of Pretoria. The Pienaars River borders the north-eastern section of the proposed site. The Silver Lakes Golf Estate is situated to the south of the proposed development (just to the south of the N4 Freeway). The proposed external services upgradings for the proposed Riverwalk Development also requires the upgrading of a section of the R014/K22 road in order to accommodate the increased traffic generated by the development and the proposed access to the study area.

This Environmental process is therefore for the proposed ecological rehabilitation works and upgrading of services in areas below the flood line and within the wetland/wetland and river/river buffer areas at the Riverwalk residential development.

It is the intention of the applicant to install and upgrade some external services in the riparian related open space areas for the purpose of the Riverwalk development and other surrounding developments. As mentioned this will also include the upgrading of roads and associated infrastructure. An internal road already forms part of the approved layout; however, this application also includes the construction of a bridge in the area where the internal road traverses the river (in the south-eastern section of the study area).

Some storm water management measures (mainly associated with storm water outlets) will also be implemented (where required) for the proposed infrastructure upgradings and for the Riverwalk Residential Development. It is also the applicant's intention to implement (if possible) a cycling track along the river in order to afford the residents and members of the public the opportunity to enjoy the natural assets of this open space area. The proposed cycling track will be a "non-paved" and narrow low impact track. The alignment of the track is not fixed yet, because the intention is to appoint a specialist to assist with the design of the track. Obviously the track will be designed and implemented in such a way that it will not cause erosion and siltation.

As mentioned above the proposed upgradings applied for also includes the upgrading of a section of the Bronkhorstspruit road/R104/K22. The road is a

SANRAL road and therefore the competent authority for the evaluation of an EIA for the road is the National Department of Environmental Affairs (DEA). GDARD however agreed to incorporate the proposed road upgradings as part of the holistic and integrated services upgrading for the Riverwalk Development.

The proposed road upgrade will not exceed 1.00 km in length. After discussions with GDARD it was determined that the road upgrades do not trigger a listed activity except in the area where it crosses a culvert and just before it traverses the Pienaars River by means of an existing bridge across the Pienaars River (at the end of the upgrading area). No construction works are planned across the Pienaars River, but it was decided to also delineate the watercourse and its associated buffers in this area in order to prevent any construction workers from entering the watercourse and watercourse buffer area.

The proposed K22/ R104 upgradings were only incorporated as part of the BA Process after the Draft BAR was made available to the I&APs for comment and after the activities associated with the project were advertised. The project team was initially under the impression that there is an existing Environmental Authorisation (EA) for the proposed road upgradings and therefore excluded the proposed road upgradings from the BA process for the Riverwalk services upgradings. The appointed traffic engineers furnished Bokamoso with the environmental authorisation issued for the road by DEA and Bokamoso confirmed that the environmental authorisation included the proposed road upgradings for the Riverwalk development. SANRAL already issued the wayleave for the upgrading works, but the SANRAL environmental division indicated that they were concerned about the validity of the EA and the SANRAL liabilities and risks if a developer conducts the road upgradings. SANRAL eventually recommended that Balwin rather re-apply for the required EA and that Balwin take full responsibility for the proposed road upgradings as part of the external services upgradings for the proposed Riverwalk development.

After SANRAL requested that Balwin re-apply for the EA authorisation for the areas where the road crosses watercourses and watercourse buffers, the matter was discussed with DEA and with GDARD. DEA indicated that an application under their jurisdiction can be handled by GDARD in cases where the applicant applies for activities that fall under the jurisdiction of both competent authorities, but only if GDARD agrees to accept to also consider the activities that fall under DEA in an integrated application.

During a meeting held at GDARD on 10 October 2016, GDARD agreed to the proposed incorporation of the proposed R014/K22 road upgrades as part of the Riverwalk external services BAR, because the proposed road upgrading

also includes the access road to the Riverwalk Development. GDARD proposed that the proposed road upgradings also be advertised and that the I&APs be informed of the proposed inclusion of the R014/K22 road upgrades as part of the integrated EIA application (BA Process) for the Riverwalk external services.

After the meeting with GDARD, an errata notice was sent out to all the stakeholders and Interested & Affected Party members, to inform them of the inclusion of the R014/K22 road upgrades, which involves a section of approximately 1km. The section, which triggered a listed activity at the culvert crossing is however only approximately 90m in length. It was decided to also include the eastern end of the proposed road upgradings where the road cuts across the Pienaars River by means of an existing bridge, because the road upgradings could encroach into the watercourse buffer area (even though the appointed engineers believe the proposed road upgraded will end before the watercourse buffer area and the river crossing).

No listed activities needed to be added to the current application as all applicable listed activities for the road upgrades and services (including bridge on the development site and cycling track) have already been applied for. After the discussion of 10 October with the involved GDARD officials, a letter was sent to GDARD, confirming the discussions at the meeting. In this letter, background on the process and the road upgrades were also supplied. Please refer to **Appendix K** for this letter.

History of the site:

Bokamoso decided, for clarity purposes, to supply some background information regarding the Riverwalk study area. On 22 July 2008 an EA was issued by GDARD for the study area (a larger study area for which development to the north of the R104/K22 also approved). The larger development also approved the development of golf green, fairways, walkways, low-water bridges etc. in the 1:100 year flood line areas and within the watercourse & watercourse buffer areas. The following activities were approved across the larger study area:

- The establishment of 3355 dwelling units;
- An eighteen (18) hole championship golf course;
- A nine (9) hole mashie course with a driving range;
- A four storey club house with corporate suite and penthouse;
- A conference centre with a theatre and a wellness centre;
- A hotel with 200 rooms with a swimming pool;
- A Créche;
- A fully equipped gymnasium;
- Squash courts;

- A soccer field;
- Basketball courts;
- Tennis courts;
- A convenience store within the estate;
- A laundromat and cleaning services;
- Self storage space and offices; and
- An office park/ restaurant at the entrance.

GDARD however recently approved (on 11 October 2016) amendments to the original activities approved and to the layout. The main amendments that were approved were the exclusion of the golf course from the development, the increase of the density of the development and a change of the development layout. The amendment application also included a name change and a reduction of the size of the study area.

The new approved layout includes the following land-uses:

- "Education/ Private School" (± 8,5ha);
- "Residential 4" (7 erven ± 90-95 units per hectare) – size of area to be covered with residential units is ±70ha;
- "Private Open Space" (± 33 ha);
- A low impact cycling track and on-going rehabilitation and open space management are planned for the natural private open space areas;
- Roads and associated landscaped areas and sidewalks (± 8ha); and
- Gatehouse, Club House and Entrance Gate (± 0,5ha).

This Basic Assessment Application is for the same amended study area, but as discussed above, will only be for the installation and upgrading of services, roads and a cycling track below the flood line and within the wetland/watercourse buffer zone.

The R014/K22 road is also being upgraded and this falls under an Environmental Authorisation issued by the Department of Environmental Affairs on 29 March 2012 with DEA Reference 12/12/20/2238. However, after discussions with SANRAL, they now requested that Balwin apply for the section they want to upgrade themselves. Therefore, the road upgrades now forms part of this BA Application.

Proposed Services Installations and Upgrades – BA Application

The services installations below the flood line and in the wetland buffer area will include a water pipeline, storm water infrastructure, sewer pipeline as well as roads, specifically with a bridge crossing a tributary of the Pienaars River in the south-eastern portion of the study area. A cycling track is also planned along the river in the open space area (refer to Appendix G5). A section of

the existing sewer pipeline, which runs along the river, will also be upgraded. The sewer upgradings will be conducted (on behalf of the City of Tshwane Metropolitan Municipality (CTMM) within the existing 2m sewer servitude of the CTMM)).

The figure below (Figure 1) represents a combined map, which indicates all the services and services connection points situated within the flood line and wetland buffer, and for which the application is made in terms of the amended 2014 NEMA EIA Regulations. All other maps in this document also incorporate the larger study area (the area to the south of the BA application area, which already received an EA), because the services applied for are regarded as part and parcel of the larger development and Bokamoso wanted to ensure that the readers of this document also take note of the bigger picture. It is however important to note that activities triggered will only occur in the areas as highlighted along the river in Figure 1.

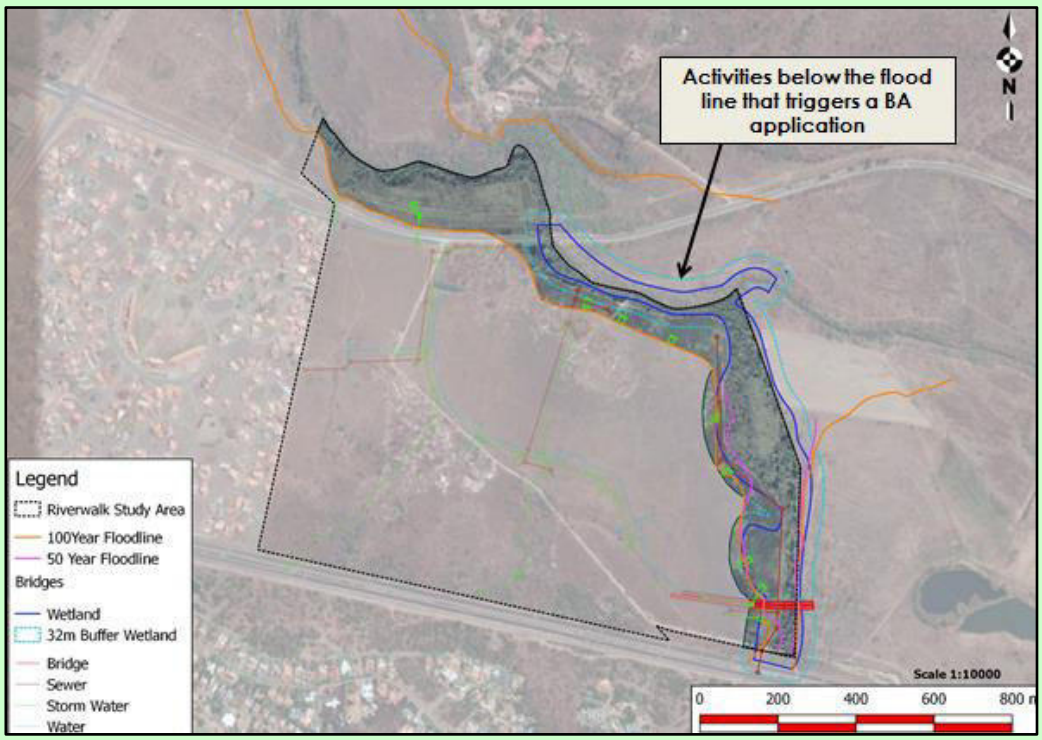


Figure 1: Illustration of area where the listed activities will take place (excluding the road upgrades).

The original EA for the larger development (formerly known as the African Renaissance Proper Golf Course Development) failed to include the listed activities associated with a watercourse and a wetland, event though the EA approved various construction activities (mainly associated with the golf course, storm water management and external services) within the watercourse area, the watercourse buffer area and across the river. It was decided during a pre-application meeting at GDARD to rather take the

cautious approach and to apply separately for the listed activities that will be triggered by the Riverwalk Development. This BA Process is thus for the listed activities triggered within the watercourse/ watercourse buffer areas. The activities applied for are mainly associated with the external services and storm water management measures required to accommodate the Riverwalk Development. Take note that the bulk water pipeline and sewer line upgradings are also designed to accommodate other developments in the area.

