ECOLOGICAL ASSESSMENT REPORT

S24G FOR THE UNLAWFUL COMMENCEMENT OR CONTINUATION OF ACTIVITIES WITHIN A WATERCOURSE, HONEYDEW, GAUTENG PROVINCE

July 2017

Prepared by:

Gerhard Botha (Pri Sci Nat: Ecology & Botany)

ECO-CARE CONSULTANCY
ENVIRONMENTAL & BIODIVERSITY CONSULTANTS

PO Box 12500, Brandhof, 9324

Cell: 084 2073454

Email: gabotha11@gmail.com

Prepared for:

Savannah Environmental (Pty) Ltd

1st Floor, Block 2, 5 Woodlands Drive

Office Park

Cnr Woodlands Drive & Western Service Road

Woodmead

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DECLARATION OF CONSULTANT'S INDEPENDENCE

I, Gerhard Botha, as the appointed specialist hereby declare that I:

- » act/ed as the independent specialist in this application;
- » regard the information contained in this report as it relates to my specialist input/study to be true and correct, and
- » do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2017 and any specific environmental management Act;
- » have and will not have no vested interest in the proposed activity proceeding;
- » have disclosed, to the applicant, EAP and competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- » am fully aware of and meet the responsibilities in terms of NEMA, the Environmental Impact Assessment Regulations, 2017 (specifically in terms of regulation 13 of GN No. R. 326) and any specific environmental management Act, and that failure to comply with these requirements may constitute and result in disqualification;
- » have provided the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not; and
- » am aware that a false declaration is an offence in terms of regulation 48 of GN No. R. 326.

Gerhard Botha Pr.Sci.Nat 400502/14 (Botanical and Ecological Science)
Date: July 2017

Field of expertise:

Wetland ecology, aquatic and wetland fauna & flora, terrestrial biodiversity, aquatic biomonitoring and wetland habitat evaluations.

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ECOLOGICAL ASSESSMENT

1 INTRODUCTION

1.1 Applicant

Soror Language Services cc.

1.2 Project

S24G for the unlawful commencement or continuation of activities within a watercourse in Honeydew, Gauteng.

1.3 Proposed Activity

As a result of non-compliance with Section 24 of NEMA, a rectification process is required for the listed activities which have already taken place. The Directive issued for non-compliance on 10 February 2017, pertains to the activities which include:

- The erection of palisade fencing around the perimeter of the property. The intention of this fencing was to prevent unwanted trespassers from entering the property, thereby improving security and safety. Moreover, the applicant undertook to cut and maintain the grass along the fencing.
- The removal of deposited debris upstream of the Wilgespruit River. The client intended to remove any rubble and debris from the watercourse in an attempt to improve water flow, and rid/lessen any established alien vegetation along and within the watercourse.
- The construction of culverts, a bridge structure and other flow control measures (removal of sediment and the implementation of gabions) within the watercourse in order to improve the value of the watercourse as well as the aesthetic and natural value of Erf 24 and Erf 76 of Ruimsig AH.

Soror Language Services cc require environmental authorisation in terms of Section 24G of National Environmental Management Act 107 of 1998 (NEMA), to recertify and undertake the listed activities in terms of Government Notice Regulation (GNR) 327: Activity 19 and GNR 324: Activity 14 of the Environmental Impact Assessment (EIA) Regulations of 2014, as amended on 07 April 2017. The following process was undertaken in support of the Section 24G application:

- A Basic Assessment (BA) in terms of the NEMA, for submission to the Gauteng Department of Agriculture and Rural Development (GDARD).
- Water Use Licence Application (WULA) in terms of the National Water Act 36 of 1998 (NWA), for submission to the Department: Water and Sanitation (DWS) (Formerly Department of Water Affairs) for activities applicable to Section 21 of the Act which include.
  - 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.

Soror Language Services cc submitted a Section 24G Application on 2013 for the following activities which commenced unlawfully:

The activity involved the upgrading of a natural watercourse which included the following:

- The removal of riparian and alien invasive vegetation from the watercourse banks;
- Cleaning and removing all debris: clothing, plastic bottles and bags, glass, tyres;
- The removal of extensive rubble created from a pre-existing dam wall;
- The cleaning of a pre-existing island to allow the two pre-existing channels of water to flow freely without debris blocking the flow of the watercourse;
- The damming of the watercourse to build on top of the existing dam wall;
- The installation of culverts and other flow control measures;
- The construction of in-stream gabions near to the existing culvert;
- The construction of a pedestrian bridge to the in-stream island;
- The re-vegetation of the banks of the watercourse and placement of stone pitching downstream as erosion control measures;
- Perimeter Fencing around the riparian area and over the channel (culvert) crossing the watercourse as a safety and security measure;
- Substantial outlet piping throughout the gabion basket has been provided to allow constant water flow; and
- Landscaping.

1.4 Location

Erf 24 an Erf 76 of Ruimsig Agricultural Holdings (AH) (affected properties) falls within the City of Johannesburg Metropolitan Municipality of the Gauteng Province along Pierre Road in Ruimsig Agricultural Holdings, Honeydew.

1.5 Terms of reference

Ecological assessment as stipulated in Section 9.6.3.2 of the Directive (Ref No: S24G/03/13-14/0274) in terms of Section 24G(1) of the National Environmental Management Act 107 of 1998 as amended ("NEMA").

The following terms of references are associated with the Directive:

» An ecological study of the site (including functional ecology, biodiversity on the site and threatened ecosystem aspects);
» The specialist studies must examine the cumulative impacts of the activity on the site and the surrounding environment;
» A site rehabilitation plan detailing mitigation measures (including alternatives) to give effect to the recommendations of the biodiversity assessment, and relevant to addressing (controlling) the degradation caused on the environment, as the case may be;
» An assessment of the nature, extent, duration, impact and significance of the consequences for, or impacts on the environment of each of the activities unlawfully commenced with, and the cumulative impacts on the environment must also be discussed. An indication of the methodology used in determining the significance of actual and/or potential environmental impacts must be outlined.

1.6 General assumptions and limitations

1.2.1. General assumptions

» This study assumes that the project proponent will make every effort to mitigate and/or offset negative impacts on the environment.
» GIS spatial datasets used as part of the field surveys (site demarcation) and analysis are accurate.

1.2.2. Limitations

The following refers to general limitations that affect the applicability of information represented within this report (also refer to Conditions of the Report):

» This report specifically focuses on the ecology of the area and immediate surroundings in terms of the phytosociology of the area.
» The faunal species lists for the site are those which were observed on- site during the site visit, as well as those which may occur in the area based on distribution records and habitat requirements.
» Accuracy of the maps, routes and desktop assessments is based on the current 1:50 000 topographical map series of South Africa;

» Accuracy of Global Positioning System (GPS) coordinates was limited to 8m accuracy in the field.
» A single survey limited the amount of biota identified at the site;
» While every care is taken to ensure that the data presented are qualitatively adequate, inevitably conditions are never such that that is possible. The nature of the vegetation, seasonality, human intervention etc. limit the veracity of the material presented.
» The field assessment was undertaken in winter (June 2017). The assessment therefore does not cover the seasonal variation in conditions at the site. This will not have a significant impact on the conclusion made regarding the potential impacts and sensitivities of the study area.

1.7 Conditions of this report

Findings, recommendations and conclusions provided in this report are based on the authors' best scientific and professional knowledge and information available at the time of compilation. No form of this report may be amended or extended without the prior written consent of the author. Any recommendations, statements or conclusions drawn from or based on this report must clearly cite or make reference to this report. Whenever such recommendations, statements or conclusions form part of a main report relating to the current investigation, this report must be included in its entirety.

1.8 Relevant legislation and guidelines

The following legislation was taken into account whilst compiling this report:

» National Environmental Management Act / NEMA (Act No 107 of 1998), and all amendments and supplementary listings and/or regulations
» Environment Conservation Act (ECA) (No 73 of 1989) and amendments
» National Environmental Management Act: Biodiversity Act / NEMA:BA (Act No. 326 of 2017) and amendments
» National Forest Act 1998 / NFA (No 84 of 1998)
» National Veld and Forest Fire Act (Act No. 101 of 1998)
» Conservation of Agricultural Resources Act / CARA (Act No. 43 of 1983) and amendments
» The Transvaal Nature Conservation Ordinance (No. 12 of 1983)
» Convention on International Trade in Endangered Species of Fauna and Flora (CITES)
» Convention on Biological Diversity, 1995

2 STUDY AREA

2.1 Climate and rainfall

The Honeydew area is characterised by a warm and temperate climate with an average annual temperature of 15.5°C and an average rainfall of 786mm falling predominantly in early summer (highest in January: 144mm). The driest month is July with only 7mm of precipitation. With an average temperature of 19.8°C, January is the warmest month, whilst June is the coldest month with an average of 9.3°C (https://en.climate-data.org/location/232/). Frost are also relative prominent during the winter months with mean frost days of 29 days.

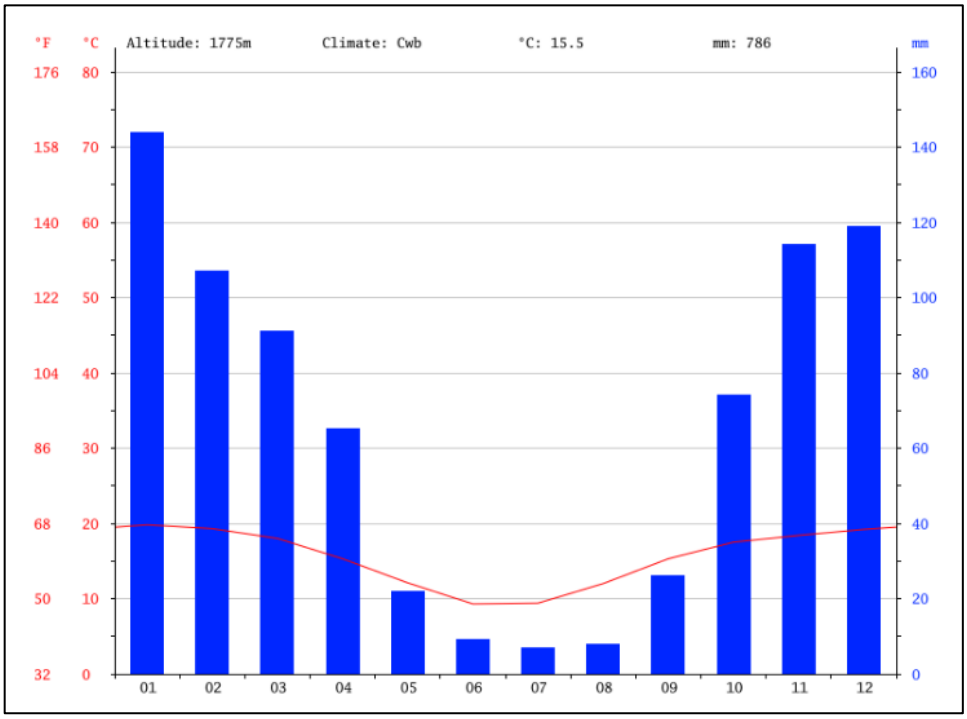


Figure 1: Climate graph of Roodepoort region (https://en.climate-data.org/location/27075/).

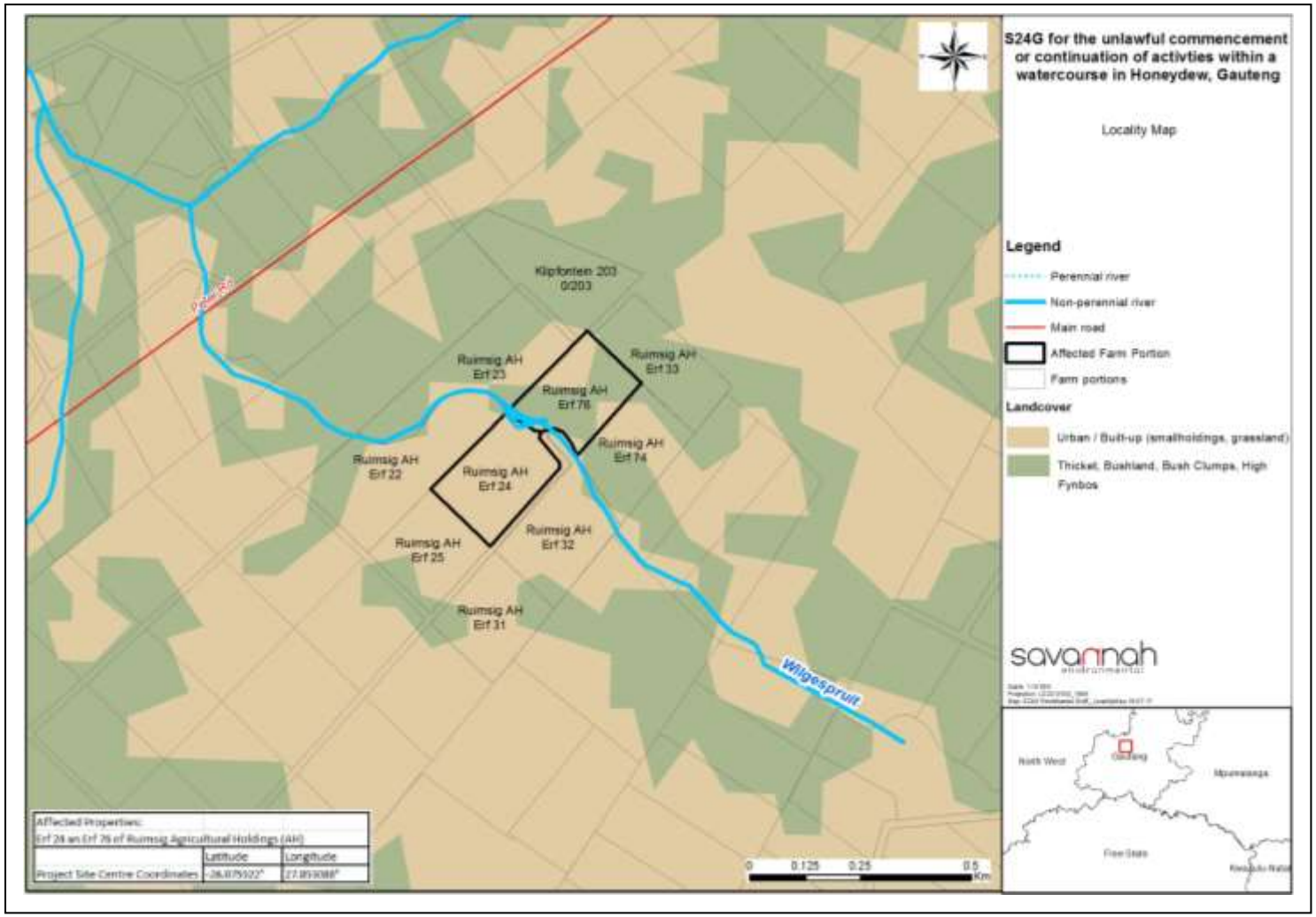


FIGURE 2: *LOCATION MAP (AS PROVIDED BY SAVANNAH ENVIRONMENTAL).*

2.2 Physiography and soils

Landscape Features

According to Mucina and Rutherford (2006), the region can be described as moderately undulating plains and low hills supporting a tall grassland with some woody species on rocky outcrops or rock sheets.

According to AGIS, 2007 the bulk of the affected landscape is classified as A3 terrain type (>80% has a slope less than 8% with a local relief of 90 – 150m) and is situated within a footslope/valley-bottom landscape setting with a predominantly concave slope shape (X). Percentage slope is generally between 10 and 2%.

At a finer scale using a Google elevation profile for the study area and immediate surroundings, the area can be described as a moderately to gradually sloping valley sides and a relative narrow valley section. The local elevation of the affected properties ranges between 1505m (watercourse) and 1522m with the wetland situated between 1508m – 1505m. The average slope of the study area is 7% in a south-westerly direction and 4.7% in a north-westerly direction. A maximum slope of 11.8% is associated with a section of the south-west facing valley slope. The main topographic feature is the Eagle Canyon Golf Course and associated artificial waterbodies (located approximately 2.10km west of the study area – upstream).

Geology

The study area (and catchment area) is characterised by felsic intermediate rocks (Figure 4) of the Halfway House Granite (Johannesburg Dome) (Mucina & Rutherford, 2006).

This granitic mass occupies an ovoid area of approximately 700km^2 between Johannesburg and Pretoria, and constitutes one of numerous domical "windows" of ancient granite basement exposed on the Kaapvaal Craton. The age of the basement rocks ranges from 3000 million years to 3400 million years.

The geological features of the granitic rocks vary considerably throughout the Johannesburg Dome and include variations in colour, the development of gneissic facies towards the south and southwest and the composition of the granite (mineralogically and chemically).

The granite type found within the study area are described as follows:

» The Grey Grandodiorite Suite (Anhausser, 1971).

Essentially two varieties of granite comprise the rock-type broadly classified in to the grey granodiorite suite namely; (a) homogenous, medium-textured granodioritic-to-adamellitic granites and, (b) porphyritic granodiorites. The study area falls within the latter mentioned type. Both varieties of rocks belonging to the grey granodiorite suite occur mainly on the southern half of the Johannesburg Dome where they occupy the greater part of the region between the zone of transitional gneisses, migmatites, and homogenous granitic rocks and the ancient tonalitic gneisses and medium-coarse pinkish-grey granodiorites. The essentially porphyritic granodiorites occur mainly west of Ferndale and extend from Boschkop 199 IQ through Honeydew, and westward towards Muldersdrift.

Mineralogically, the granites of the grey granodiorite suite consist of quartz, plagioclase (albite-oligoclase) orthoclase, and microcline. Lesser amounts of biotite, muscovite, epidote, and sphene are also present while sericitization and saussuriteization of feldspar is common. These granites of the grey granodiorite suite support leached, shallow, coarsely grained, sandy soil which are poor in nutrients and are typically of Glenrosa form (Mucina & Rutherford, 2006).

Soil and Land Types

Detailed soil information is not available for broad areas of the country. A surrogate land type data was used to provide a general description of soil in the study area (land types are areas with largely uniform soils, typography and climate). The entire catchment area is situated within the Bb1 land type.

» **Bb land type** (Plinthic Catena – Dystrophic and/or mesotrophic yellow soils) refer to areas characterised with mainly yellow, apedal (structureless) soils, moderately (mesotrophic) to highly (dystrophic) leached (low to moderate fertility status), with a wide textural range, mostly sandy loam to sandy clay loam. Soils contain a greyish subsoil layer (plinthic) where iron and manganese accumulate in the form of mottles, due to a seasonally fluctuating water table. With time, these mottles may harden (or even cement) to form concretions. These plinthic layers will case restricted water infiltration and root penetration. In drier areas, however, they may help to hold water in the soil the plants can use.

Hydrology

The study area is located within the Crocodile (West) & Marica Water Management Area and within the A21E quaternary catchment area (Figure 7). The most prominent river system within the region is the Crocodile River. The affected wetland forms part of the Wilgespruit Watercourse (Non-perennial) which is a tributary of the Crocodile River with the confluence of these systems located approximately 1.2km north-west of the study area. Associated with this watercourse is an extensive valley-bottom wetland (mostly channelled) of approximately 61.459ha in size. This valley-bottom wetland is primarily fed through lateral inflow and over-bank flow from the watercourse as well as being fed by smaller drainage lines and valley-bottom wetlands. According to the Present Ecological State (DWS PES, 1999) the condition of the Crocodile River is classified as Class C, which indicates that the river is in a moderately modified state. No PES Score is available for the Wilgespruit watercourse.

The Wilgespruit watercourse originates as a valley head wetland (Seepage) just west of the R564. The watercourse then flows largely in a north-westerly direction through the artificial wetlands (mostly dams) associated with the Eagle Canyon Golf Course and after a distance of approximately 5.47km terminates into the Crocodile River. As mentioned this valley-bottom wetland (mostly channelled) is fed by five smaller valley-bottom wetlands flowing perpendicular to the larger wetland system as well as a moderately sized artificial wetland system discharging water into the system (within the area of the Eagle Canyon Golf Course).

Understanding the conservation context and importance of the site is essential to inform decision making regarding the future use of the area. In this regard, both national and provincial level conservation planning information is available and was used to obtain an overview of the site. The importance of water resources in meeting national freshwater conservation targets is illustrated in Figure 8. This shows that sections of the wetland have been identified within the NFEPA data source although none of these wetlands have been identified as important FEPAs (Freshwater Ecosystem Priority Areas). Most of these identified wetlands are associated with the artificial wetlands located within the mentioned golf course (Artificial Seeps according to NWCS L4 Classification). Further downstream, three small artificial channelled valley-bottom wetlands were identified. The wetland catchment falls within a Fish Support Area (not within a Fish FEPA). Fish sanctuaries are sub-quaternary catchments that are essential in order to meet the required fish population targets. Fish sanctuaries in a good condition (A or B ecological category) were selected as FEPAs and the remaining ones become Fish Support Areas (CSIR, 2011). According to the spatial data set (CSIR, 2011) one listed fish species is expected to occur within the relevant sub-quaternary catchment area namely the Marico Barb (*Barbus motebensis*) which is classified as Vulnerable. This Barb species is limited to the upper catchments of the Marico

and Crocodile Rivers and occurs within slow flowing section and shallow pools of small streams where it is associated with the banks and vegetation (Engelbrecht & Bills, 2007). While the map suggests that these wetlands are not important from a biodiversity perspective, this should not undermine the importance of the areas for other ecosystem services. The main major wetland vegetation group occurring in the study area is Mesic Highveld Grassland Group 3 according to the NFEPA project coverage (CSIR, 2011) which is regarded as Endangered.

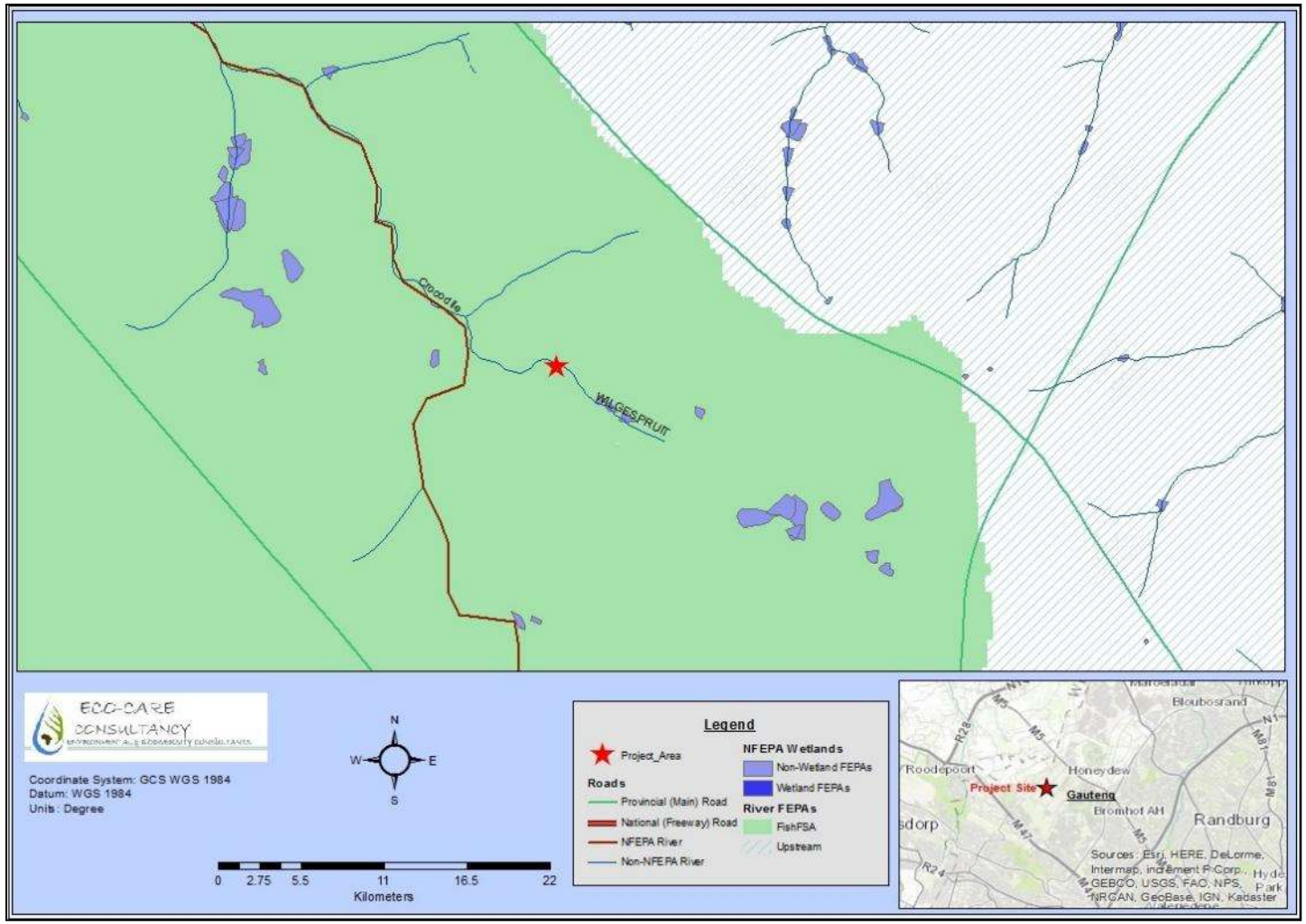


Figure 3: Map showing the location of the wetland systems and catchment area relative to recently identified National Freshwater Ecosystem Priority Areas or NFEPA (CSIR, 2011).