As mentioned earlier in this report, road upgrades to the R104/K22 have been added to this application after discussions with GDARD. Please refer to Figure 2 for the map illustrating the proposed road upgrades. After the meeting with GDARD, a letter was sent to Mr. Dan Motaung, confirming the discussions at the meeting. In this letter, background on the process and the road upgrades were also supplied. Please refer to **Appendix K** for this letter.

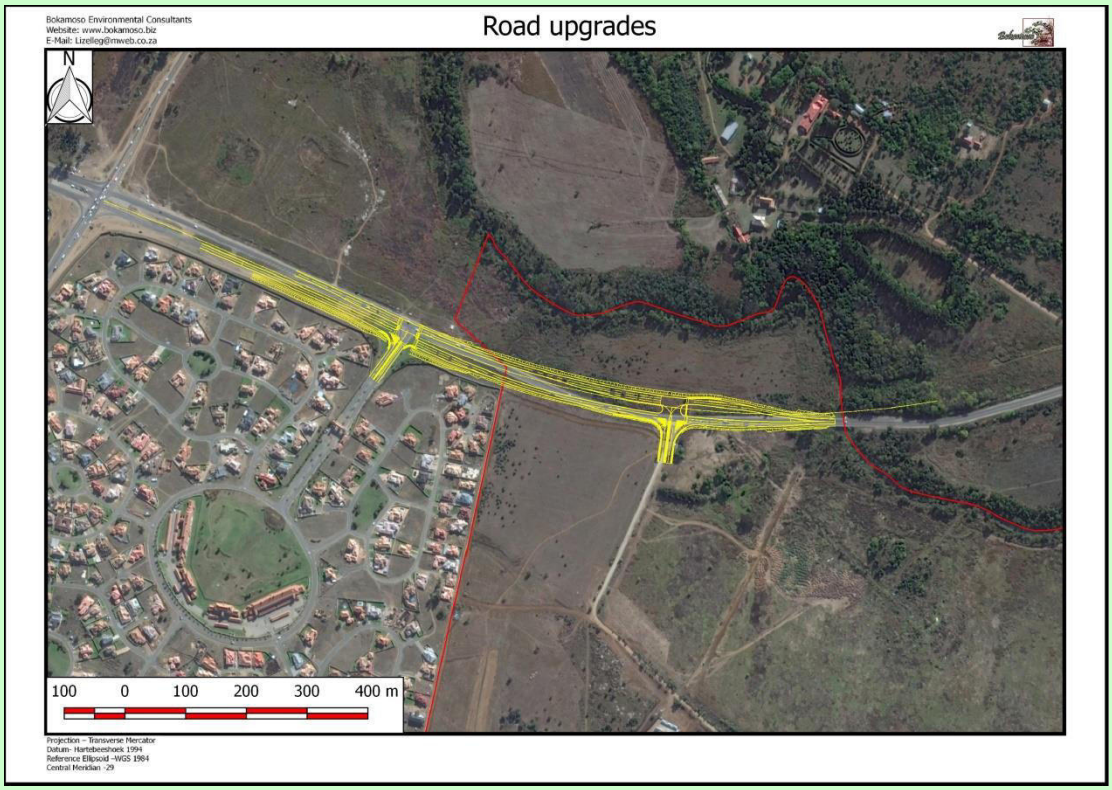


Figure 2: Road upgrades to the R104/K22

In the application submitted to GDARD it is indicated that the developer is applying for the following listed activities in terms of **Notice 1 and 3 (R983 and R985, 4 December 2014):**

Table 1: Listed Activities

Indicate the number and date of the	**Activity Number**	**Describe each listed activity as per the wording in the relevant listing notice**

relevant Government Notice		
R983 December 2014	Listing Notice 1 Activity 9	The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water- (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more; excluding where- (a) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve; or (b) where such development will occur within an urban area.
This activity can now be *excluded* as the proposed water and storm water will be in an urban area (development has already been approved).		
R,983 December 2014	Listing Notice 1 Activity 10	The development and related operation of infrastructure exceeding 1000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes - (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more; excluding where- (a) such infrastructure is for bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes inside a road reserve; or (b) where such development will occur within an urban area
This activity can now be *excluded* as the proposed sewer infrastructure will be within an urban area (development has already been approved).		
R,983 December 2014	Listing Notice 1 Activity 12	The development of- (i) canals exceeding 100 square metres in size; (ii) channels exceeding 100 square metres in size; (iii) bridges exceeding 100 square metres in size; (iv) dams, where the dam, including infrastructure and water surface area, exceeds 100 square metres in size; (v) weirs, where the weir, including infrastructure and water surface area, exceeds 100 square metres in size; (vi) bulk storm water outlet structures exceeding 100 square metres in size;

		(vii) marinas exceeding 100 square metres in size; (viii) jetties exceeding 100 square metres in size; (ix) slipways exceeding 100 square metres in size; (x) buildings exceeding 100 square metres in size; (xi) boardwalks exceeding 100 square metres in size; or (xii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs- (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; - excluding- (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; or (ee) where such development occurs within existing roads or road reserves.
This activity is *included* as the proposed services infrastructure will be below the flood line and within the wetland buffer. This activity will also be applicable for the road upgrades on the R104/K22 where it crosses a wetland and/or watercourses.		
R,983 December 2014	Listing Notice 1 Activity 19	The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from- (i) a watercourse; (ii) the seashore; or (iii) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater- but excluding where such infilling, depositing, dredging, excavation, removal or moving- (a) will occur behind a development setback; (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or

		(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies.
This activity is *included* as the proposed services infrastructure will be below the flood line and within the wetland buffer. This activity will also be applicable for the road upgrades on the R104/K22 where it crosses a wetland and/or watercourses.		
R,983 December 2014	Listing Notice 1 Activity 27	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.
This activity is not applicable as the services infrastructure is seen as linear activities. However, it is unsure whether the bridge that forms part of a road (already approved for the African Renaissance Proper development) is seen as linear. Should it not be seen as linear it is not expected that more than a hectare will be cleared. Due to the fact that this is not confirmed this activity will be *included*.		
R,983 December 2014	Listing Notice 1 Activity 45	The expansion of infrastructure for the bulk transportation of water or storm water where the existing infrastructure- (i) has an internal diameter of 0,36 metres or more; or (ii) has a peak throughput of 120 litres per second or more; and (a) where the facility or infrastructure is expanded by more than 1000 metres in length; or (b) where the throughput capacity of the facility or infrastructure will be increased by 10% or more; excluding where such expansion- (aa) relates to transportation of water or storm water within a road reserve; or (bb) will occur within an urban area.
This activity can now be *excluded* as the proposed water (expansion from existing infrastructure) and storm water will be in an urban area (development has already been approved).		
R,983 December 2014	Listing Notice 1 Activity 46	The expansion and related operation of infrastructure for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes where the existing infrastructure- (i) has an internal diameter of 0,36 metres or more; or (ii) has a peak throughput of 120 litres per second or more; and

		(a) where the facility or infrastructure is expanded by more than 1000 metres in length; or (b) where the throughput capacity of the facility or infrastructure will be increased by 10% or more; excluding where such expansion- (aa) relates to transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes within a road reserve; or (bb) will occur within an urban area.
This activity can now be *excluded* as the proposed sewer infrastructure (upgrades and expansion from existing infrastructure) will be within an urban area (development has already been approved).		
R,983 December 2014	Listing Notice 1 Activity 48	The expansion of- (i) canals where the canal is expanded by 100 square metres or more in size; (ii) channels where the channel is expanded by 100 square metres or more in size; (iii) bridges where the bridge is expanded by 100 square metres or more in size; (iv) dams, where the dam, including infrastructure and water surface area, is expanded by 100 square metres or more in size; (v) weirs, where the weir, including infrastructure and water surface area, is expanded by 100 square metres or more in size; (vi) bulk storm water outlet structures where the bulk storm water outlet structure is expanded by 100 square metres or more in size; or (vii) marinas where the marina is expanded by 100 square metres or more in size; where such expansion or expansion and related operation occurs- (a) within a watercourse; (b) in front of a development setback; or (viii) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding- (aa) the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such expansion activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;

		(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such expansion occurs within an urban area; or (ee) where such expansion occurs within existing roads or road reserve
This activity is *included* as the proposed services infrastructure will be below the flood line and within the wetland buffer and it might possibly include the expansion of channels, canals, weirs and storm water outlets. This activity could also be applicable for the road upgrades on the R104/K22 where it crosses a wetland and/or watercourses.		
R,985 December 2014	Listing Notice 3 Activity 4	The development of a road wider than 4 metres with a reserve less than 13,5 metres. (c) In 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) and 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 relevant environmental authority; vii. Sites identified as high potential agricultural land in terms of Gauteng Agricultural Potential Atlas; viii. Important Bird and Biodiversity Area (IBA); ix. Sites or areas identified in terms of an International Convention; x. 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 National Environmental Management: Protected Areas Act (Act No. 57 of 2003); xi. Sites designated as nature reserves within municipal SDFs; or xii. Sites zoned for a conservation or public open space or equivalent zoning.
This activity is *excluded* as the road already forms part of the approved development (for which a RoD has previously been issued) and it is not necessary to authorise an activity for it again.		

R,985 December 2014	Listing Notice 3 Activity 12	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. (a) In Eastern Cape, Free State, Gauteng, Limpopo, North West and Western Cape provinces: 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 identified in bioregional plans; iii. Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas; or iv. 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.
This activity has been *included* as it is possible that more than 300 square meters of indigenous vegetation will be cleared with the services and bridge infrastructure.		
R,985 December 2014	Listing Notice 3 Activity 14	The development of- (i) canals exceeding 10 square metres in size; (ii) channels exceeding 10 square metres in size; (iii) bridges exceeding 10 square metres in size; (iv) dams, where the dam, including infrastructure and water surface area exceeds 10 square metres in size; (v) weirs, where the weir, including infrastructure and water surface area exceeds 10 square metres in size; (vi) bulk storm water outlet structures exceeding 10 square metres in size; (vii) marinas exceeding 10 square metres in size; (viii) jetties exceeding 10 square metres in size; (ix) slipways exceeding 10 square metres in size; (x) buildings exceeding 10 square metres in size; (xi) boardwalks exceeding 10 square metres in size; or (xii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs-

		(a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. (b) In 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) and 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 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 National Environmental Management: Protected Areas Act (Act No. 57 of 2003); ix. Sites designated as nature reserves within municipal SDFs; or x. Sites zoned for conservation or public open space or equivalent zoning.
This activity is *included* as the proposed services infrastructure will be below the flood line and within the wetland buffer. This activity will also be applicable for the road upgrades on the R104/K22 where it crosses a wetland and/or watercourses.		
R,985 December 2014	Listing Notice 3 Activity 23	The expansion of- (i) canals where the canal is expanded by 10 square metres or more in size; (ii) channels where the channel is expanded by 10 square metres or more in size; (iii) bridges where the bridge is expanded by 10 square metres or more in size; (x) buildings where the building is expanded by 10square metres or more in size;

		(xi) boardwalks where the boardwalk is expanded by 10 square metres or more in size; or (xii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; where such development occurs- (a) within a watercourse; (b) in front of a development setback adopted in the prescribed manner; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. (d) In 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) and 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; vi. Biodiversity Act (Act No. 10 of 2004); vii. Sensitive areas identified in an environmental management framework adopted by relevant environmental authority; viii. Sites or areas identified in terms of an International Convention; ix. 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 National Environmental Management: Protected Areas Act (Act No. 57 of 2003); x. Sites designated as nature reserves within municipal SDFs; xi. Sites zoned for conservation or public open space or equivalent zoning.
This activity is *included* as the proposed services infrastructure will be below the flood line and within the wetland buffer and it might possibly include the expansion of channels, canals, weirs and storm water outlets. This activity could also be applicable for the road upgrades on the R104/K22 where it crosses a wetland and/or watercourses.		

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 X	NO

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

National Water Act (Act No. 36 of 1998) - The proposed development occurs within 500m radius from the boundary of a wetland. The installation/ upgrading of services and the cycling track will actually be within the wetland buffer and below the flood line, and therefore it does not resort under the General Authorisation for Section 21 (c) and (i) water use, but requires a Section 21 Water Use License Application (WULA) for Activities (c) and (i).

DWS however indicated during a follow-up meeting that they will consider it to grant a General authorisation for the proposed R014/K22 road upgradings. DWS already issued a Section 21 WUL for some upgrading works along the R014/K22 road and originally agreed to amend the existing S21WUL issued to SANRAL for the proposed culvert extension. ***Refer to Appendix N for letter from DWS.*** SANRAL however requested that Balwin apply for their own S21WUL for the proposed culvert extension and for the works within the watercourse area.

If yes, have you applied for the authorisation(s)?	YES	**NO X** We are currently preparing the required application
If yes, have you received approval(s)? (attach in appropriate appendix)	YES	**NO X**

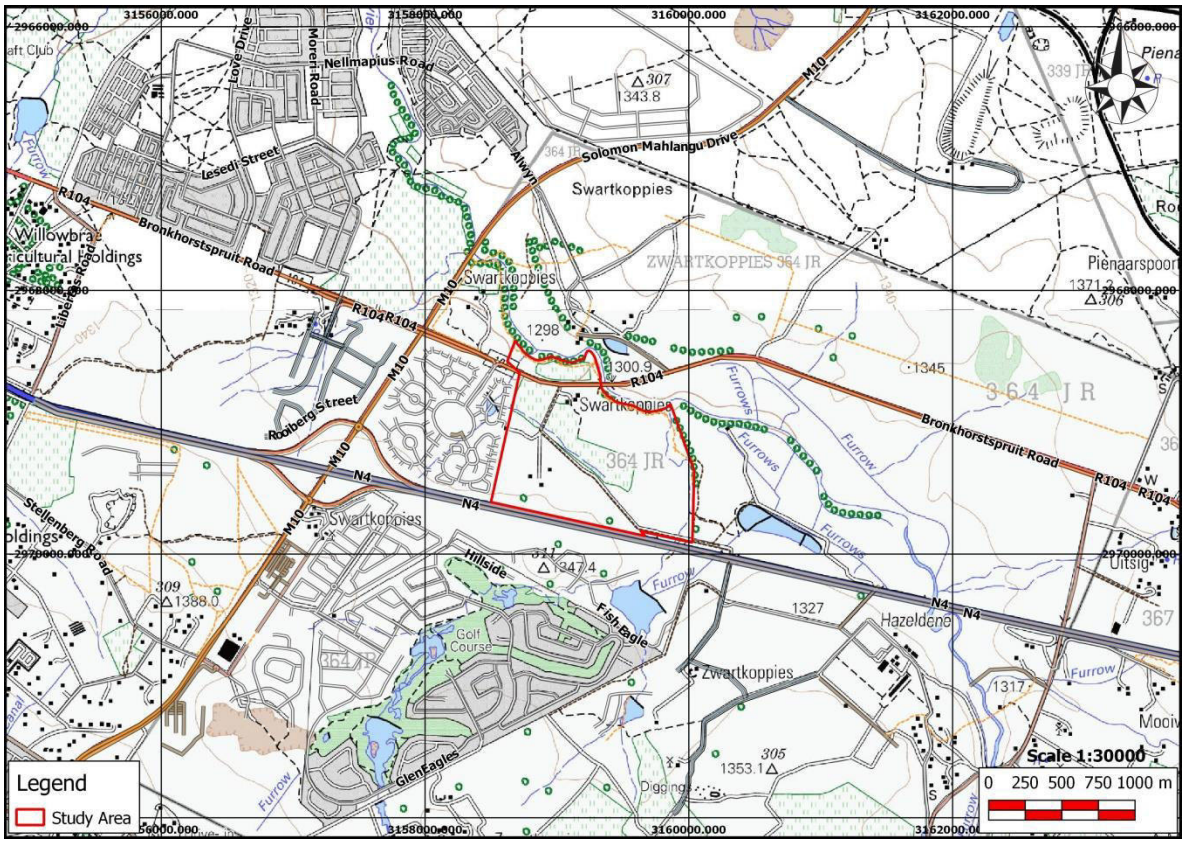


Figure 3: Locality map

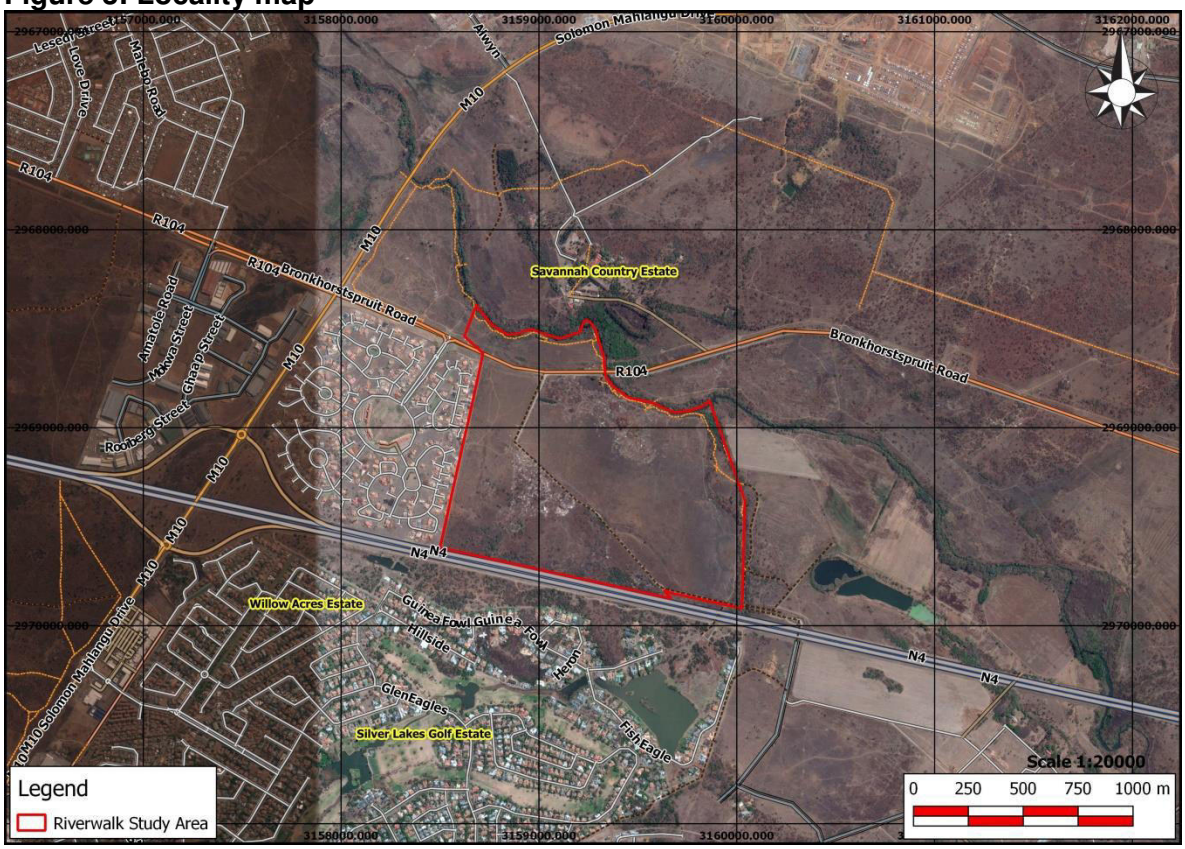


Figure 4: Aerial map

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**
The NEMA is primarily an enabling Act in that it provides for the development of environmental implementation plans and environmental management plans. The principles listed in the act serve as a general framework within which environmental management and implementation plans must be formulated. The Minister of Environmental Affairs and Tourism passed (in April 2006) Environmental Impact Assessment Regulations[1] (the Regulations) in terms of Chapter 5 of the National Environmental Management Act, 1998[2] (NEMA). The new Regulations came into effect on 3 July 2006. The Minister of Environmental Affairs passed (in June 2010) the Amended Environmental Impact Assessment Regulations in terms of Chapter 5 of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA). The Regulations were amended once again in 2014. The Amended Regulations came into effect on 8 December 2014, and therefore all new applications must be made in terms of the Amended NEMA regulations and not in terms of the 2010 NEMA Regulations. The purpose of this process is to determine the possible negative and positive impacts of the proposed development on the surrounding environment and to provide measures for the mitigation of negative impacts and to maximize positive impacts. Notice **No. R 983, R 984 and R 985** of the Amended Regulations list the activities that indicate the process to be followed. The activities listed in Notice No. R 983 requires that a Basic Assessment process be followed and the Activities listed in terms of Notice No. R 984 requires that the Scoping and EIA process be followed. Notice No. 985 has been introduced to make provision for Activities in certain geographical and sensitive areas.		
National Water Act (Act No. 36 of 1998)	**National & Provincial**	**20 August 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 take into account, amongst other factors, the following: ❑ Meeting the basic human needs of present and future generations; ❑ Promoting equitable access to water; ❑ Promoting the efficient, sustainable and beneficial use of water in the public interest; ❑ Reducing and preventing pollution and degradation of water resources;		

- Facilitating social and economic development; and
- Providing for the growing demand for water use.

Figure 5: Wetland

In terms of the section 21 of the National Water Act, the developer must obtain water use licences if the following activities are taking place:

a) Taking water from a water resource;
b) Storing water;
c) Impeding or diverting the flow of water in a water course;
d) Engaging in a stream flow reduction activity contemplated in section 36;
e) Engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);
f) Discharging waste or water containing waste into a water resource through a pipeline, canal, sewer, sea outfall or another conduit;
g) Disposing of waste in a manner which may detrimentally impact on a water resource;
h) Disposing in any manner which contains waste from or which has been heated in any industrial or power generation process;

i) Altering the bed, banks, course or disposing of water found underground if it is necessary for the safety of people;
j) Removing, discharging, or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and
k) Using water for recreational purposes.

The National Water Act also requires that (where applicable) the 1:50 and 1:100-year flood line be indicated on all the development drawings (even the drawings for the external services) that are submitted for approval.

Conservation of Agricultural Resources Act (Act No. 43 of 1983)	**National**	**1 June 1983**

This act provides for control over the utilization of natural agricultural resources of South Africa in order to promote the conservation of soil, water sources and the vegetation as well as the combating of weeds and invader plants; and for matters connecting therewith.