3 METHODOLOGY

3.1 Data scouring and review

Data sources from the literature were consulted and used where necessary in the study and include the following:

Vegetation:

» Vegetation types and their conservation status were extracted from the South African National Vegetation Map (Mucina and Rutherford 2006) as well as the National List of Threatened Ecosystems (2011), where relevant.
» Critical Biodiversity Areas for the site and surroundings were extracted from the Gauteng Conservation Plan3.3 (http://bgis.sanbi.org/fsp/project.asp).
» Information on plant and animal species recorded for the Degree Square (DS) 2627B was extracted from the SABIF/SIBIS database hosted by SANBI. This is a considerably larger area than the study area, but this is necessary to ensure a conservative approach as well as the fact that the site itself has probably not been well sampled in the past.
» The IUCN conservation status (Table 2) of the species in the list was also extracted from the database and is based on the Threatened Species Programme, Red List of South African Plants (2013).
» Freshwater and wetland information was extracted from the National Freshwater Ecosystem Priority Areas assessment, NFEPA (Nel et al. 2011). This includes rivers, wetlands and catchments defined under the study.

Fauna

» Lists of mammals, reptiles and amphibians which are likely to occur in the study area were derived based on distribution records from the literature and various spatial databases (SANBI's SIBIS and BGIS databases).
» Literature consulted includes Branch (1988) and Alexander and Marais (2007) for reptiles, Du Preez and Carruthers (2009) for amphibians, Friedmann and Daly (2004) and Skinner and Chimimba (2005) for mammals.
» Apart from the literature sources, additional information on reptiles were extracted from the SARCA web portal, hosted by the ADU, http://vmus.adu.org.za
» The faunal species lists provided are based on species which are known to occur in the broader geographical area, as well as a preliminary assessment of the availability and quality of suitable habitat at the site.
» The conservation status of each species is also listed, based on the IUCN Red List Categories and Criteria 2014 (See Figure 5) and where species have not been assessed under these criteria, the CITES status is reported where possible. These lists are adequate for mammals and amphibians, the majority of which have been assessed, however the majority of reptiles have not been

assessed and therefore, it is not adequate to assess the potential impact of the development on reptiles, based on those with a listed conservation status alone. In order to address this shortcoming, the distribution of reptiles was also taken into account such that any narrow endemics or species with highly specialised habitat requirements occurring at the site were noted.

3.2 Site Visit

The site was conducted on the 20th and 21st of June 2017. During the site visit, the different biodiversity features, habitat, and landscape units present at the site were identified and mapped in the field. Specified features visible on the satellite imagery of the site were also marked for field inspection and were verified and assessed during the site visit. A walk-through-survey was done of the study site wherein all plant and animal species observed were recorded. Random plots (4X4m) were taken during the survey wherein all plants were recorded. Active searches for reptiles and amphibians were also conducted. All data samples were accompanied by GPS coordinates and was used in the compilation of the sensitivity map.

3.3 Criteria used to assess sites

The broad-scale ecological sensitivity map of the site was produced by integrating the above information collected on-site with the available ecological and biodiversity information available in the literature and various spatial databases (SIBIS, BGIS). The ecological sensitivity of the different units identified in the mapping procedure was rated according to the following scale:

Table 1: Explanation of sensitivity rating

Sensitivity	Factors contributing to sensitivity	Examples of qualifying features
VERY HIGH	Indigenous natural areas that are highly positive for any of the following: ▪ presence of threatened species (Critically Endangered, Endangered, Vulnerable) and/or habitat critical for the survival of populations of threatened species. ▪ High conservation status (low proportion remaining intact, highly fragmented, habitat for species that are at risk). ▪ Protected habitats (areas protected according to national/provincial legislation, e.g. National Forests Act,	▪ CBA 1 areas ▪ Remaining areas of vegetation type listed in Draft Ecosystem List of NEM:BA as Critically Endangered, Endangered or Vulnerable. ▪ Protected forest patches. ▪ Confirmed presence of populations of threatened species.

Sensitivity	Factors contributing to sensitivity	Examples of qualifying features
	Draft Ecosystem List of NEM:BA, Integrated Coastal Zone Management Act, Mountain Catchment Areas, Lake Areas Development Act). May also be positive for the following: ▪ High intrinsic biodiversity value (high species richness and/or turnover, unique ecosystems). ▪ High value ecological goods and services (e.g. water supply, erosion control, soil formation, carbon storage, pollination, refugia, food production, raw materials, genetic resources, cultural value). ▪ Low ability to respond to disturbance (low resilience, dominant species very old).	
HIGH	Indigenous natural areas that are positive for any of the following: ▪ High intrinsic biodiversity value (moderate/high species richness and/or turnover). ▪ presence of habitat highly suitable for threatened species (Critically Endangered, Endangered Vulnerable species). ▪ Moderate ability to respond to disturbance (moderate resilience, dominant species of intermediate age). ▪ Moderate conservation status (moderate proportion remaining intact, moderately fragmented, habitat for species that are at risk). ▪ Moderate to high value ecological goods & services (e.g. water supply, erosion control, soil formation, carbon storage, pollination, refugia, food production, raw materials, genetic resources, cultural value). May also be positive for the following: ▪ Protected habitats (areas protected according to national/provincial	▪ CBA 2 "critical biodiversity areas". ▪ Habitat where a threatened species could potentially occur (habitat is suitable, but no confirmed records). ▪ Confirmed habitat for species of lower threat status (near threatened, rare). ▪ Habitat containing individuals of extreme age. ▪ Habitat with low ability to recover from disturbance. ▪ Habitat with exceptionally high diversity (richness or turnover). ▪ Habitat with unique species composition and narrow distribution. ▪ Ecosystem providing

Sensitivity	Factors contributing to sensitivity	Examples of qualifying features
	legislation, e.g. National Forests Act, Draft Coastal Zone Management Act, Mountain Catchment Areas Act, Lake Areas Development Act)	high value ecosystem goods and services.
MEDIUM-HIGH	Indigenous natural areas that are positive for one or two of the factors listed above, but not a combination of factors.	▪ CBA 2 "corridor areas". ▪ Habitat with high diversity (richness or turnover). ▪ Habitat where a species of lower threat status (e.g. near threatened, rare) could occur (habitat is suitable but no confirmed records).
MEDIUM-LOW	Degraded or disturbed indigenous natural vegetation	
LOW	No natural habitat remaining	

Any natural vegetation within which there are features of conservation concern will be classified into one of the high sensitivity classes (MEDIUM-HIGH, HIGH or VERY HIGH). The difference between these three high classes is based on a combination of factors and can be summarised as follows:

» Areas classified into the VERY HIGH class are vital for the survival of species or ecosystems. They are either known sites for threatened species or are ecosystems that have been identified as being remaining areas of vegetation of critical conservation importance. CBA1 areas would qualify for inclusion into this class.
» Areas classified into the HIGH class are of high biodiversity value, but do not necessarily contain features that would put them into the VERY HIGH class. For example, a site that is known to contain a population of a threatened species would be in the VERY HIGH sensitivity class, but a site where a threatened species could potentially occur (habitat is suitable), but it is not known whether it does occur, is classified into the HIGH sensitivity class. The class also includes any areas that are not specifically identified as having high conservation status but, have high local species richness, unique species composition, low resilience or provide very important inclusion into this class, if there were no other factors that would put them into the highest class.

» Areas classified into the MEDIUM-HIGH sensitivity class are natural vegetation in which there are one or two features that make them of biodiversity value, but not to the extent that they would be classified into one of the other two higher categories. CBA2 "corridor areas" would qualify for inclusion into this class.

3.4 Assessment of impacts

The Environmental Impact Assessment methodology assists in the evaluation of the overall effect of an activity on the environment. This includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of the criteria of extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).

» The **nature**, which includes a description of what causes the effect, what will be affected and how it will be affected.
» The **extent**, wherein it is indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 was assigned as appropriate (with 1 being low and 5 being high).
» The **duration**, wherein it was indicated whether:
  - the lifetime of the impact will be of a very short duration (0 – 1 years) – assigned a score of 1;
  - the lifetime of the impact will be of a short duration (2 – 5 years) – assigned a score of 2;
  - medium-term (5 -15 years) – assigned a score of 3;
  - long term (> 15 years) – assigned a score of 4; or
  - permanent – assigned a score of 5;
» The **magnitude**, quantified on a scale from 0 – 10, where 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
» The **probability** of occurrence, which describes the likelihood of the impact actually occurring. Probability was estimated on a scale of 1 -5, where 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).
» The **significance**, was determined through a synthesis of the characteristics described above and can be assessed as **LOW**, **MEDIUM** or **HIGH**; and

» the **status**, which was described as either positive, negative or neutral.
» the degree of which the impact can be reversed,
» the degree to which the impact may cause irreplaceable loss of resources,
» the degree to which the impact can be mitigated.

The significance was calculated by combining the criteria in the following formula:

S=(E+D+M)P where;

» S = Significance weighting
» E = Extent
» D = Duration
» M = Magnitude
» P = Probability

The significance weightings for each potential impact are as follows;

» < 30 points: **LOW** (i.e. where the impact would not have a direct influence on the decision to develop in the area),
» 30 – 60 points: **MEDIUM** (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
» > 60 points: **HIGH** (i.e. where the impact must have an influence on the decision process to develop in the area).

4 DESCRIPTION OF THE AFFECTED ENVIRONMENT

4.1 Broad-Scale Vegetation Patterns

Broad vegetation types

The study area is situated in the Grassland biome and Mesic Highveld Grassland Bioregion. The vegetation in and around the study area is Egoli Granite Grassland (Gm10) (refer to Figure 5).

The distribution of the vegetation type is located within the Gauteng Province, within the Johannesburg Dome extending in the region between northern Johannesburg in the south, and from near Lanseria Airport and Centurion (south of Pretoria) to the north, westwards to about Muldersdrif and eastwards to Tembisa. This vegetation type is found mainly at elevations between 1280m and 1660m (Mucina and Rutherford, 2006). This vegetation type has been described by Mucina and Rutherford (2006) as a tall, usually *Hyparrhenia hirta*, dominated grassland, with some woody species on rocky outcrops or rock sheets. This grassland is found within moderate undulating plains and low hills.

Key species include graminoids such as *Aristida canescens, A. congesta, Cynodon dactylon, Digitaria monodactyla, Eragrostis capensis, Eragrostis chloromelas, Eragrostis curvula, Eragrostis racemosa, Heteropogon contortus, Hyparrhenia hirta, Melenis repens, subsp. Repens, Monocymbium ceresiiforme, Setaria sphacelata, Themeda triandra, Tristachya leucothrix, Andropogon eucomus, Aristida aequiglumis, A. diffusa, A. scrabrivalvis subsp. Borumensis, Bewsia biflora, Brachiaria serrata, Bulbostylis burchellii, Cymbopogon caesius, Digitaria tricholaenoides, Diheteropogon amplectens, Eragrostis gummiflua, E. sclerantha, Panicum natalense, Schizachyrium sanguineum, Setaria nigrirostris, Tristachya rehmannii, Urelytrum agropyroides* Herbs: *Acalypha angustata, Acalypha peduncularis, Becium obovatum, Berkheya insignis, Crabbea hirsute, Cyanotis speciose, Dicoma anomala, Helichrysum rugulosum, Justicia anagalloides, Kohautia amatymbica, Nidorella hottentotica, Pentanisia prunelloides subsp. Latifolia, Pseudognaphalium luteo-album, Senecio venosus* Geophytic Herbs: *Cheilanthes deltoidea, C. hirta. Small Tree*: *Vangueria infausta* Tall Shrubs: *Searsia pyroides* Low Shrubs: *Anthospermum hispidulum, A. rigidum subsp. Pumilum, Gnidia capitata, Helichrysum kraussii, Ziziphus zeyheriana*; and Succulent Shrub: *Lopholaena coriifolia*.

A species list from POSA (http://posa.sanbi.org, Grid reference 2627BB) containing the species that have been recorded to date in the area was obtained. POSA generated species lists also contain updated Red Data species status according to the Red List of South African Plants published by SANBI in Strelitzia 25 (Raimondo *et al*. 2009, updated 2013). Only protected and red data species that may potentially occur in the study area have been listed (Table 2). According to the data sourced from GDARD, Table 3 indicates the plants that are known to occur within the area.