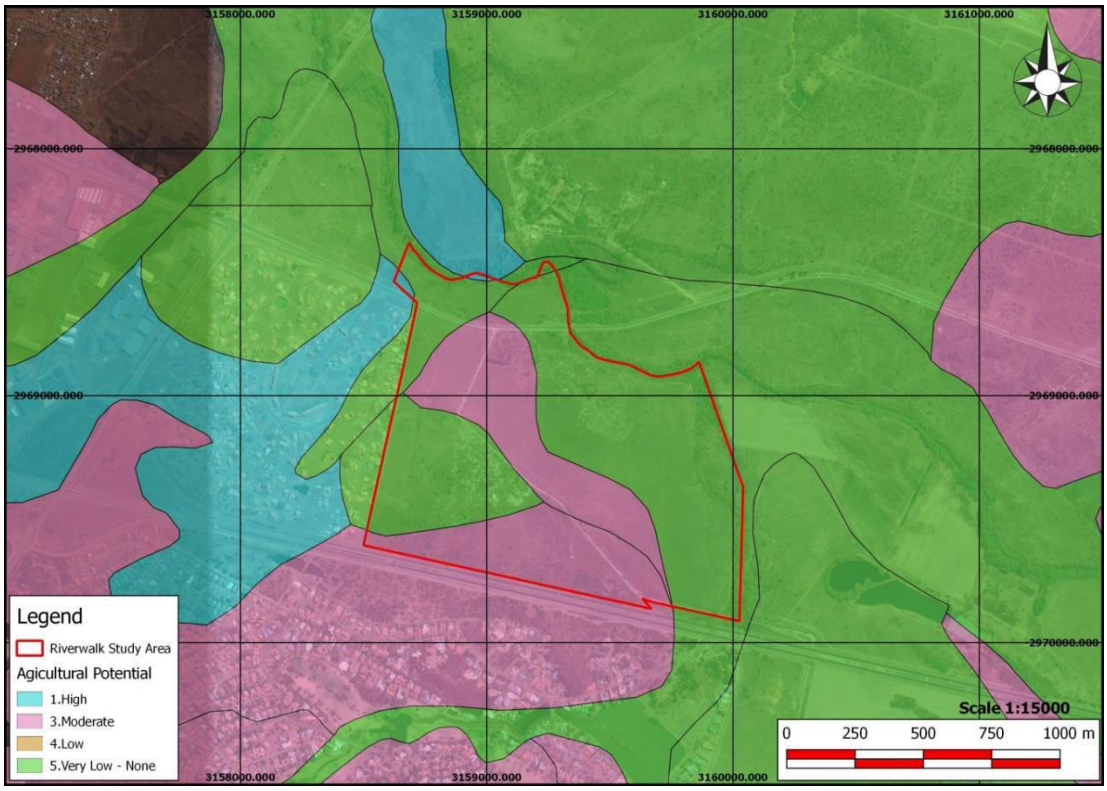


Figure 6: Agricultural potential

National Heritage Resources Act (Act No. 25 of 1999)	**National & Provincial**	**1999**

The National Heritage Resources Act legislates the necessity and heritage impact assessment in areas earmarked for development, which exceed 0.5ha and linear development exceeding 300m in length. The Act makes provision for the potential destruction to existing sites, pending the archaeologist's recommendations through permitting procedures. Permits are administered by the South African Heritage Resources Agency (SAHRA).

National Environmental Management: Waste Act	**National**	**11 June**

(Act No. 59 of 2009)		**2010**
This Act came into effect on 11 June 2009. It aims to consolidate waste management in South Africa, and contains a number of commendable provisions, including: • The establishment of a national waste management strategy, and national and provincial norms and standards, for amongst other, the classification of waste, waste service delivery, and tariffs for such waste services; • Addressing reduction, reuse, recycling and recovery of waste; • The requirements for industry and local government to prepare integrated waste management plans; • The establishment of control over contaminated land; • Identifying waste management activities that requires a license, which currently include facilities for the storage, transfer, recycling, recovery, treatment and disposal of waste on land; • Co-operative governance in issuing licenses for waste management facilities, by means of which a licensing authority can issue an integrated or consolidated license jointly with other organs of state that has legislative control over the activity; and • The establishment of a national waste information system. On the 29th of November 2013 the Minister of Environmental Affairs and Tourism amended the list of waste management activities that might have a detrimental effect on the environment. These listed activities are promulgated under Government Notice 921 (of 29 November 2013) of the National Environmental Management Waste Act (Act No. 59 of 2008).		
National Environmental Management Protected Areas Act (Act No. 57 of 2003)	**National**	**2003**
The purpose of this Act is to provide for the protection, conservation, and management of ecologically viable areas representative of South Africa's biological biodiversity and its natural landscapes.		

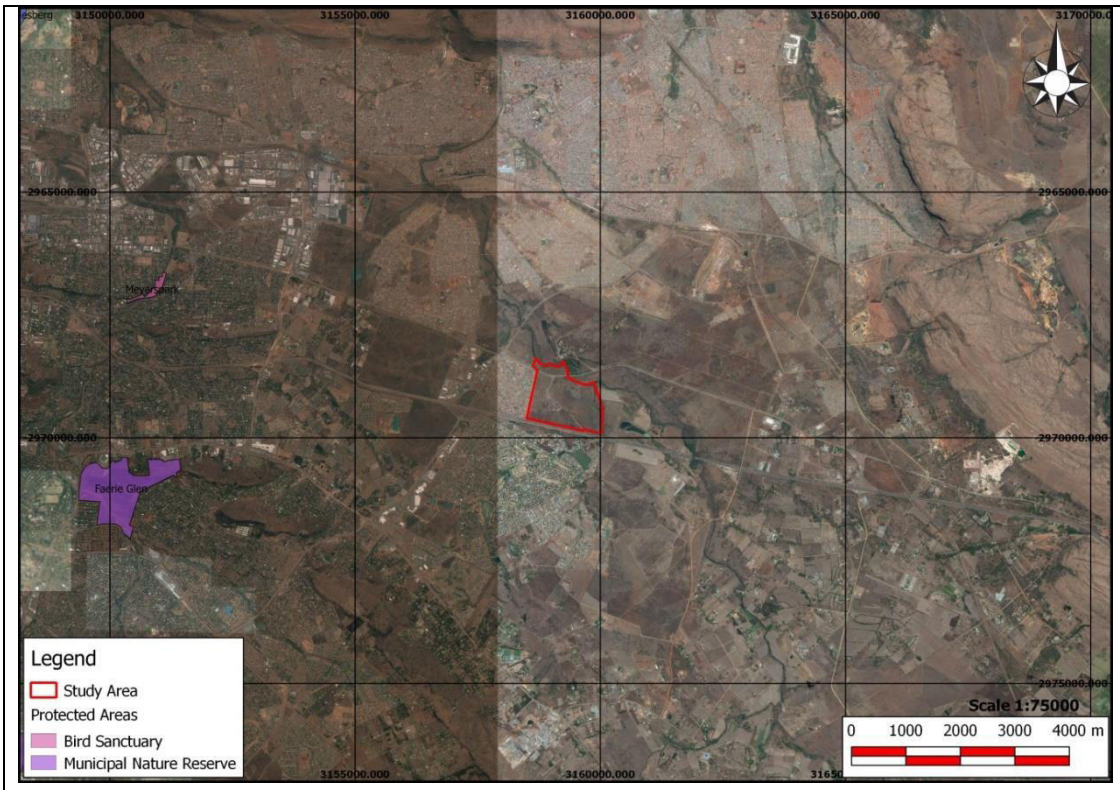


Figure 7: Protected Areas

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

The Biodiversity Act provides for the management and protection of the country's biodiversity within the framework established by NEMA. It provides for the protection of species and ecosystems in need of protection, sustainable use of indigenous biological resources, equity, and bio prospecting, and the establishment of a regulatory body on biodiversity- South African National Biodiversity Institute.

Objectives of the Act:

(a) With 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
(iii) The fair and equitable sharing among stakeholders of benefits arising from bio-prospecting involving indigenous biological resources;

(b) To give effect to ratified international agreements relating to biodiversity which are binding on the republic;

(c) To provide for co-operative governance in biodiversity management and conservation; and

(d) To provide for a South African National Biodiversity Institute to assist in achieving the objectives of this Act.

Under this Act notices are published in terms of alien and invasive species or

threatened ecosystems in order to promote the biodiversity of natural resources and protect species endemic to South Africa.