A total of 909 indigenous species have been recorded in the 2627BB Degree Grid according to the SANBI database. It is highly unlikely that all of these species will occur within the project area. Alien invasive species (107) – including 35 Category 1b-, 5 Category 2 and 2 Category 3 invasive alien plants - have also been recorded within the relevant degree grid.

Table 2: The following red data species have been recorded within the 2627BB Degree Grid according to the SANBI database:

Species	Family	Threat Status
Acalypha caperonioides var. caperonioides	EUPHORBIACEAE	DDT
Boophone disticha	AMARYLLIDACEAE	Declining
Ilex mitis var. mitis	AQUIFOLIACEAE	Declining
Callilepis leptophylla	ASTERACEAE	Declining

Hypoxis hemerocallidea	HYPOXIDACEAE	Declining
Brachycorythis conica subsp. transvaalensis	ORCHIDACEAE	EN
Cineraria austrotransvaalensis	ASTERACEAE	NT
Pearsonia bracteata	FABACEAE	NT
Habenaria barbertoni	ORCHIDACEAE	NT
Melolobium subspicatum	FABACEAE	VU

Table 3: Floral species of conservation importance which could be found on site (GDARD data):

Taxon	**Latest (IUCIN version 3.1) Threat Status***	**Habitat**	**Flowering Time**	**Probability of occurrence**	**Priority rating**
Alepidea attenuata	NT	Rock crevices on rocky ridges, usually south-facing, or in shallow gravel on top of rocks, but often in shade of other vegetation.	Sep-Jan	Low	A2
Aloe peglerae	EN	Grassland, in shallow gravelly quartzitic soils on rocky north-facing lopes or summits of ridges.	July-Aug	Low	A2
Brachycorythis conica subsp. transvaalensis	VU	Short grassland, hillsides, on sandy gravel overlying dolomite, sometimes also on quartzites, occasionally open woodland, 1000 – 1705m.	Jan-Mrt	Low	A3
Bowiea volubilis subsp. volubilis	VU	Shady places, steep rock slopes and in open woodland, under large boulders in bush or low forest.	Sep-Apr	Low	N/A
Callilepis leptophylla	LC (Declining)	Grassland or open woodland, often on rocky outcrops or rocky hillslopes.	Aug-Jan & May	Medium	N/A
Cineraria austrotransvaalensis	NT	Amongst rocks on steep slopes of hills and ridges, as well as at the edge of thick bush or under trees; on all aspects and on a range of rock types: quartzite, dolomite and shale; 1400 – 1700m.	Mar-Jun	High	A3

Delosperma leendertziae	NT	Rocky ridges; on rather steep south facing slopes of quartzite in mountain grassveld.	Oct-Apr	Low	A2
Eucomis autumnalis subsp. clavata	LC (Declining)	Open grassland, marshes.	Nov-Apr	High	N/A
Habenaria barbertonii	NT	In grassland on rocky hillsides.	Feb-Mar	Medium	A2
Holothrix randii	NT	Grassy slopes and rock ledges, usually southern aspects.	Sep-Jan	Low	B
Hypoxis hemerocallidea	LC (declining)	Grassland and mixed woodland. Often observed adjacent to marsh wetlands in hillslope seepage areas.	Sep-Mar	High	N/A
Ilex mitis var mitis	LC (declining)	River banks, stream beds, evergreen forests.	Oct-Dec	Low	N/A
Melolobium subspicatum	VU	Grassland.	Sep-May	High	A1
Pearsonia bracteata	NT	Plants in Gauteng and North West occur in gently sloping Highveld grassland.	Dec-Apr	High	A3

Conservation status of broad vegetation types

The vegetation types of South Africa have been categorised according to their conservation status which is, in turn, assessed according to the degree of transformation and rates of conservation. The status of a habitat or vegetation type is based on how much of its original area still remains intact relative to various thresholds. On a national scale, these thresholds are as depicted in the table below, as determined by best available scientific approaches (Driver *et al*. 2005). The level at which an ecosystem becomes Critically Endangered differs from one ecosystem to another and varies from 16% to 36% (Driver *et al*. 2005).

Table 4: Determining ecosystem status (from Driver et al. 2005). *BT = biodiversity target (the minimum conservation requirement.

Habitat remaining (%)		
80–100	least threatened	LT
60–80	vulnerable	VU
*BT–60	endangered	EN
0–*BT	critically endangered	CR

The National List of Ecosystems that are Threatened and in need of protection (GN1002 of 2011), published under the National Environment Management:

Biodiversity Act (Act No. 10 of 2004), lists national vegetation types that are afforded protection on the basis of rates of transformation. The threshold for listing in this legislation is higher than in the scientific literature, which means there are fewer ecosystems listed in the National Ecosystem List versus in the scientific literature.

Table 5: Conservation status of the vegetation type occurring in and around the study area.

Vegetation Type	**Target (%)**	**Conserved (%)**	**Transformed (%)**	**Conservation Status**	
				Driver *et al*., 2005; Mucina & Rutherford, 2006	National Ecosystem List (NEM:BA)
Egoli Granite Grassland	24%	2.5%	68.2%	Endangered	Endangered

According to Mucina and Rutherford (2006) the vegetation type, Egoli Granite Grassland, is classified as Endangered and is similarly classified as Endangered within National List of Ecosystems that are Threatened and in need of protection (GN1002 of 2011), published under the National Environment Management: Biodiversity Act (Act No. 10 of 2004)) (refer to Figure 5).

Egoli Granite Grassland covers an extent of approximately 1093.1893km^2. Approximately 31.8% of the original natural grassland remains of which only 2.5% is protected (statutory within: Diepsloot and Melville Koppies Nature Reserves; private conservation areas: Motsetse and Isaac Stegmann Nature Reserves, Kingskloof Natural Heritage Site, Melrose and Beaulieu Bird Sanctuaries as well as the Walter Sisulu National Botanical Garden). More than two thirds of the unit have already undergone transformation mostly by urbanisation, cultivation or by building of roads.

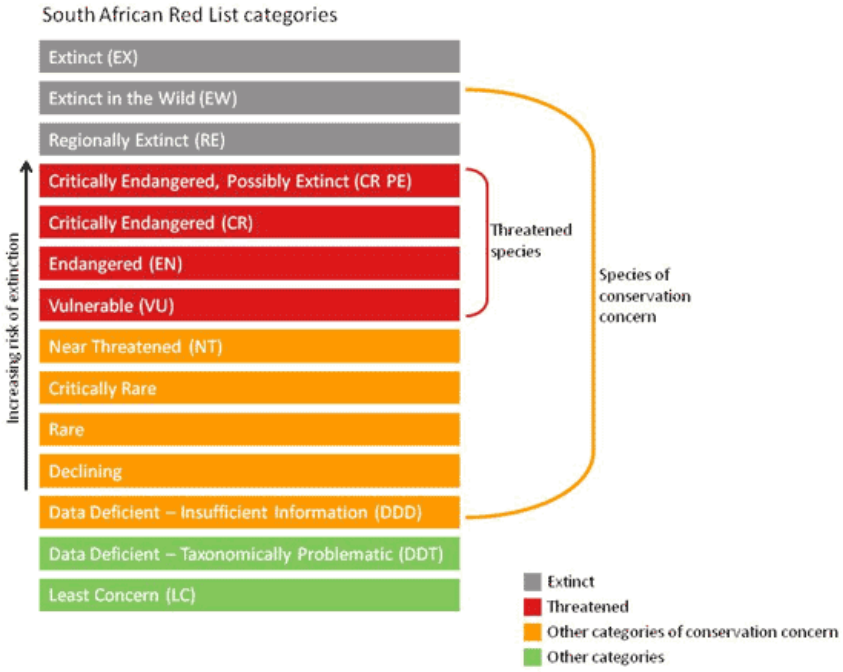


Figure 4: Schematic representation of the South African Red List categories. Taken from http://redlist.sanbi.org/redcat.php

4.2 Gauteng Conservation Plan

Gauteng Conservation Plan Version 3.3 contains two major categories to describe areas namely:

» **Critical Biodiversity Areas (CBAs)** that contain three types of areas:
- Irreplaceable areas, which are essential in meeting targets set for the conservation of biodiversity in Gauteng.
- Areas that are important for the conservation of biodiversity in Gauteng
- Conserved areas, which include all existing level 1 and 2 protected areas.

Level 1 and Level 2 protected areas are proclaimed in terms of relevant legislation (National Environmental Management Protected Areas Act, 2003 (Act No 57 of 2003) specifically for the protection of biodiversity (or for the purposes of nature conservation).

» **Ecological Support Areas (ESAs).** ESAs are an imperative part of C-Plan 2 to ensure sustainability in the long term. ESAs are part of the entire hierarchy of biodiversity, but it is not possible to include all biodiversity features in them. Landscape features associated with ESAs (termed spatial surrogates

for ESAs) that are essential for the maintenance and generation of biodiversity in sensitive areas, and therefore that require sensitive management were incorporated into C-Plan 3. Spatial surrogates include dolomite, rivers, wetlands, corridors for climate change and species migration, ridges and low-cost areas for Johannesburg and Tshwane.

According to the Gauteng C-Plan most of the affected area south of the watercourse falls within an Ecological Support Area (ESA) while the entire watercourse area and associated wetlands are classified as Important Areas (CBA). Most of the area north of the watercourse and west of Pierre Road is also included as Important Areas as well as the southern half of the property located east of Pierre Road (Figure 6). This Important Area (CBA site) is classified as such due to the presence of Primary and largely natural grassland. The primary vegetation layer used in the Gauteng C-Plan was derived from untransformed grassland, woodland and wetlands extracted for GTI land cover 2009.

Almost the entire wetland area (shown in light pink) is considered an Important Area (Critical Biodiversity Area –CBA) due to its association with the wetland and most notably due to the wetlands associated vegetation (Primary/Untransformed vegetation) creating a unique bioclimatic zone/refuge.

From yearly (prior to 2014) satellite imagery it is clear that the study area was severely invaded with alien invasive tree species thus impacting this area as a CBA, significantly limiting the ability of this area to contribute as a unique bioclimatic refuge. Furthermore, such an invaded area contains little natural vegetation and the vegetation present are in an unstable and severe degraded and transformed state. From the satellite imagery, the density of such invasive alien trees has been greatly reduced since 2014.

Comparing satellite imagery prior to 2014 with the current site condition (based on field observations), the study area has greatly improved with the eradication of most of the invasive alien trees allowing for the re-establishment of some indigenous species and the general improvement of wetlands. As such it can be concluded that the impacted CBA area has improved allowing for some of the functions associated with such a CBA to return.

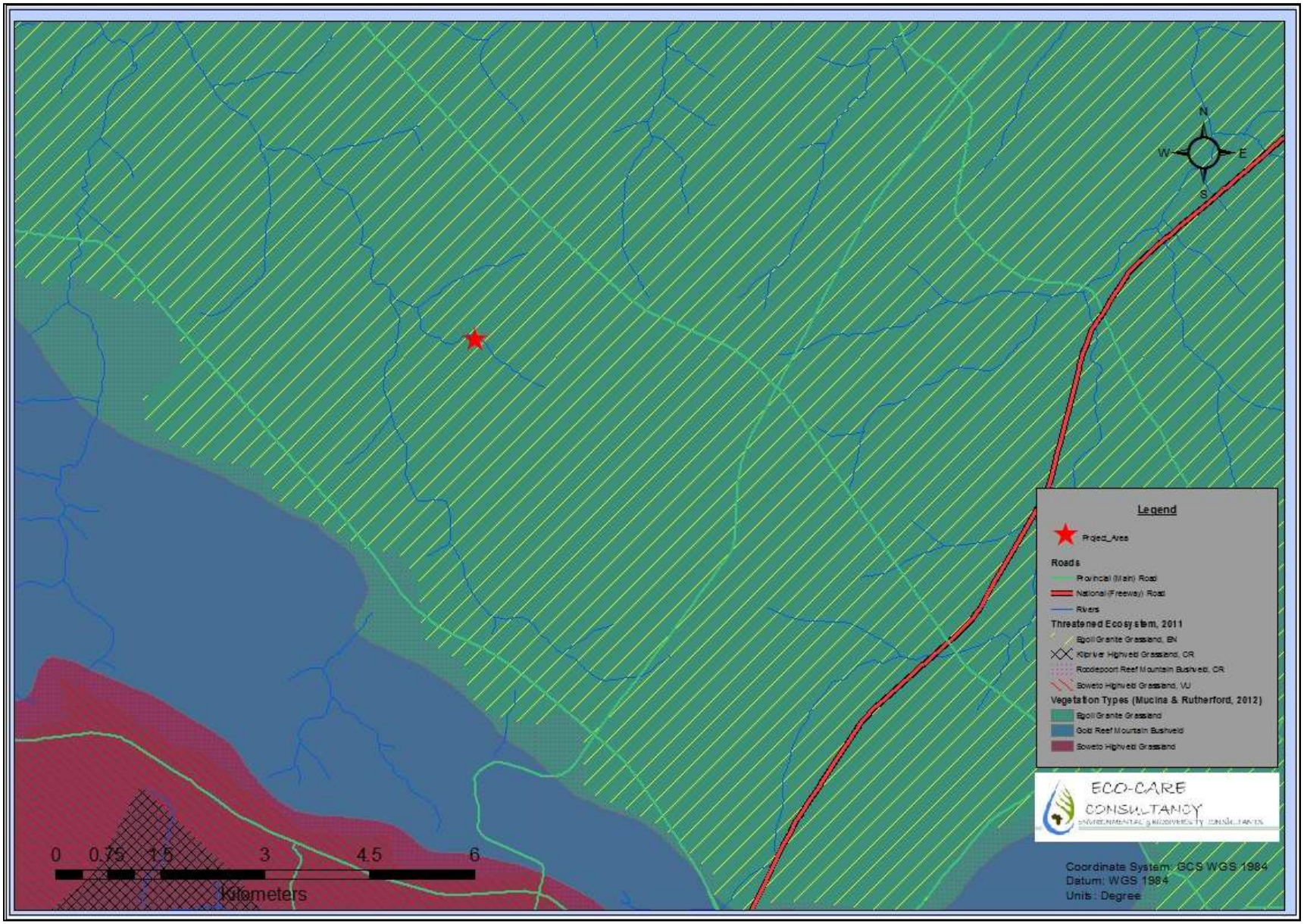


Figure 5: Vegetation types of study area and surrounding environment according to Mucina and Rutherford (2012).