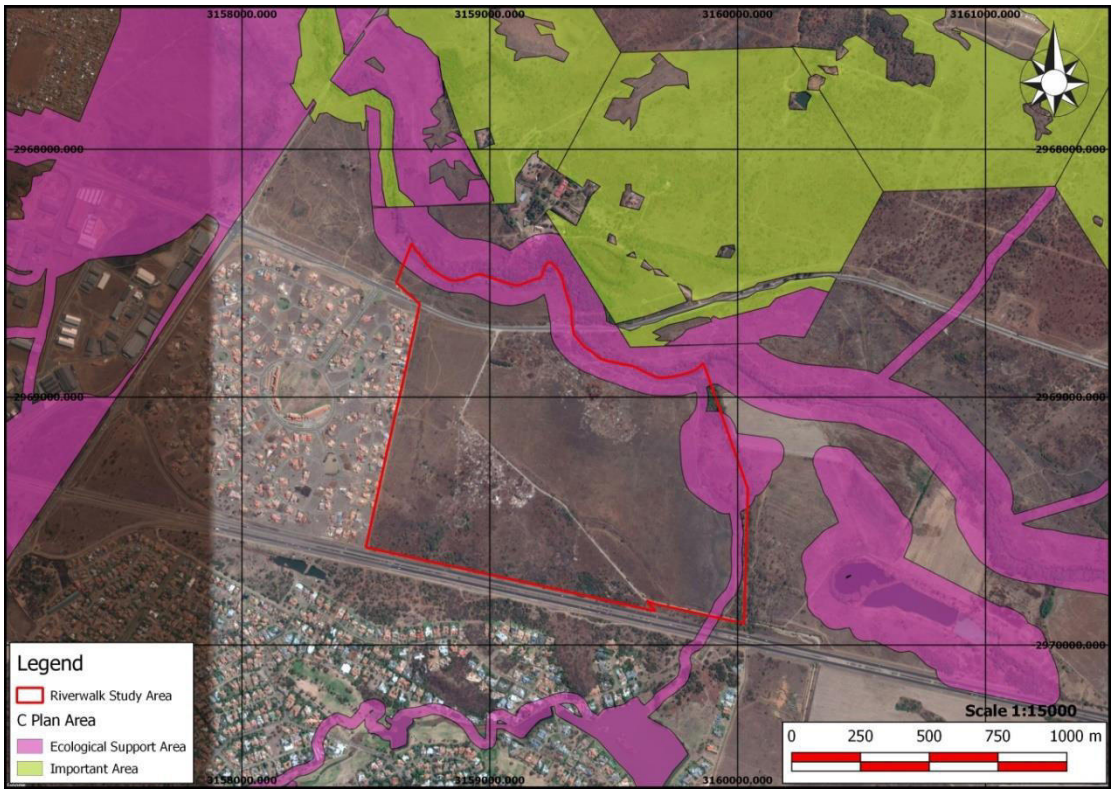


Figure 8: Conservation Areas

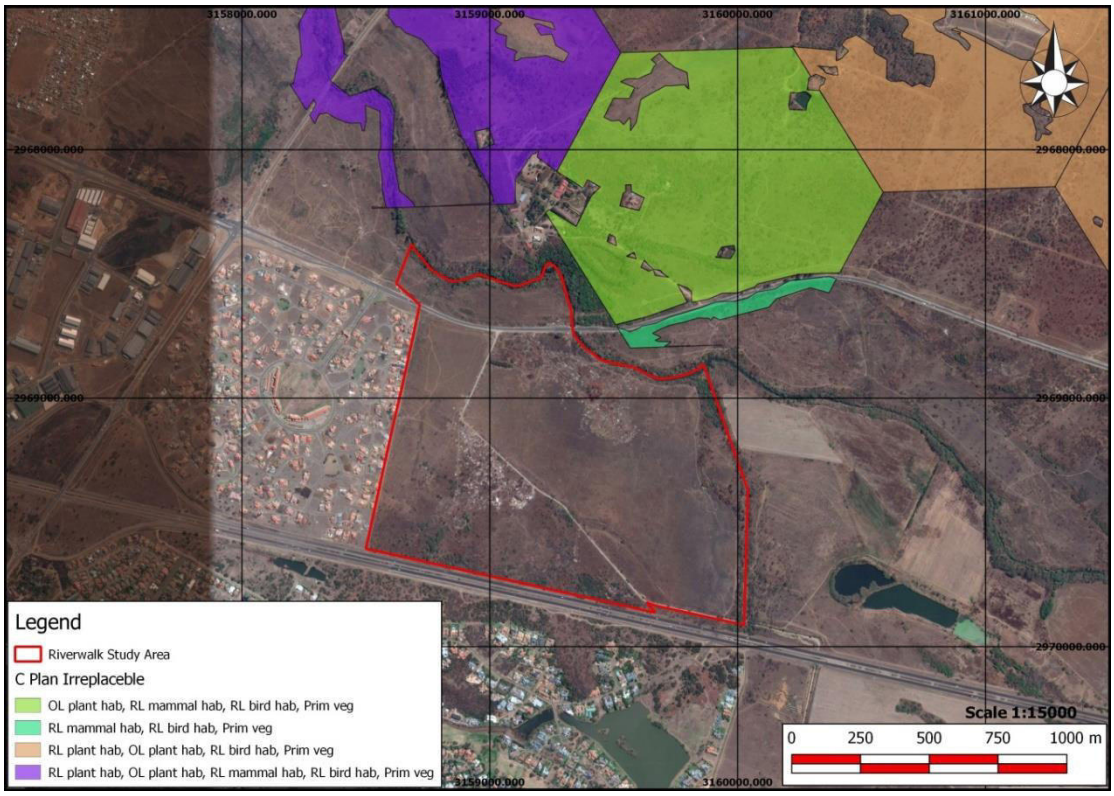


Figure 9: Irreplaceable Areas

National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004)	**National &**	**2004**

	Provincial	

The NEMA: AQA serves to repeal the Atmospheric Pollution Prevention Act (45 of 1965) and various other laws dealing with air pollution and it provides a more comprehensive framework within which the critical question of air quality can be addressed.

The purpose of the Act is to set norms and standards that relate to:

- Institutional frameworks, roles and responsibilities
- Air quality management planning
- Air quality monitoring and information management
- Air quality management measures
- General compliance and enforcement.

Amongst other things, it is intended that the setting of norms and standards will achieve the following:

- The protection, restoration and enhancement of air quality in South Africa.
- Increased public participation in the protection of air quality and improved public access to relevant and meaningful information about air quality.
- The reduction of risks to human health and the prevention of the degradation of air quality.

The Act describes various regulatory tools that should be developed to ensure the implementation and enforcement of air quality management plans. These include:

- Priority Areas, which are air pollution 'hot spots'.
- Listed Activities, which are 'problem' processes that require an Atmospheric Emission Licence.
- Controlled Emitters, which includes the setting of emission standards for 'classes' of emitters, such as motor vehicles, incinerators, etc.
- Control of Noise.
- Control of Odours.

Gauteng Transport Infrastructure Act	**Provincial**	**2001**

The act was created to consolidate the laws relating to roads and other types of transport infrastructure in Gauteng; and to provide for the planning, design, development, construction, financing, management, control, maintenance, protection and rehabilitation of provincial roads, railway lines and other transport infrastructure in Gauteng; and to provide for matters connected therewith.

In terms of Section 46 of the Act, no person may erect, construct, or lay, or establish a structure or object on or over, or below the surface of a provincial road or railway line or land in a building restriction area.

This Act was then amended in 2003, the Gauteng Transport Infrastructure Amendment Act. The aim of this Amendment Act is to amend the Gauteng Transport Infrastructure Act, 2001 so as to amend and insert certain definitions;

to provide for the necessary land use rights with respect to stations and for the necessary powers of the MEC to enter into contracts for road and rail projects; to amend the procedure in relation to route determination; to make a second environmental investigation at the stage of preliminary design of a road or railway line unnecessary where the competent environmental authority decides that the environmental investigation at the stage of route determination is adequate; and to provide for incidental matters.

Occupational Health & Safety Act, 85 of 1993	**National & Provincial**	**1993**
The Act was created 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 or 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 therewith.		

GDARD Draft Ridges Policy	**Provincial**	**2001**
This policy is provided for the protection, conservation, and maintenance of ridges within the Gauteng Province.		

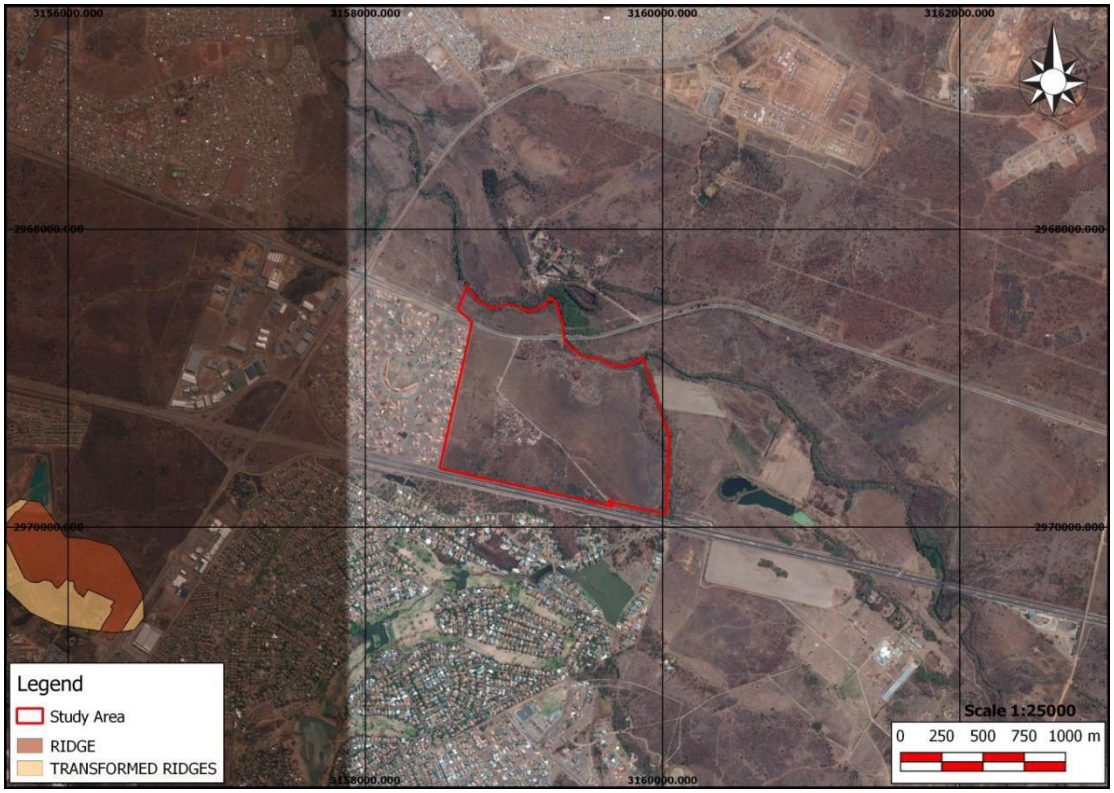


Figure 10: Ridges

Gauteng Conservation Plan (C-Plan) Version 3.3	**Provincial**	**March 2014**
Gauteng Nature Conservation (hereafter Conservation), a component of the Gauteng Department of Agriculture and Rural Development (GDARD) produced the Gauteng Conservation Plan Version 3 (C-Plan 3) in December 2010. The conservation plan was edited on three occasions since then: C-Plan		

3.1 was released in July 2011 after it became apparent that some areas were not desirable in Critical Biodiversity Areas (CBAs hereafter). Not all areas were addressed in the first round of editing, so this was done during September 2011 resulting in C-Plan Version 3.2. It was soon released however, that some CBAs became separated by the removal of undesirable areas causing some attributes not to be completely reflective of that CBAs any longer. C-Plan 3.3 became available in October 2011 after this issue was addressed.

The main purposes of C-Plan 3.3 are:

- to serve as the primary decision support tool for the biodiversity component of the Environmental Impact Assessment (EIA) process;
- to inform protected area expansion and biodiversity stewardship programs in the province;
- To serve as a basis for development of Bioregional Plans in municipalities within the province.

Please refer to Figure 7 and 8.

GDARD Agricultural Hub Policy	**Provincial**	**2006**
GDARD identified 7 Agricultural Hubs in Gauteng Province. These hubs are earmarked for agricultural activities and there are policies and guidelines that should be taken into consideration when one plans to develop in these hubs areas. Urban development is usually not supported in these hubs.		

Gauteng Guidelines on Red List Plant Species	**Provincial**	**2001 (amended in 2006)**
The main purpose of the draft Red Data Policy is to protect red data fauna and flora species in Gauteng Province. This policy requires that red data species are conserved.		

Gauteng Noise Control Regulations	**Provincial**	**1999**
The regulation controls noise pollution. According to the acceptable noise levels in a residential area situated within an urban area is 55dBA and the maximum acceptable noise levels in a rural area is 45dBA.		

Gauteng Urban Edge	**Provincial**	**2011**
According to the Gauteng Department of Economic Development the urban edge is now delineated on a yearly basis and it is the responsibility of the local authorities to request for a yearly amendment to the urban edge. The aim of the Urban Edge Policy is to curb unbridled urban growth.		

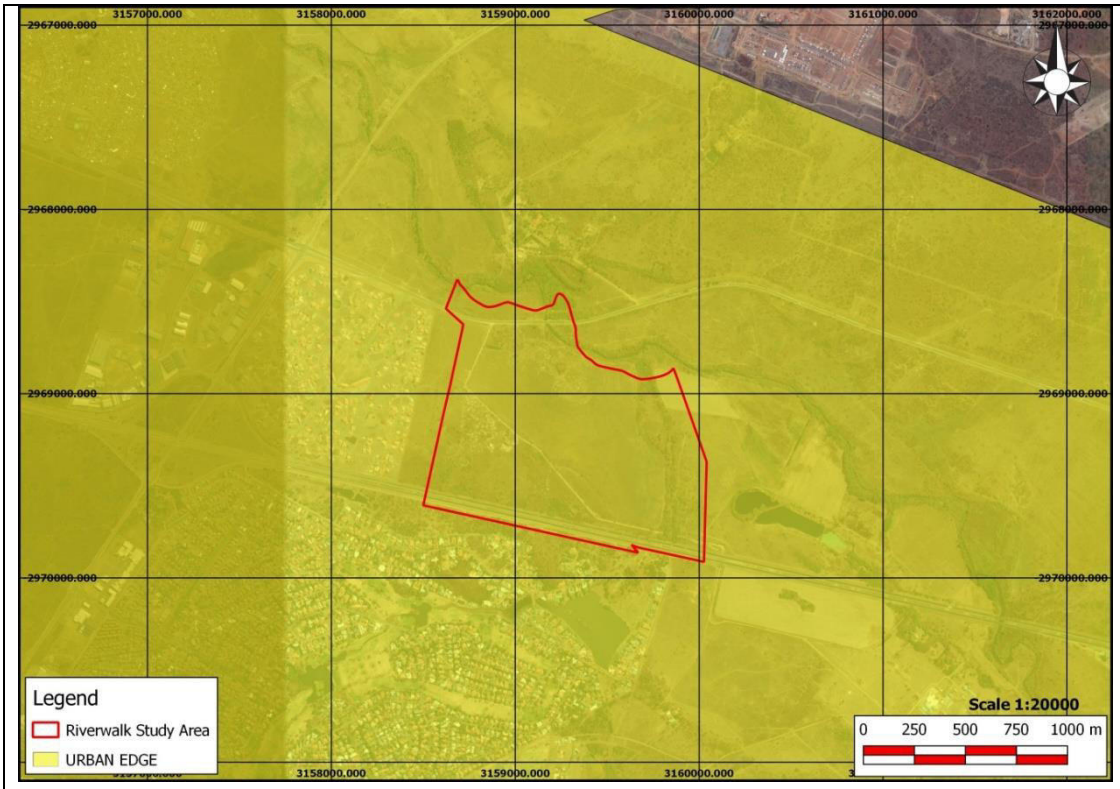


Figure 11: Gauteng Urban Edge

Gauteng Provincial Environmental Management Framework	**Provincial**	**2014**

The Gauteng Department of Agriculture and Rural Development (GDARD) decided to produce an Environmental Management Framework for the whole of Gauteng (GPEMF). The GPEMF replaces all other EMFs in Gauteng with the exception of the Cradle of Humankind World Heritage Site which is incorporated within the GPEMF.

The objective of the GPEMF to guide sustainable land use management within the Gauteng Province. The GPEMF, inter alia, serve the following purposes:

To provide a strategic and overall framework for environmental management in Gauteng;

Align sustainable development initiatives with the environmental resources, developmental pressures, as well as the growth imperatives of Gauteng;

Determine geographical areas where certain activities can be excluded from an EIA process; and

Identify appropriate, inappropriate and conditionally compatible activities in various Environmental Management Zones in a manner that promotes proactive decision-making.

The Province has been divided into 5 management zones of which Zone 1: Urban Development Zone and Zone 5: Industrial and Large Commercial focus zone, proposes the exclusion of certain NEMA listed activities in order to streamline development.

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

Legislation, policy of guideline	Description of compliance

National Environmental Management Act No. 107 of 1998 (as amended)	The application for the proposed development consists of activities listed under Notice R. 983 and R. 985 (Listing No. 1 and 3) and therefore a Basic Assessment Report will be submitted to GDARD for consideration of environmental authorisation.
National Water Act (Act No. 36 of 1998)	The proposed development of services and associated infrastructure occurs **within 500m radius from the boundary of a wetland** as the Pienaars River runs along a section of the site boundary, and therefore requires a Section 21 Water Use License Application for Activities (c) and (i). There will also be a bridge crossing a stream at the south-eastern corner of the site. Refer to Figure 5. DWS indicated that they will consider it to issue a GA for the proposed R104/K22 road upgradings. DWS already issued a S21WUL to SANRAL for certain upgradings associated with the R104/K22 upgradings. ***Refer to Appendix O for copy of S21WUL already issued by DWS for work along the R104/K22***
Conservation of Agricultural Resources Act (Act No. 43 of 1983)	The proposed development site does not fall in an Agricultural Hub of Gauteng and does not fall within an area with high agricultural potential. According to GAPA 3, the site has very low to moderate agricultural potential. No Agricultural Potential Study was therefore conducted. Refer to Figure 6.
National Resources Act (Act No. 25 of 1999)	Due to the site already receiving an Authorisation and construction already commenced on the site, it is not deemed necessary for a Heritage Impact Assessment to be done. However, in order to eliminate any queries in this regard, a specialist was sent out to the site to conduct an assessment. Nothing of historical or cultural importance was found on the site.
National Environmental Management : Waste Act (Act 59 of 2009)	No listed waste activities will take place on site and therefore a waste license will not be required. Construction and operational general waste will have to be removed to a registered landfill site.
National Environmental Management Protected Areas Act (Act No. 57 of 2003)	The proposed development site does not form part of a protected area or occur near a protected area. Refer to Figure 7.
National Environmental Management : Biodiversity Act (Act 10 of 2004)	Only one Orange List plant species was recorded during the survey. The Orange List species *Hypoxis hemerocallidae* was recorded in *Combretum erythrophyllum – Searsia lancea* riverine vegetation, *Heteropogon contortis – Hypoxis haemerocallidae* primary grassland, *Vachellia karroo – Hypericum aethiopicum* open woodland and *Searsia lancea – Commelina africana* rocky woodland vegetation communities. It was concluded by the specialist that a dumping site has been established on the study area. This area is highly disturbed and the ecological integrity of

	this area is considered to be low. The dumping site forms the upper part of the proposed corridor.
National Environmental Management : Air Quality Act, 2004 (Act 39 of 2004)	During the construction phase of the proposed development, generation of dust could become a factor to road users travelling on the N4 highway. During the operational phase, fumes from hydrocarbons could be of concern to clients if fuel is not managed correctly. However, if the development is well planned and the mitigating measures are successfully implemented the proposed development's contribution to air and noise pollution can become insignificant.
Gauteng Transport Infrastructure Amendment Act	The proposed development site runs along the R104/K22 and the N4 highway which is both SANRAL roads. Roads regulated by GDRT are not directly affected by the development.
Occupational Health & Safety Act, 85 of 1993	Considering the proposed development will occur within an urban environment next to a national road, the Act not only applies to the persons who will be responsible for construction, but also to the safety of members of the public.
GDARD Draft Ridges Policy	No ridges occur on, or in the direct vicinity of the study site. The development site has a level topography. Please refer to Figure 10.
Gauteng Conservation Plan (C-Plan) Version 3.3	The proposed development has an Ecological Support area classified on the boundary of the study area in terms of the Gauteng Conservation Plan. Some Important areas are situated further to the north of the study area.
GDARD Agricultural Hub Policy	The application site does not fall within any of the Gauteng Agricultural Hubs and available GAPA data regarding Agricultural Potential within the Gauteng Province indicate that the study area has very low to moderate Agricultural Potential.
Gauteng Guidelines on Red List Plant Species	Only one Orange List plant species was recorded during the survey. The Orange List species *Hypoxis hemerocallidae* was recorded in four vegetation communities. This species will be accommodated in the open space areas on the site.
Gauteng Noise Control Regulations	If well planned and if mitigation measures are successfully implemented, the proposed development will not contribute to significant noise generation in the area. The noise impacts will mainly be during the construction phase and is therefore only short term.
Gauteng Urban Edge	The proposed development site falls within the Gauteng Urban Edge. The proposed development is regarded as being in line with the Urban Edge Policy. Refer to Figure 11.
Gauteng Provincial Environmental Management Framework	The proposed external services and upgradings occur within Zone 1 of the GPEMF i.e. identified as urban development zone i.e. ideal for the development that has been authorised on the study area. External services and upgradings associated with this development will therefore be in line. The Pienaars River on the boundary of the study area is regarded as Zone 2 which is High Control Zone within the urban development zone.

GDARD confirmed during he meeting of 10 October 2016 that the Riverwalk study area falls within Zone 1, the urban development zone.

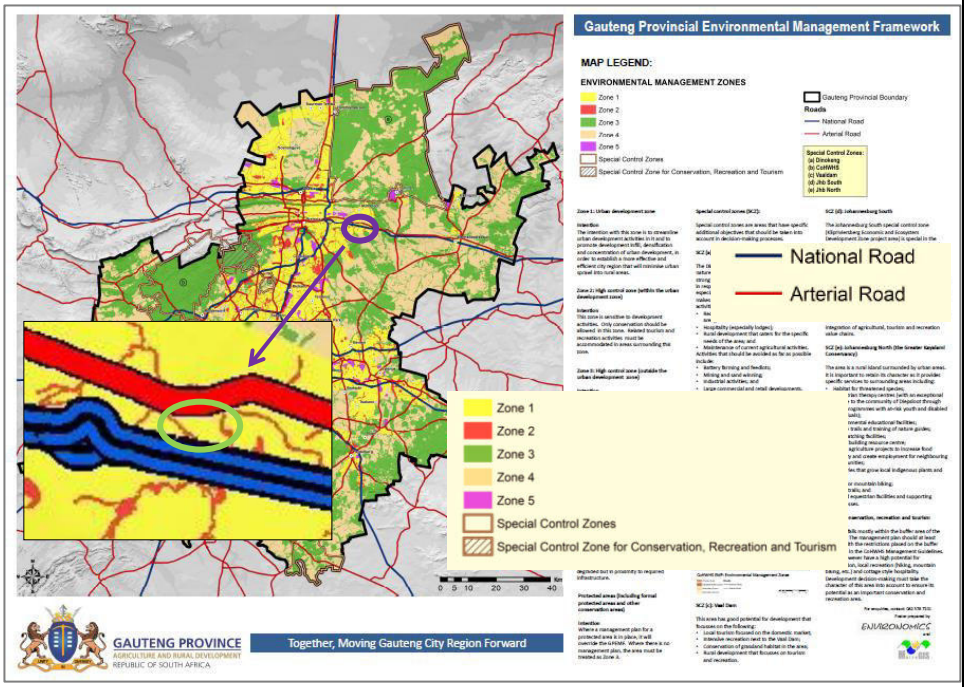


Figure 12: Gauteng EMF

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

Route Alternative

As the study area already has an approved layout the best route for the various services and cycling track was determined based on the layout and the alignments of service that are already installed.

According to the appointed civil engineers there are already existing bulk services installed along the river and the proposed services upgradings will mainly take place in the services servitudes. Services alignment alternatives will make no sense from a financial and pollution point of view. It will also require the proclamation of new services servitudes.

The former EA approved the construction of a high impact golf course across the entire watercourse and watercourse buffer area. The new application is

for a low impact cycling track and for some rehabilitation works along the river.

The proposed R104/K22 road upgradings will occur on the R104/K22 and immediately adjacent to the R104/K22 within the road reserve for the R104/K22 and therefore there are no alignment alternatives considered for the R104/K22 upgradings.

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	Refer to Figures 13, 14, 15, 16 and 17 for the layouts of the external services, road upgrades and the bridge. A layout plan of the development (already authorised) which indicates the cycling track along the river in the open space area, has been attached to Appendix G5.
2	Alternative 1	
3	Alternative 2	
	Etc.	

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

The study area is already approved for a development and the proposed installation and upgrading of external services will be directly associated with the approved development. The best route for the various services was determined based on the layout and the existing services servitudes and road reserves.

Please refer to the attached letter that was sent by the engineer addressing the comments from GDARD on the alternatives – **Appendix L**.