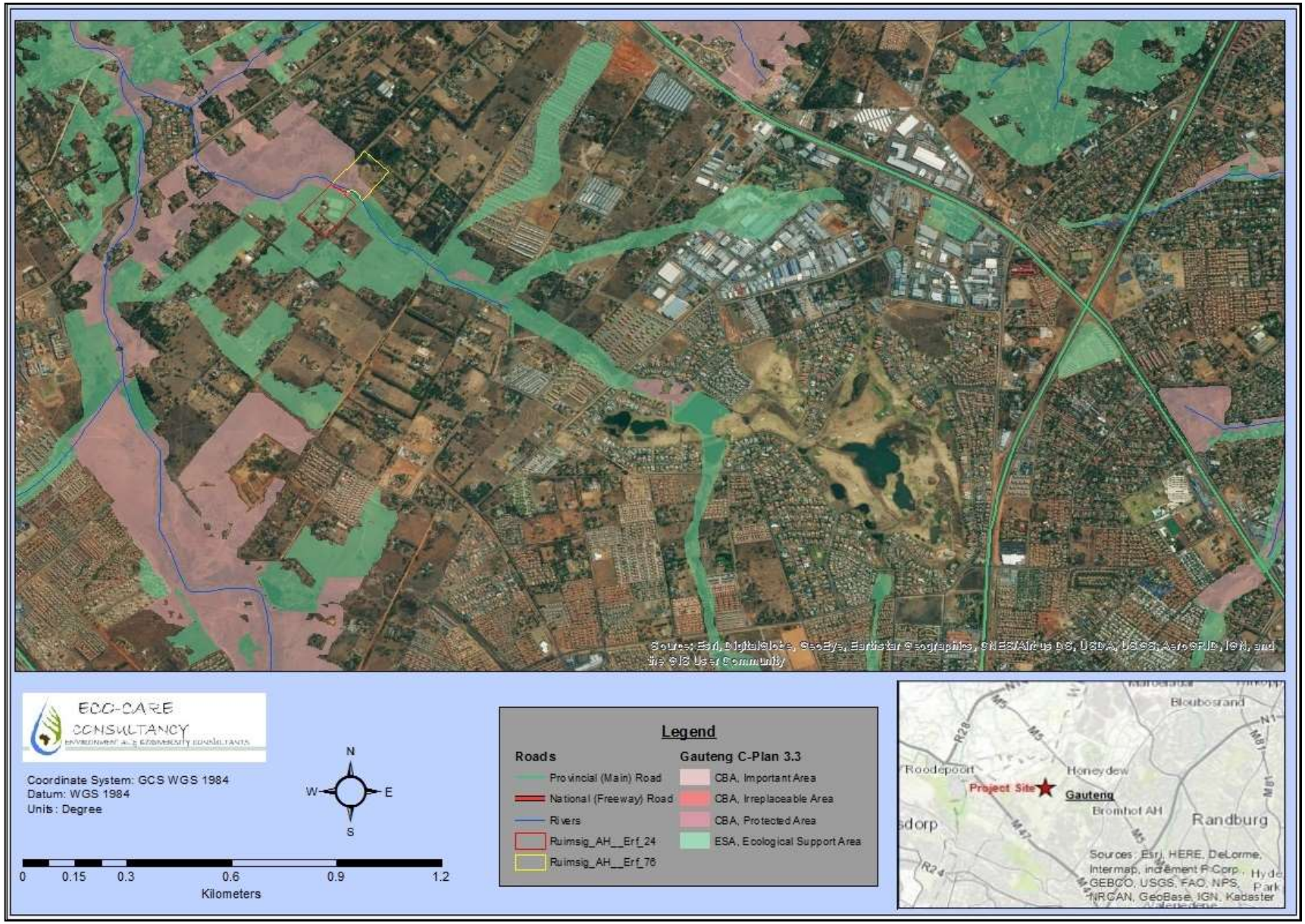


Figure 6: Gauteng C-Plan Map.

4.3 Habitat description

Two major ecosystems / habitats were identified within the study area. The zonal terrestrial habitat occurring along the midslopes and upper parts of the footslopes, forming part of the Egoli Granite Grassland (EGG), and the azonal aquatic habitat found within the lower footslopes and valley-bottom portion of the landscape. The terrestrial habitat comprises of a dominating grass cover and a high species diversity of herbs whilst the aquatic habitat comprises of a mixture of grasses, sedges and reeds.

» ***Terrestrial Ecosystem***

The terrestrial habitat resembles a secondary grassland which has developed on previous (historically) disturbed and transformed land. Due to this history, the grassland constitutes a transformed and species poor representation of Egoli Granite Grassland and is currently subjected to regular disturbances preventing it to progress along the successional gradient and to form a more stable and denser vegetation cover. Most of the southern portion of the study area has been severely transformed containing no elements of the EGG, with most of the area being developed. Vegetation between the standing infrastructure comprise of a regularly mowed lawn, commercial garden plants and a few Invasive Alien Trees. A small strip, between the southern, developed area, and the aquatic ecosystem comprise of a moderate degraded secondary grassland dominated mainly by *Hyparrhenia hirta* and *Eragrostis chloromelas*. This portion of grassland provides a buffer between the developed area and the aquatic ecosystem. A small portion of grassland located within Erf 76 (west of Pierre Road) contain a slightly better version of EGG although this area is subjected to high levels of IAP encroachment. The open spaces (grassland) surrounding the affected properties are in a similar degraded condition with the area west of Erf 24 comprising of a tall primary grassland subjected to numerous disturbances including; uncontrolled fires, human traffic, edge effect (due to fracturing cause by numerous developments and roads) and severe invasion with IAPs and weeds. Also included within this grassland ecosystem, even though it forms a transitional area or ecotone between the terrestrial and aquatic habitats, is the vegetation of the temporary and seasonally saturated zones. Inclusion is based on the relative close resemblance in vegetation structure and species shared between these areas.

Dominant species found within the terrestrial upland ecosystem include; *Hyparrhenia hirta, Eragrostis chloromelas, Helichrysum coriaceum, H. nudifolium, Plantago lanceolata* and *Verbena aristigera*.

As mentioned, the temporary saturated zone shows a close affinity to the upland grassland characterised by grass species such as *Eragrostis chloromelas, E. curvula, Sporobolus africanus, Digitaria eriantha, Cynodon dactylon, Chloris virgata, Acroceras macrum* and *Eragrostis plana*. Prominent herbaceous species of the temporary zone include; *Verbena bonariensis, Bidens pilosa, Sida rhombifolia* and Verbena aristigera.

The Seasonal Saturated Zone is dominated by more moisture loving grass species. Variations within this unit are mainly due to the presence/absence of temporary inundation. Inundation typically occur after sufficient flooding during the wet season and do not persist for long periods of time following these flooding events.
Areas that experience periodical inundation are dominated by a dense sward like grassy community with *Acroceras macrum* being the diagnostic species. Also associated with this community is *Paspalum urvillei, Bromus catharticus, Digitaria eriantha, Agrostis lachnantha, Eragrostis plana, Paspalum scrobiculatum, Chloris gayana, and Sporobolus fimbriatus.* The herbaceous layer is much less prominent than within the permanent saturated zone and include mostly weeds and invasive alien plants such as *Bidens pilosa, Lactuca indica, Verbena bonariensis and V. brasiliensis.* Sections of the seasonal saturated zone which is seldom to almost never inundated, comprise mostly tufted grasses with some creeping grasses and herbs. Diagnostic species comprising this community include *Eragrostis curvula, Eragrostis plana, Sporobolus fimbriatus* and *Acroceras macrum*. The herbaceous layer is also predominantly made up with weeds and invasive alien plants such as *Verbena brasiliensis, Amaranthus hybridus, Bidens pilosa, Lactuca indica* and *Plantago lanceolata*. Portions of this HGM zone have been extensively invaded with invasive alien trees and shrubs such as *Populus x canescens, Salix babylonica, Acacia dealbata* and *Sesbania punicea*. Fringing the dense *P. australis* community west of the affected properties is a dense seasonal saturated plant community comprising mostly out of *Imperata cylindrica* and *Hyparrhenia tamba*.

» ***Aquatic Ecosystem***

The aquatic (azonal) habitat comprise out of various habitats created mainly along the hydrogeomorphological (HGM) zones. The vegetation structure and composition of these habitat types have been greatly altered (especially historical disturbances), although the condition of the aquatic ecosystem within the study area has been greatly improved with the re-establishment of the HGM zones with distinguishing vegetation features through the eradication of IAPs and erosion control. Alien Invasive Plants are probably the most significant and threatening impact associated with this ecosystem and have transformed large areas to the west and east of the study area, severely degrading and even destroying the

integrity of the aquatic habitats and HGM zones within these areas. These invaded areas can be classified as Invasive Riparian Woodlands and comprise out of a largely monotonous vegetation structure, with a prominent tree layer (mainly *Populus x canescens, Salix babylonica, Acacia dealbata, A. mearnsii* and *Eucalyptus camaldulensis*), and a species poor, almost bare ground cover comprising out of a pioneer grasses and weeds (*Bromus catharticus, Bidens bipinnata, Sida rhombifolia* and *Tagetes minuta*).

The vegetation of the permanent saturated zone can be described as a tall and dense sedge and grassy zone also containing numerous moisture loving herbs and a few alien invasive trees. Variation of the species composition vary within this zone and is mostly determined by the degree and period of inundation. Typically, this zone is characterised by *Schoenoplectus brachyceras, Paspalum urvillei, Persicaria decipeins, Plantago longissima, Lactuca indica, Phragmites australis* and *Juncus exertus*.

The areas experiencing prolonged to almost permanent periods of inundation comprise of dense patches of monotonous *Phragmites australis* stands with *Typha capensis* sometimes associated with these patches. A patch of *Typha capensis* is present just below the bridge and culvert system where the watercourse exits the property boundary. These communities are extremely important in slowing down water flow and to trap sediments, nutrients and toxicants, functioning as a filter. A relative large and dense *Pharagmites australis* population (community) is present west of the study area, just west of the dense Invasive Riparian Woodland.

Where inundation is less prolonged, the dominance of *Phragmites australis* decreases and is replaced by a relative diverse, dense and tall sedges and grass wetland including species such as; *Schoenoplectus brachyceras, S. corymbosus, Lipocarpha chinensis, Cyperus fastigiatus, Paspalum urvillei, Leersia hexandra, Paspalum distichum, Agrostis lachnantha* and *Hemarthria altissima*. This area is also well represented by herbaceous species such as *Berula erecta, Cotula coronopifolia, Denekia capensis, Helichrysum mundtii, Nasturtium officinale, Oxalis semiloba, Persicaria decipeins, Plantago longissima, Rumex lanceolatus and Helichrysum* spp. Moderate levels of invasive alien tree levels area present within this unit and include *Acacia dealbata, Sesbania punicea* and *Salix babylonica*. This community contributes greatly to surface roughness of the area and is subsequently vital for flood attenuation, trapping of sediments and nutrient assimilation.