Figure 13: Proposed Water Layout

Figure 14: Proposed Storm Water Layout

Figure 15: Proposed Sewer Layout

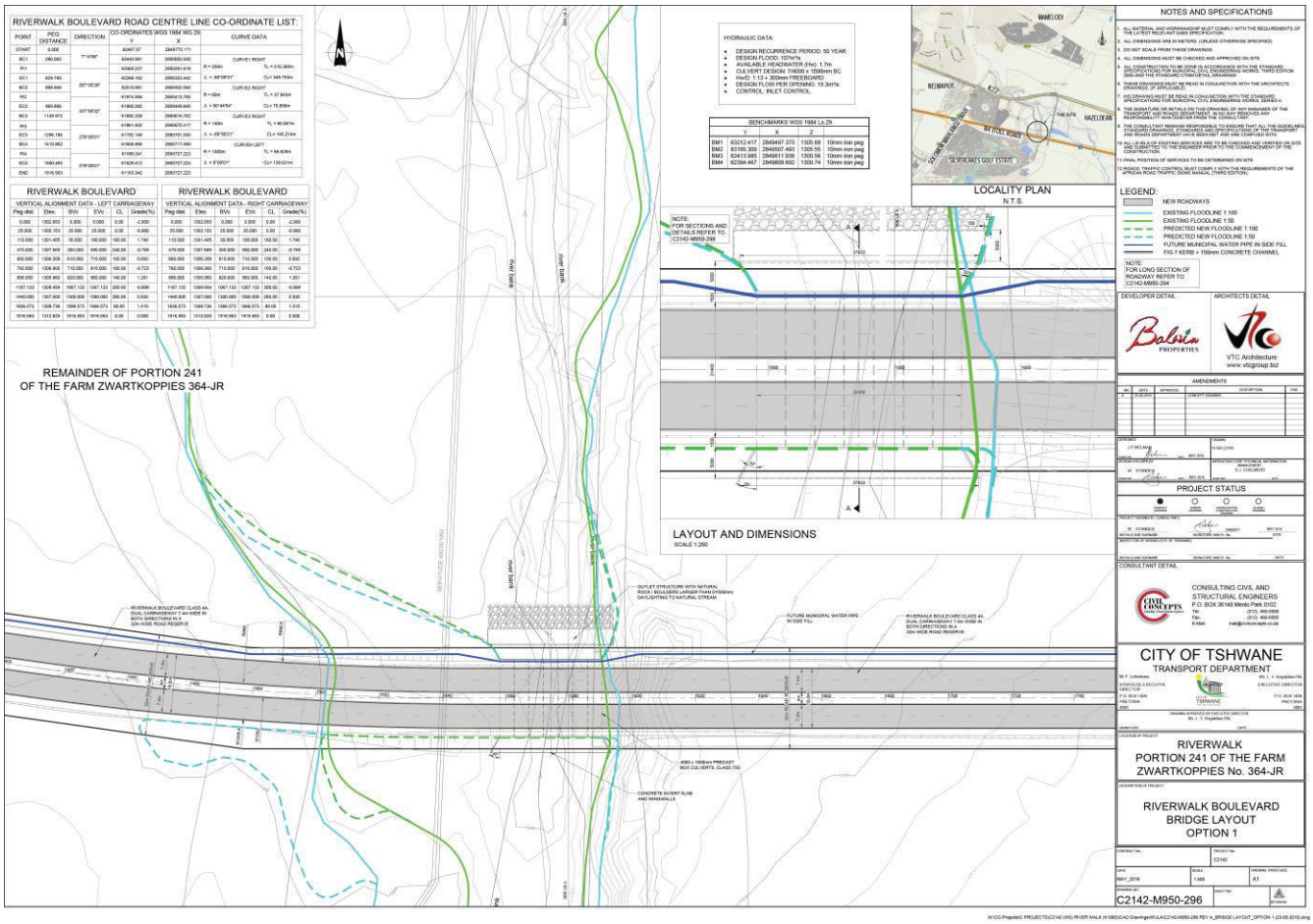


Figure 16a: Proposed Bridge Option 1

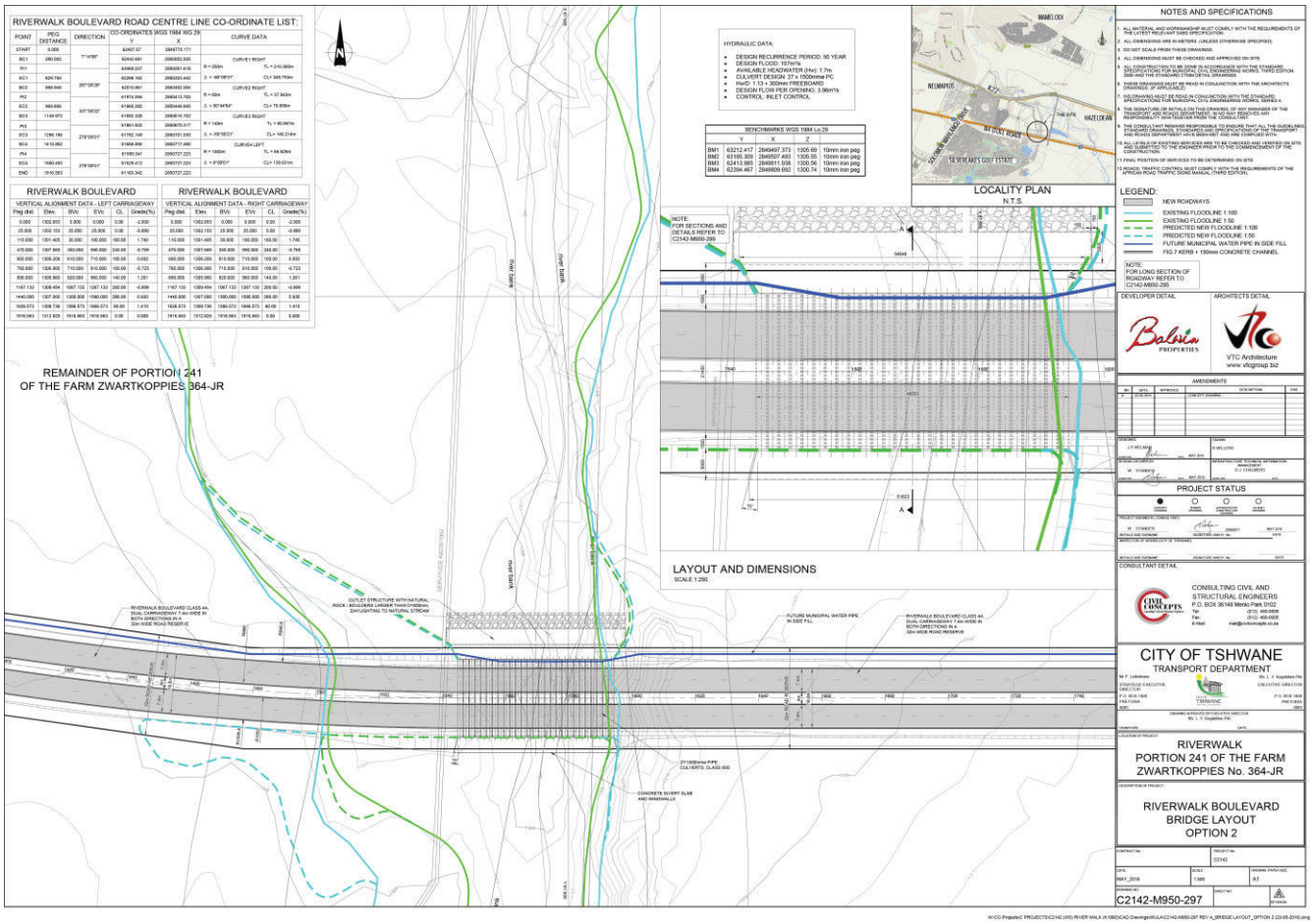


Figure 16b: Proposed Bridge Option 2

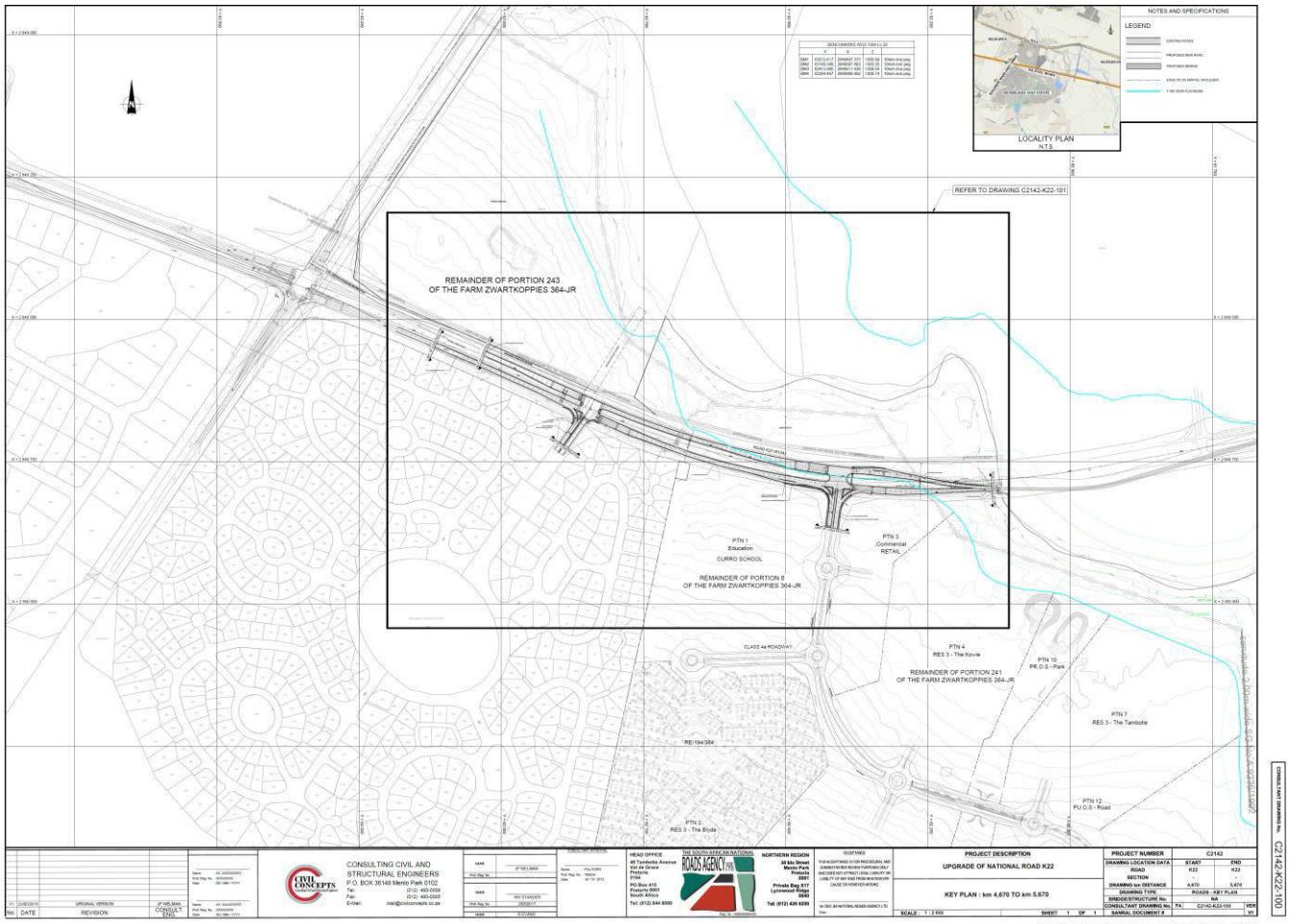


Figure 17: R104/K22 Road Upgrades

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:

Proposed activity ***(Total environmental (landscaping, parking, etc.) and the building footprint)***

Alternatives:
Alternative 1 (if any)
Alternative 2 (if any)

Size of the activity:

The area to be disturbed/ transformed will be less than 20 ha

Ha/ m^2

or, for linear activities:

Proposed activity

Length of the activity:

- Cycling track (within wetland buffer) ±3km
- Sewer line (within the wetland buffer) ±1.5km
- Storm water and water line (within the wetland buffer) will be small sections (less than 100m sections)
- Bridge (only at the crossing on the development site)

	• R104/K22 upgrades will not exceed 1.00 km
Alternatives:	
Alternative 1 (if any)	
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	±20 ha
Alternatives:	
Alternative 1 (if any)	
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
X	

If NO, what is the distance over which a new access road will be built: m

Describe the type of access road planned:

Access to the approved development is via the R104/K22 and internal roads also form part of the layout. Therefore, there will be access to the services infrastructure within the approved development.