The narrow fringes of permanent saturated zones occurring along the relative steep watercourse banks are usually much more species poor than the above described vegetation unit and is characterised by species such as *Schoenoplectus*

brachyceras, Phragmites australis, Paspalum urvillei, Acroceras lachnantha, Plantago longissimi, Lactuca indica and *Persicaria serrulata*.

Where sand accumulation has occurred along the northern split of the watercourse, the channel bed has risen to an extent, as already discussed, that some of the channel bed have become seasonally exposed. These exposed areas are extremely dynamic and unstable and as such is dominated by the annual plant *Persicaria decipiens* which is capable to extensively colonize the area as soon as conditions become favourable.

Where shallow soil is present along the exposed bedrock smaller sedges and especially aquatic herbs are diagnostic species. Such diagnostic species include; *Bromus catharticus, Hemarthria altissima, Paspalum scrobiculatum, Berula erecta, Cotula coronopifolia, Craterostigma wilmsii, Nasturtium officinal, Plantago longissima, Ranunculus multifidus, Rumex crispus, Juncus exertus, Cyperus rupestris, Kylinga alata, Pycreus polystachyos* and *Schoenoplectus brachyceras*.

4.4 Description of vegetation communities/units

Below are the plant communities and sub-communities found within the affected properties as well as neighbouring areas (refer to vegetation map).

Terrestrial Upland Grassland

4.4.1 *Eragrostis chloromelas – Hyparrhenia* hirta Tall Grassland Community

4.4.2 Eragrostis curvula – Eragrostis chloromelas Short Grassland Community

Terrestrial Moist Grassland

4.4.3 Eragrostis plana – Acroceras macrum Moist Grassland Community

a. *E. Plana – A. macrum – Verbena aristigera* Sub-Community
b. *E. plana – A. macrum – Verbena brasiliensis* Sub-Community

4.4.4 Hyparrhenia tamba – Imperata cylindrica Moist Grassland-Community

Seasonal Inundated Sedgelands

4.4.5 Persicaria decipiens – Schoenoplectus brachyceras Sedgeland Community

a. *P. decipiens – S. brachyceras – Juncus exertus* Sub-Community
b. *P. decipeins – S. brachyceras – Pharagmites australis* Sub-Community

Permanent Inundated Reed Beds

4.4.6 Leersia hexandra – Phragmites australis Reed Community

Invasive Riparian Woodland

4.4.7 Populus x canescens – Salix babylonica Riparian Woodland

4.4.1 *Eragrostis chloromelas - Hyparrhenia hirta Tall Grassland Community*

Habitat and Land use			
Substrate	Coarse sandy (hard plinthic B-horizon), Moderate slopes (Midslope and upper portion of Footslopes).	**Disturbance**	Historical mowing of grassland & burning; old race track, footpaths and invasion with invasive alien trees and weeds.
Species Richness **(Indigenous)**	32 species recorded of which only 20 species are indigenous.	**Conservation value:**	Low to Medium Disturbed form of Egoli Granite Grassland and ESP within Gauteng C-Plan.
Ecosystem function	A permanent vegetation cover will be necessary to maintain the ecosystem function of stabilising, maintaining and nourishing soil, vegetation will also aid in slowing down runoff to increase infiltration into the soil and prevent degradation of downstream wetland systems.	**Sensitivity:**	Low
Need for rehabilitation	Clearing of weeds and alien invasive plants (8 alien species noted & 4 weeds).		

Vegetation structure		
Layer	**Height (m)**	**Cover (%)**
High shrubs and trees	2 - 4	0 - 8
Low Shrubs	0.2 – 0.5	0 - 3
Grass	0.1 – 0.9	40 - 70
Forbs	0.01 – 1.5	5 - 20
Dominant species	*Eragrostis chloromelas, Eragrostis gummiflua, Eragrostis curvula, Hyparrhenia hirta, Sporobolus africanus, Helichrysum aureonitens, Plantago lanceolata, Helichrysum coriaceum, Helichrysum nudifolium, Hermannia depressa, Verbena aristigera*	

Photo 1: Tall *Hyparrhenia hirta* grassland found on the midslopes (south and north facing).

4.4.2 *Eragrostis curvula – Eragrostis chloromelas Short Grassland Community*

Habitat and Land use			
Substrate	Coarse sandy, Low to Moderate slopes (Midslope and upper portion of Footslopes).	**Disturbance**	Historical cultivation.
Species Richness **(Indigenous)**	24 species of which only 17 species are indigenous.	**Conservation value:**	Low Transformed form of Egoli Granite Grassland and ESP within Gauteng C-Plan.
Ecosystem function	A permanent vegetation cover will be necessary to maintain the ecosystem function of stabilising, maintaining and nourishing soil, and vegetation will also aid in slowing down runoff to increase infiltration into the soil and prevent degradation of downstream wetland systems.	**Sensitivity:**	Low
Need for rehabilitation	Clearing of weeds and alien invasive plants (5 alien species noted and 2 weeds).		

Vegetation structure		
Layer	**Height (m)**	**Cover (%)**
High shrubs and trees	2 - 4	0
Low Shrubs	0.2 – 0.5	0
Grass	0.1 – 0.9	60 - 80
Forbs	0.01 – 1.5	20 - 30
Dominant species	*Eragrostis chloromelas, Eragrostis curvula, Aristida congesta subsp barbicollis Hyparrhenia hirta, Cynodon dactylon, Melinis repens, Pogonarthria squarrosa, Helichrysum coriaceum, Helichrysum nudifolium, Hermannia depressa, Verbena aristigera, Richardia brasiliensis*	

Photo 2: Shorter grassland with *Eragrostis chloromelas* being much more prominent.

Table 6: Species recorded within the two Terrestrial Upland Grassland Communities.

Growth Form	Species	E. cloromelas - H. hirta Tall Grassland	E. curvula - E. chloromelas Short Grassland	Ecological Status	Successional Status
Dwarf Shrub	*Stoebe vulgaris*	X		Weed	
Grass	*Aristida congesta subsp. barbicollis*	X	X	Pioneer	Increaser 2
Grass	*Chloris pycnothrix*	X		Pioneer	Increaser 2
Grass	*Chloris virgata*		X	Pioneer	Increaser 2
Grass	*Cynodon dactylon*		X	Pioneer	Increaser 2
Grass	*Digitaria eriantha*	X		Climax	Decreaser
Grass	*Eragrosits nindensis*		X	Sub-Climax	Increaser 2
Grass	*Eragrostis chloromelas*	X	X	Sub-Climax	Increaser 2
Grass	*Eragrostis curvula*	X	X	Sub-Climax	Increaser 2
Grass	*Eragrostis gummiflua*	X		Sub-Climax	Increaser 2
Grass	*Eragrostis heteromera*	X		Sub-Climax	Increaser 2
Grass	*Hyparrhenia hirta*	X	X	Climax	Increaser 1
Grass	*Melinis repens*	X	X	Sub-Climax	Increaser 2
Grass	*Microchloa caffra*		X	Pioneer	Increaser 2
Grass	*Pogonarthria squarrosa*		X	Sub-Climax	Increaser 2
Grass	*Sporobolus africanus*	X		Sub-Climax	Increaser 3
Grass	*Themeda triandra*	X		Climax	Decreaser
Grass	*Tragus berteronianus*	X	X	Pioneer	Increaser 2
Grass	*Trichoneura grandiglumis*	X	X	Sub-Climax	Increaser 2
Herb	*Bidens bipinnata*	X		Invasive Alien Plant	
Herb	*Chamaecrista comosa*		X		

Herb	*Cleome monophylla*		X	Invasive Alien Plant	
Herb	*Crepis hypochoeridea*	X		Weed	
Herb	*Gazania krebsiana*		X		
Herb	*Gerbera piloselloides*	X			
Herb	*Gomphrena celosioides*		X	Invasive Alien Plant	
Herb	*Haplocarpa scaposa*	X			
Herb	*Helichrysum aureonitens*	X	X		
Herb	*Helichrysum coriaceum*	X	X		
Herb	*Helichrysum nudifolium*	X			
Herb	*Helichrysum rugulosum*	X		Weed	
Herb	*Hermannia depressa*	X	X		
Herb	*Lactuca inermis*		X	Weed	
Herb	*Plantago lanceolata*	X	X	Invasive Alien Plant	
Herb	*Richardia brasiliensis*	X	X	Invasive Alien Plant	
Herb	*Scabiosa columbaria*		X	Weed	
Herb	*Sida alba*	X		Weed	
Herb	*Sida dregei*	X			
Herb	*Tagetes minuta*	X		Invasive Alien Plant	
Herb	*Verbena aristigera*	X	X	Invasive Alien Plant	
Shrub	*Sesbania punicea*	X		Category 1b Invasive Alien Plant	
Tree	*Acacia decurrens*	X		Category 1b Invasive Alien Plant	
Tree	*Pinus taeda*	X		Category 2 Invasive Alien Plant	
Shrub	*Cotoneaster lacteus*			Exotic	
Succulent	*Cereus jamacaru*			Category 1b Invasive Alien Plant	

Shrub					
Tree	*Acacia poalyriifolia*			Category 1b Invasive Alien Plant	
Tree	*Acer buergerianum*			Exotic	
Tree	*Albizia julibrissin*			Category 1b Invasive Alien Plant	
Tree	*Cupressus sempervirens*			Exotic	
Tree	*Eucalyptus camaldulensis*			Category 1b Invasive Alien Plant	
Tree	*Grevillea robusta*			Category 3 Invasive Alien Plant	
Tree	*Melia azedarach*			Category 1b Invasive Alien Plant	
Tree	*Photinia serratifolia*			Exotic	
Tree	*Platycladus orientalis*			Exotic	
Tree	*Yucca gloriosa*			Exotic	

4.4.3 *Eragrostis plana – Acroceras macrum Moist Grassland Community*

a. E. Plana – A. macrum – Verbena aristigera Sub-Community

Habitat and Land use			
Substrate	Coarse sandy (hard plinthic B-horizon), Moderate slopes (Midslope and upper portion of Footslopes).	**Disturbance**	Historical mowing of grassland & burning; old race track, footpaths and invasion with invasive alien trees and weeds.
Species Richness **(Indigenous)**	27 species recorded of which only 13 species are indigenous.	**Conservation value:**	Medium Falls within the wetland boundary, Disturbed form of Egoli Granite Grassland & CBA (important area) within Gauteng C-Plan.
Ecosystem function	Vegetation as grazing and stabilisation of soils, accumulates and slows down runoff from higher-lying areas, maximises infiltration of runoff into soils and filtering of runoff before it seeps further into lower-lying river systems.	**Sensitivity:**	Medium - High
Need for rehabilitation	Clearing of weeds and alien invasive plants (5 alien species noted and 2 weeds).		

Vegetation structure		
Layer	**Height (m)**	**Cover (%)**
High shrubs and trees	2 - 4	5 - 30
Low Shrubs	0.2 – 0.5	0 - 2
Grass	0.1 – 0.9	30 - 60
Forbs	0.01 – 1.5	10 - 20
Dominant species	*Eragrostis chloromelas, E. curvula, Sporobolus africanus, Digitaria eriantha, Cynodon dactylon, Chloris virgata, Acroceras macrum, Eragrostis plana, Verbena bonariensis, Bidens pilosa, Sida rhombifolia and Verbena aristigera*	

Photo 3: Temporary saturated zone dominated by a mixture of tufted and creeping grass species (left bottom corner) in contrast with the higher tufted grassland (top right) of the terrestrial upland ecosystem.

b. E. Plana – A. macrum – Verbena brasiliensis Sub-Community

Habitat and Land use			
Substrate	Coarse bleached sandy, Moderate to steep slopes (Valley-bottom).	**Disturbance**	Invasion with invasive alien trees.
Species Richness **(Indigenous)**	41 species recorded of which only 26 species are indigenous.	**Conservation value:**	Medium Falls within the wetland boundary, Disturbed form of Egoli Granite Grassland and CBA (important area) within Gauteng C-Plan.
Ecosystem function	Vegetation as grazing and stabilisation of soils, accumulates and slows down runoff from higher-lying areas, maximises infiltration of runoff into soils and filtering of runoff before it seeps further into lower-lying river systems, creates unique habitat for flora and fauna.	**Sensitivity:**	Medium - High
Need for rehabilitation	Clearing of weeds and alien invasive plants (15 alien species).		

Vegetation structure		
Layer	**Height (m)**	**Cover (%)**
High shrubs and trees	2 - 4	5 - 25
Low Shrubs	0.2 – 0.5	0 - 5
Grass	0.1 – 0.9	40 - 60
Forbs	0.01 – 1.5	5 - 15
Dominant species	*Acroceras macrum, Paspalum urvillei, Bromus catharticus, Digitaria eriantha, Agrostis lachnantha, Eragrostis plana, Paspalum scrobiculatum, Chloris gayana, Sporobolus fimbriatus, Eragrostis curvula, Bidens pilosa, Lactuca indica, Verbena bonariensis, V. brasiliensis*	

Photo 4: Seasonal saturated zoned dominated with tufted and creeping moisture loving grass species.

4.4.4 *Hyparrhenia tamba - Imperata cylindrica Moist Grassland Community*

Habitat and Land use			
Substrate	Loamy to clayey soil, Low slopes (Valley-bottom)	**Disturbance**	Reduction in moisture due to upstream invasion of invasive alien plants.
Species Richness **(Indigenous)**	Only 4 species	**Conservation value:**	Medium Falls within the wetland boundary, CBA (important area) within

			Gauteng C-Plan
Ecosystem function	Vegetation as stabilisation of soils, accumulates and slows down runoff from higher-lying areas, maximises infiltration of runoff into soils and filtering of runoff before it seeps further into lower-lying river systems, creates unique habitat for flora and fauna.	**Sensitivity:**	Medium - High
Need for rehabilitation	Monitoring to prevent potential invasion of invasive alien trees.		

Vegetation structure		
Layer	**Height (m)**	**Cover (%)**
High shrubs and trees	2 - 4	0
Low Shrubs	0.2 – 0.5	0
Grass	0.1 – 0.9	90
Forbs	0.01 – 1.5	5 - 8
Dominant species	*Hyparrhenia tamba, Imperata cylindrica*	

Photo 5: Seasonally saturated zone dominated by *Imperata cylindrica*

Table 7: Species recorded within the two Terrestrial Moist Grassland Communities.

Growth Form	Species	*E. plana - A. macrum - V. brasiliensis* Seasonal Moist Grassland	*E. plana - A. macrum - V. aristigera* Temporary Moist Grassland	*H. tamba - I. cylindrica* Seasonal Moist Grassland	Hydrological Status	Successional Status	Ecological Status
Climbing Herb	*Araujia sericifera*		X			Category 1b Invasive Alien Plant	
Climbing Herb	*Cuscata campestris*		X			Category 1b Invasive Alien Plant	
Dwarf Shrub	*Lessertia stricta*	X			Facultative Wetland		
Grass	*Acroceras macrum*	X			Facultative Wetland	Climax	Decreaser
Grass	*Agrostis lachnantha*	X			Facultative Wetland	Pioneer	Increaser 2
Grass	*Bromus catharticus*	X			Facultative	Invasive Alien Plant	
Grass	*Chloris gayana*	X				Sub-Climax	Increaser 2
Grass	*Chloris virgata*		X			Pioneer	Increaser 2
Grass	*Cynodon dactylon*	X	X			Pioneer	Increaser 2
Grass	*Digitaria eriantha*	X	X			Climax	Decreaser
Grass	*Eragrostis chloromelas*		X			Sub-Climax	Increaser 2
Grass	*Eragrostis curvula*	X	X			Sub-Climax	Increaser 2
Grass	*Eragrostis heteromera*	X			Facultative Wetland	Sub-Climax	Increaser 2

Grass	*Eragrostis plana*	X			Facultative Wetland	Sub-Climax	Increaser 2
Grass	*Hemarthria altissima*	X			Obligate Wetland	Climax	Decreaser
Grass	*Hyparrhenia tamba*	X		X	Facultative Wetland	Climax	Increaser 1
Grass	*Imperata cylindrica*	X	X	X	Obligate Wetland		
Grass	*Panicum maximum*	X				Sub-Climax	Decreaser
Grass	*Paspalum scrobiculatum*	X			Obligate Wetland	Sub-Climax	Increaser 2
Grass	*Paspalum urvillei*	X	X		Facultative Wetland	Invasive Alien Plant	
Grass	*Sporobolus africanus*	X	X		Facultative	Sub-Climax	Increaser 3
Grass	*Sporobolus fimbriatus*	X	X		Facultative	Climax	Decreaser
Grass	*Urelytrum agropyroides*	X	X		Facultative	Climax	Increaser 1
Herb	*Amaranthus hybridus*	X			Facultative	Invasive Alien Plant	
Herb	*Bidens bipinnata*	X	X			Invasive Alien Plant	
Herb	*Bidens pilosa*	X	X			Invasive Alien Plant	
Herb	*Buchnera spp.*		X				
Herb	*Gomphrena celosiodes*		X				

Herb	*Helichrysum spp.*	X		X	Obligate Wetland		
Herb	*Hermannia depressa*		X				
Herb	*Lactuca indica*	X				Invasive Alien Plant	
Herb	*Oxalis semiloba*	X					
Herb	*Plantago lanceolata*	X	X			Invasive Alien Plant	
Herb	*Plantago longissima*	X		X	Obligate Wetland		
Herb	*Raphanus raphanistrum*	X				Invasive Alien Plant	
Herb	*Richardia brasiliensis*		X			Invasive Alien Plant	
Herb	*Rumex lanceolatus*	X			Facultative		
Herb	*Schkuhria pinnata*		X			Invasive Alien Plant	
Herb	*Sida rhombifolia*		X			Weed	
Herb	*Tagetes minuta*	X				Invasive Alien Plant	
Herb	*Trifolium campestre*	X				Invasive Alien Plant	
Herb	*Verbena aristigera*		X			Invasive Alien Plant	
Herb	*Verbena bonariensis*	X			Facultative Wetland	Category 1b Invasive Alien Plant	
Herb	*Verbena brasiliensis*	X	X			Category 1b Invasive Alien Plant	

Sedge	*Cyperus rupestris*	X			Facultative		
Sedge	*Pycreus polystachyos*	X			Obligate Wetland		
Shrub	*Cestrum aurantiacum*	X			Facultative Wetland	Category 1b Invasive Alien Plant	
Shrub	*Robina pseudoacacia*		X		Facultative	Category 1b Invasive Alien Plant	
Shrub	*Sesbania punicea*	X	X		Facultative Wetland	Category 1b Invasive Alien Plant	
Tree	*Acacia dealbata*	X	X		Facultative	Category 2 Invasive Alien Plant	
Tree	*Eucalyptus camaldulensis*	X				Category 1b Invasive Alien Plant	
Tree	*Populus x canescens*	X	X		Facultative	Category 2 Invasive Alien Plant	
Tree	*Salix babylonica*	X			Facultative	Naturalised Alien Species	

4.4.5 *Persicaria decipiens - Schoenoplectus brachyceras Sedgeland Community*

a. P. decipiens – S. brachyceras – Juncus exertus Sub-Community

Habitat and Land use			
Substrate	Predominantly clay soils with coarse sand and organic material, Low sloping concave landscape (Valley-bottom).	**Disturbance**	Some Invasive Alien Trees, Pierre Road affecting runoff into wetland.
Species Richness **(Indigenous)**	30 species recorded of which only 18 species are indigenous.	**Conservation value:**	Medium - High Falls within the wetland boundary, CBA (important area) within Gauteng C-Plan, Important ecological functions.
Ecosystem function	Stabilisation of soils, accumulates and slows down runoff from higher-lying areas, maximises infiltration of runoff into soils and filtering of runoff before it seeps further into lower-lying river systems, sediment trapping, nutrient and toxicant accumulation.	**Sensitivity:**	Medium - High
Need for rehabilitation	Clearing of weeds and alien invasive plants (12 alien species noted & 1 weed).		

Vegetation structure		
Layer	**Height (m)**	**Cover (%)**
High shrubs and trees	2 - 4	0 - 10
Low Shrubs	0.2 – 0.5	0
Grass & Sedges	0.1 – 0.9	40 - 60
Forbs	0.01 – 1.5	20 - 40
Dominant species	*Schoenoplectus brachyceras, S. corymbosus, Lipocarpha chinensis, Cyperus fastigiatus, Paspalum urvillei, Leersia hexandra, Paspalum distichum, Agrostis lachnantha, Hemarthria altissima, Berula erecta, Cotula coronopifolia, Denekia capensis,*	

	Helichrysum mundtii, Nasturtium officinale, Oxalis semiloba, Persicaria decipeins, Plantago longissima, Rumex lanceolatus and *Helichrysum spp*

Photo 6: Permanently saturated area dominated by a mixture of sedges and grasses.

b. P. decipiens – S. brachyceras – Phragmites australis Sub-Community

Habitat and Land use			
Substrate	Predominantly clay soils with coarse sand and organic material, Relative steep concave landscape (Valley-bottom).	**Disturbance**	Invasive Alien Plants, Flooding due to bridges and culverts.
Species Richness **(Indigenous)**	15 species of which only 9 species are indigenous.	**Conservation value:**	Medium - High Falls within the wetland boundary, CBA (important area) within Gauteng C-Plan, Important ecological functions.
Ecosystem function	Stabilisation of soils, accumulates and slows down runoff from higher-lying areas, maximises infiltration of runoff into soils and filtering of runoff before it seeps further into lower-lying river systems.	**Sensitivity:**	Medium – High
Need for	Clearing of weeds and alien invasive plants (5 alien species		

rehabilitation	noted & 1 weed).	

Vegetation structure		
Layer	**Height (m)**	**Cover (%)**
High shrubs and trees	2 - 4	0 - 20
Low Shrubs	0.2 – 0.5	0
Grass & Sedges	0.1 – 0.9	50 - 70
Forbs	0.01 – 1.5	10 - 25
Dominant species	*Persicaria decipiens, Schoenoplectus brachyceras, Phragmites australis, Paspalum urvillei, Acroceras lachnantha, Plantago longissimi, Lactuca indica* and *Persicaria serrulata*	

Photo 7: Narrow strip permanently saturated zone dominated with *Schoenoplectus brachyceras*.

4.4.6 *Leersia hexandra - Phragmites australis Reed Bed Community*

Habitat and Land use			
Substrate	Permanently inundated, soil comprising a mixture of clay, organic material and coarse sand, Low slope valley-bottom.	**Disturbance**	Litter (solid pollutants)
Species	7 species recorded of which all are	**Conservatio**	Medium - High

Richness **(Indigenous)**	indigenous	**n value:**	Falls within the wetland boundary, CBA (important area) within Gauteng C-Plan, Important ecological functions.
Ecosystem function	Stabilisation of soils, accumulates and slows down runoff and attenuate floods, streamflow augmentation, filtering of water, sediment trapping, nutrient and toxicant accumulation.	**Sensitivity:**	Medium - High
Need for rehabilitation	Monitor as these areas may become encroaching with an increase in nutrient and sediment input into the aquatic system and may cause blockage of channels and contribute to low oxygen conditions (decomposing material).		

Vegetation structure		
Layer	**Height (m)**	**Cover (%)**
High shrubs and trees	2 - 4	0
Low Shrubs	0.2 – 0.5	0
Grass & Sedges	0.1 – 0.9	90 - 100
Forbs	0.01 – 1.5	0 - 10
Dominant species	*Phragmites australis*	

Photo 8: Dense stand of *Phragmites australis*.