Also note that the R104/K22 will be upgraded along the access to Savannah Country Estate and the Riverwalk Development. Please refer to Figures 2 and 17 for the upgrades to the R104/K22.

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 **0** 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, stormwater 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.

Refer Appendix A

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.

Refer Appendix B

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.

Refer Appendix C

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 **0** 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 ☐ (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.)	The site is situated to the north of the N4 highway and along the Bronkhorstspruit Road (R104/K22), 800m east of the R104 and M10 intersection. The entire services pipelines and associated infrastructure will take place on the Remainder of Portion 6 of the Farm Zwartkoppies No 364-JR, Portion 241, 138, 34, 33 and 19 of the Farm Zwartkoppies No 364-JR and the R104/K22 road reserve. However, this application is only for the services infrastructure, upgradings, cycling track and bridge infrastructure within the wetland buffer and below the flood line. Therefore, the activities applied for will take place on: **Remainder of Portion 6, Portion 241 and 138 of the Farm Zwartkoppies No 364-JR and the R104/K22 road reserve.**

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):**
	-25.757848º	**28.385373º**

In the case of linear activities:
Alternative:

- Starting point of the activity
- Middle point of the activity
- End point of the activity

Latitude (S):	**Longitude (E):**
º	º
º	º
º	º

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 ☐

The 21-digit Surveyor General code of each cadastral land parcel

PROPOSAL	**T**	**0**	**J**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**6**	**4**	**0**	**0**	**0**	**6**
	T	**0**	**J**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**6**	**4**	**0**	**0**	**2**	**4**	**1**
	T	**0**	**J**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**6**	**4**	**0**	**0**	**1**	**3**	**8**
ALT. 1																					
ALT. 2																					
etc.																					

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Flat X	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 X**	Undulating plain/low hills	River front

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

(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).

No dolomitic soils are present on the site. Please refer to Figure 18 below.

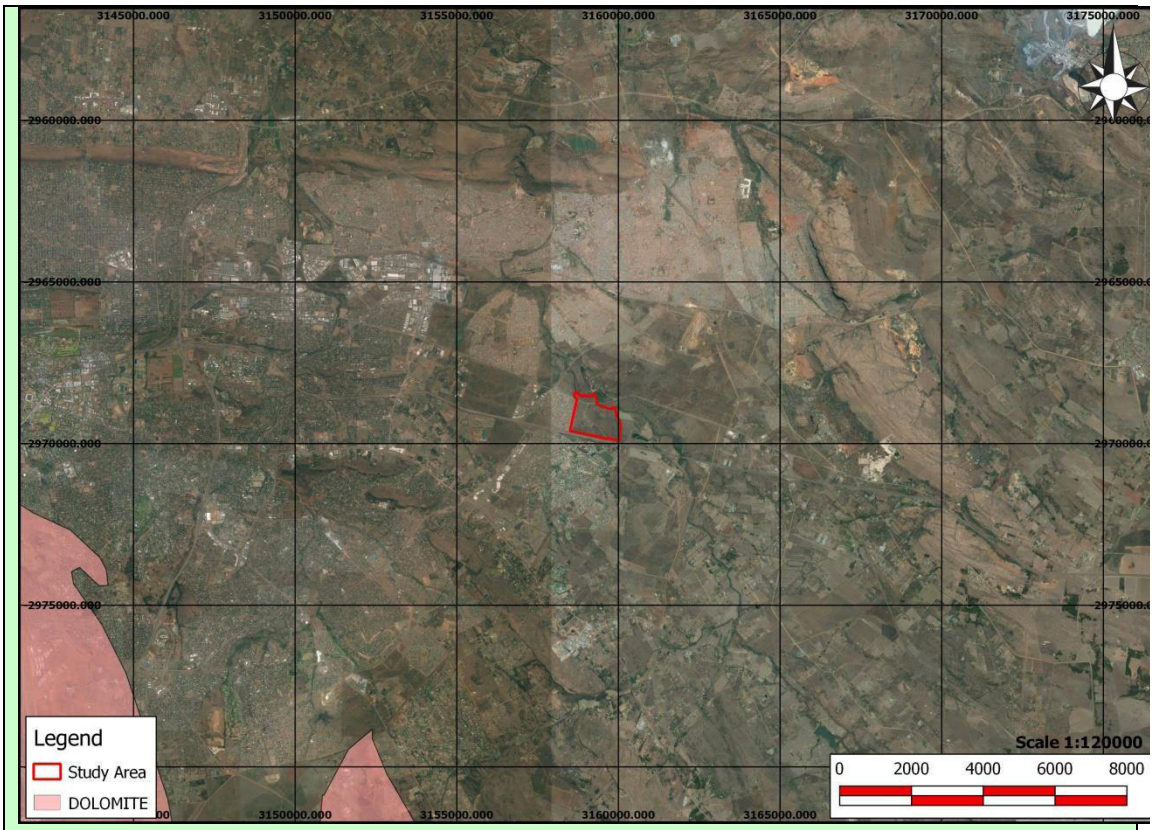


Figure 18: Dolomite

b) are any caves located on the site(s)

YES	NO
	X

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
	X

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
	X

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
	X

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 % = 14	**Natural veld with scattered aliens % = 80**	**Natural veld with heavy alien infestation % = 5**	Veld dominated by alien species % =	Landscaped (vegetation) % =
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % =	**Building or other structure % = 1**	Bare soil % =

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 X**

If YES, specify and explain:

Only one Orange List plant species was recorded during the survey. This species will be relocated into undisturbed areas should it be within the alignment of services or associated upgradings. This has been addressed in the EMPr.

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 X**

If YES, specify and explain:

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

If YES, specify and explain:

During the site visit the specialist concluded that there are only one vegetation unit within the study area for the activities under the flood line and within the wetland buffer and that is the *Combretum erythrophyllum – Searsia lancea* riverine vegetation.

This site is along the Pienaarsrivier and a tributary stream along the eastern border which is generally supported by indigenous riverine vegetation. Common tree species recorded include *Combretum erythrophyllum*, *Celtis africana*, *Searsia lancea, Buddleja salviifolia* and the shrub *Asparagus suaveolens*. Common herbaceous and grass species include *Aloe zebrine, Panicum maximum,* and *Hyparrhenia tamba.* The eastern end of the tributary is dominated by alien species such as *Eucalyptus camaldulensis*, *Melia azedarach* and *Sorghum bicolor*. The Orange List species *Hypoxis hemerocallidea* was recorded for this site. This site is considered ecologically sensitive.

The proposed activities within the watercourse should not have a significant negative effect on the watercourse and its associated ecological processes if the above-mentioned recommendations and mitigation measures are implemented. It is recommended that the *Combretum erythrophyllum – Searsia lancea* riverine vegetation study unit be demarcated and excluded from construction for the proposed residential development. However, the mentioned services and the proposed cycling track within the demarcated area may be allowed. The activities triggered within the watercourse should ensure minimum impact on the environment and should be carefully monitored by an appointed Environmental Control Officer. Removal of vegetation in the watercourse due to services and proposed cycling track should be kept to a minimum. Planning of services and proposed cycling track should try to exclude areas where *Hypoxis hemerocallidea* occur. If not possible to do so, a relocation plan for this species should be implemented.

The following recommendations have been made by the specialist:

- Before construction is initiated, the watercourse area should be fenced-off from the proposed residential development, and all construction-related impacts must be contained within the fenced-off development areas;
- However, services (such as storm water management and sewer treatment) as well as a proposed off-road cycling track may be authorised in the demarcated area. The activities triggered within the watercourse should ensure minimum impact on the environment and should be carefully monitored by an appointed Environmental Control Officer. Removal of vegetation in the watercourse due to the mentioned services and proposed off-road cycling track should be kept to a minimum;
- A pre- and post-construction alien invasive control, monitoring and eradication programme must be implemented along with an on-going programme to ensure persistence of indigenous species. A qualified botanist/ecologist should compile and supervise the implementation of this programme;
- Rehabilitation of natural vegetation should proceed in accordance with a rehabilitation plan compiled by a specialist registered in terms of

the Natural Scientific Professions Act (No. 27 of 2003) in the field of Ecological Science;

- Engineering measures are recommended to lower the risk of spillages into any watercourses located in and surrounding the proposed development;
- Where active rehabilitation or restoration is mandatory, it should make use of indigenous plant species native to the study area. The species selected should strive to represent habitat types typical of the ecological landscape prior to construction. As far as possible, indigenous plants naturally growing within the vicinity of the study area, but would otherwise be destroyed during construction, should be used for re-vegetation/landscaping purposes;
- Minimize artificial edge effects (e.g. water runoff from developed areas and application of chemicals);
- Construction activities at or close to wetlands, drainage lines and water bodies should be limited. A wetland specialist should be consulted with regards to a suitable buffer if deemed necessary;
- Where a road is to traverse a wetland, measures are required to ensure that the road has minimal effect on the flow of water through the wetland, e.g. by using a high level clearspan bridge or box culverts rather than pipes;
- A rescue plan for the Orange List species, *Hypoxis hemerocallidea* needs to be incorporated into the EMP prior to construction. This species should be relocated if affected by the proposed activities in the watercourse;
- No vehicles should be allowed to move in or through the watercourse and associated buffer zone. The area should be demarcated prior to construction;
- It is recommended that all concrete and cement works be restricted to areas of low ecological sensitivity and defined on site and clearly demarcated. Cement powder has a high alkalinity pH rating, which can contaminate and affect both soil and water pH dramatically. A shift in the pH can have serious consequences on the functioning of soil, vegetation and fauna;
- A comprehensive surface runoff and storm water management plan should be compiled, indicating how all surface runoff generated as a result of the road development (during both the construction and operational phases) will be managed (e.g. artificial wetlands / storm water and flood retention ponds) prior to entering any natural drainage system or wetland and how surface runoff will be retained outside of any demarcated buffer/flood zones and subsequently released to simulate natural hydrological conditions. This plan should form part of the EMP;
- Where roads traverse streams/rivers, an underpass should provide for the movement of aquatic as well as terrestrial species through the inclusion of appropriate buffer zones within the underpass (a 32m buffer zone from the edge of the riparian zone recommended for rivers within urban areas and a 100m buffer zone from the edge of the riparian zone recommended for rivers outside urban areas);
- Where roads traverse natural corridors such as streams/rivers and ridges, traffic control measures are recommended (appropriate speed limits, speed traps, rumble strips and speed bumps);