Table 8: Species recorded within the Permanent Saturated Habitats (Both Seasonally Inundated and Permanently Inundated Habitats)**.**

Growth Form	Species	Seasonal Inundated Sedgeland		Permanent Inundated Reed Bed	Hydrological Status	Successional Status	Ecological Status
		P. decipeins - S. brachyceras - J. exertus	***P. decipeins - S. brachyceras - P. australis***	**L. hexandra – P. australis Reed Bed**			
Bulrush	Typha capensis		X	X	Obligate Wetland		
Dwarf Shrub	Lessertia stricta	X			Facultative Wetland		
Grass	Acroceras macrum		X		Facultative Wetland	Climax	Decreaser
Grass	Agrostis lachnantha	X			Facultative Wetland	Pioneer	Increaser 2
Grass	Bromus catharticus	X	X		Facultative	Invasive Alien Plant	
Grass	Chloris gayana					Sub-Climax	Increaser 2
Grass	Chloris virgata					Pioneer	Increaser 2
Grass	Cortaderia jubata	X			Facultative	Invasive Alien Plant	
Grass	Cynodon dactylon					Pioneer	Increaser 2
Grass	Digitaria eriantha					Climax	Decreaser
Grass	Eragrostis chloromelas					Sub-Climax	Increaser 2
Grass	Eragrostis curvula					Sub-Climax	Increaser 2

Grass	Eragrostis heteromera				Facultative Wetland	Sub-Climax	Increaser 2
Grass	Hemarthria altissima	X		X	Obligate Wetland	Climax	Decreaser
Grass	Eragrostis plana				Facultative Wetland	Sub-Climax	Increaser 2
Grass	Leersia hexandra	X	X	X	Obligate Wetland	Climax	Decreaser
Grass	Panicum maximum					Sub-Climax	Decreaser
Grass	Paspalum distichum	X			Obligate Wetland	Invasive Alien Plant	
Grass	Paspalum scrobiculatum				Obligate Wetland	Sub-Climax	Increaser 2
Grass	Paspalum urvillei	X	X		Facultative Wetland	Invasive Alien Plant	
Grass	Phragmites australis		X	X	Obligate Wetland		Decreaser
Grass	Sporobolus africanus				Facultative	Sub-Climax	Increaser 3
Grass	Sporobolus fimbriatus				Facultative	Climax	Decreaser
Grass	Urelytrum agropyroides				Facultative	Climax	Increaser 1
Herb	Amaranthus hybridus				Facultative	Invasive Alien Plant	
Herb	Berula erecta	X	X	X	Obligate Wetland		
Herb	Bidens pilosa					Invasive Alien Plant	
Herb	Buchnera spp.						
Herb	Cotula coronopifolia	X			Obligate Wetland		
Herb	Craterostigma wilmsii	X			Obligate Wetland		
Herb	Denekia capensis	X			Obligate Wetland		

Herb	Gomphrena celosiodes						
Herb	Helichrysum spp.	X			Obligate Wetland		
Herb	Helichrysum mundtii	X			Facultative wetland		
Herb	Hermannia depressa						
Herb	Lactuca indica					Invasive Alien Plant	
Herb	Nasturtium officinale	X	X		Obligate Wetland	Category 2 Invasive Alien Plant	
Herb	Oxalis semiloba	X	X				
Herb	Persicaria decipiens	X	X		Obligate Wetland	Weed	
Herb	Persicaria serrulata	X			Facultative Wetland	Invasive Alien Plant	
Herb	Plantago lanceolata					Invasive Alien Plant	
Herb	Plantago longissima	X	X		Obligate Wetland		
Herb	Ranunculus multifidus	X			Obligate Wetland		
Herb	Rumex crispus	X			Obligate Wetland	Invasive Alien Plant	
Herb	Rumex lanceolatus	X			Facultative		
Herb	Sida rhombifolia					Weed	
Herb	Tagetes minuta					Invasive Alien Plant	
Herb	Trifolium campestre					Invasive Alien Plant	
Herb	Verbena bonariensis				Facultative Wetland	Category 1b Invasive Alien Plant	

Herb	Verbena brasiliensis					Category 1b Invasive Alien Plant	
Rush	Juncus exertus	X	X	X	Obligate Wetland		
Sedge	Cyperus fastigiatus	X			Obligate Wetland		
Sedge	Cyperus rupestris				Facultative		
Sedge	Kylinga melanosperma	X			Obligate Wetland		
Sedge	Lipocarpha chinensis	X			Obligate Wetland		
Sedge	Pycreus polystachyos	X			Obligate Wetland		
Sedge	Schoenoplectus brachyceras	X	X		Obligate Wetland		
Sedge	Schoenoplectus corymbosus	X			Obligate Wetland		
Shrub	Cestrum aurantiacum				Facultative Wetland	Category 1b Invasive Alien Plant	
Shrub	Robina pseudoacacia				Facultative	Category 1b Invasive Alien Plant	
Shrub	Sesbania punicea				Facultative Wetland	Category 1b Invasive Alien Plant	
Tree	Acacia dealbata	X	X		Facultative	Category 2 Invasive Alien Plant	
Tree	Eucalyptus camaldulensis					Category 1b Invasive Alien Plant	
Tree	Populus x canescens				Facultative	Category 2 Invasive	

						Alien Plant	
Tree	Salix babylonica		X		Facultative	Naturalised Alien Species	
Herb	Verbena aristigera					Invasive Alien Plant	
Climbing Herb	Cuscata campestris					Category 1b Invasive Alien Plant	
Climbing Herb	Araujia sericifera					Category 1b Invasive Alien Plant	
Herb	Richardia brasiliensis					Invasive Alien Plant	
Tree	Melia azedarach					Category 1b Invasive Alien Plant	
Grass	Imperata cylindrica			X	Obligate Wetland		
Herb	Sonchus oleraceus					Invasive Alien Plant	
Tree	Acacia mearnsii					Category 2 Invasive Alien Plant	
Herb	Bidens bipinnata					Invasive Alien Plant	
Herb	Conyza bonariensis					Invasive Alien Plant	
Herb	Schkuhria pinnata					Invasive Alien Plant	
Herb	Raphanus raphanistrum					Invasive Alien Plant	

4.4.7 *Populus x canescens* – *Salix babylonica* Riparian Woodland

Habitat and Land use			
Substrate	Permanently, Seasonal and Temporary saturated zones, Clayey to Loamy-Clay soils. Low slope valley-bottoms.	**Disturbance**	Loss of indigenous vegetation, totally transformed due to invasion within alien woody species, Low ground cover, Sheet- and Bank erosion.
Species Richness **(Indigenous)**	23 species recorded of which only 3 are indigenous.	**Conservation value:**	Low Highly transformed habitat
Ecosystem function	Nesting and roosting sites for some avifaunal species, pollen for some insect species, minimal stabilisation of soil.	**Sensitivity:**	Low
Need for rehabilitation	Eradication of Invasive Alien Trees and re-establishment of natural wetland species. Stabilisation of soil.		

Vegetation structure		
Layer	**Height (m)**	**Cover (%)**
High shrubs and trees	2 - 4	70 - 90
Low Shrubs	0.2 – 0.5	5 – 10
Grass	0.1 – 0.9	0 - 15
Forbs	0.01 – 1.5	0 - 25
Dominant species	*Populus x canescens, Salix babylonica, Acacia dealbata, A. mearnsii* and *Eucalyptus camaldulensis*	

Photo 9: Relative dense invasive riparian woodland.

Table 9: Species recorded within the Alien Riparian Woodland Habitat (*P. x canescens – Salix babylonica* Community)**.**

Growth Form	Species	Hydrological Status	Ecological Status	Successional Status
Climbing Herb	*Araujia sericifera*		Category 1b Invasive Alien Plant	
Climbing Herb	*Cuscata campestris*		Category 1b Invasive Alien Plant	
Grass	*Bromus catharticus*	Facultative	Invasive Alien Plant	
Grass	*Digitaria velutina*	Facultative	Increaser 2	Pioneer
Grass	*Ehrarta erecta*	Facultative	Increaser 2	Pioneer
Grass	*Paspalum dilatatum*	Facultative Wetland	Invasive Alien Plant	
Grass	*Paspalum urvillei*	Facultative Wetland	Invasive Alien Plant	Sub-Climax
Herb	*Bidens bipinnata*		Invasive Alien Plant	
Herb	*Conyza bonariensis*		Invasive Alien Plant	
Herb	*Plantago lanceolata*		Invasive Alien Plant	
Herb	*Schkuhria pinnata*		Invasive Alien Plant	
Herb	*Sida rhombifolia*		Weed	
Herb	*Sonchus oleraceus*		Invasive Alien Plant	
Herb	*Tagetes minuta*		Invasive Alien Plant	
Shrub	*Cestrum aurantiacum*	Facultative Wetland	Category 1b Invasive Alien Plant	
Shrub	*Robina pseudoacacia*	Facultative	Category 1b Invasive Alien Plant	
Shrub	*Sesbania punicea*	Facultative Wetland	Category 1b Invasive Alien Plant	
Tree	*Acacia dealbata*	Facultative	Category 2 Invasive Alien Plant	
Tree	*Acacia mearnsii*		Category 2 Invasive Alien Plant	
Tree	*Eucalyptus camaldulensis*		Category 1b Invasive Alien Plant	
Tree	*Melia azedarach*		Category 1b Invasive Alien Plant	

Tree	*Populus x canescens*	Facultative	Category 2 Invasive Alien Plant	
Tree	*Salix babylonica*	Facultative	Naturalised Alien Species	

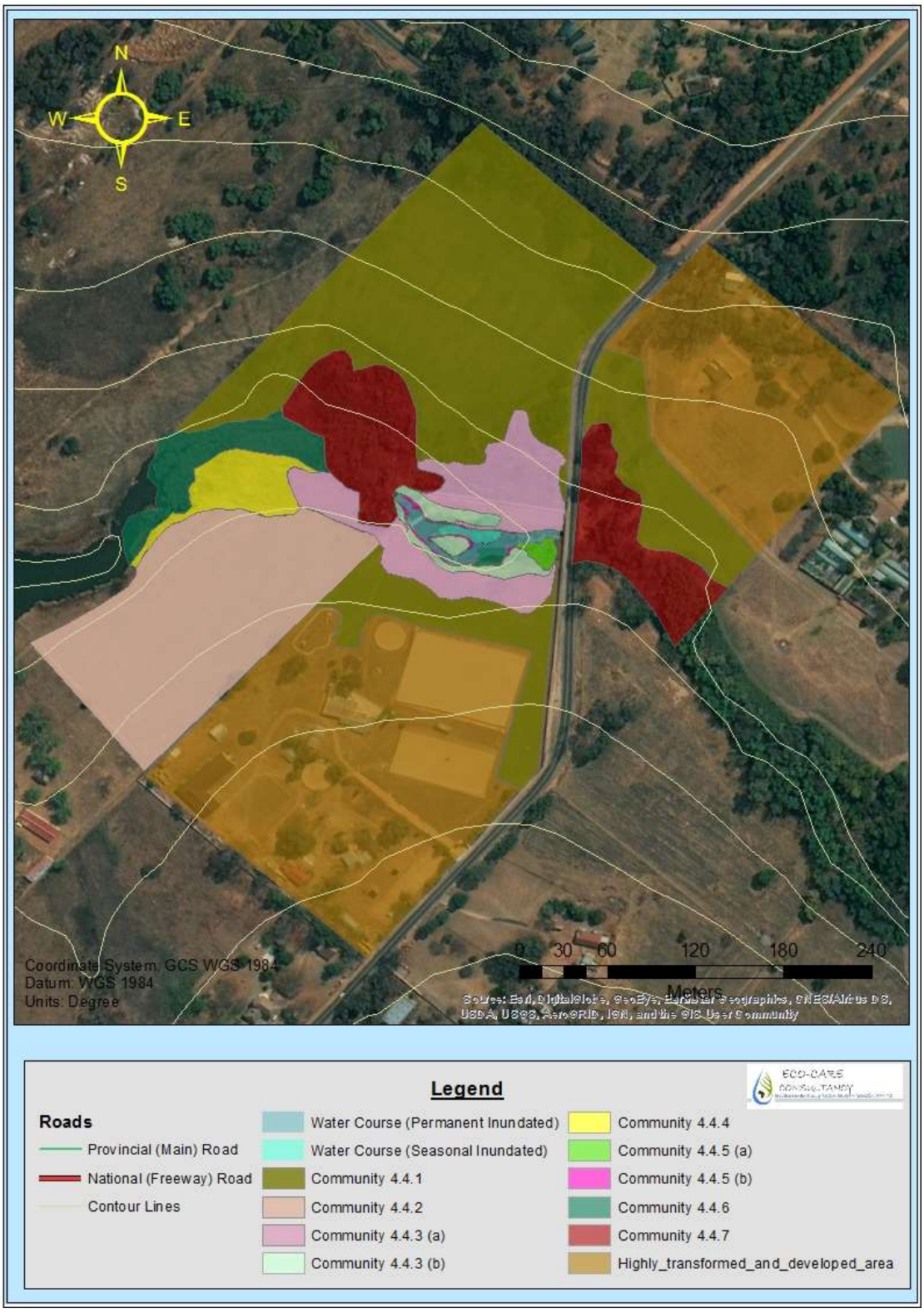


Figure 7: Map illustrating the delineated wetland zones according to soil form indicators (plots of samples also indicated).

4.5 Fauna Survey

Mammals

Indication of mammal activity within the study area was very low. Factors reducing the potential occurrence of mammal species include the high level of anthropogenic activities and movement containing the high-density urban small holding developments as well as the numerous roads traversing the area. The landscape has been greatly fractured with extensive areas of the open spaces being prone to transformation and disturbances such as regular human movement, uncontrolled burning and habitat replacement through invasion with invasive alien plants. The most important feature (potential habitat and refuge) for mammal species is the wetland area that is relative extensive and undeveloped, apart from small dam construction and road crossings. The road crossings along with extensive invasive alien woodlands do however contribute to the fracturing of this area and the potential isolation of mammal populations. Some movement through these areas are however likely. Due to the high level of disturbances, most mammals likely to be present include highly adaptable species. The only mammalian activity noted within the study area where that of Cape Porcupine (*Hystrix africaeaustralis*). There is a likelihood that the aquatic habitat within the study area may be infrequently visited by other rodent species as well as mongoose species although it is unlikely that these species reside permanently within the study area. Such species include: Swamp Musk Shrew – *Crocidura mariquensis* (accumulated organic debris and reed beds); Common (African) Mole Rat - *Cryptomys hottenttotus* (Deeper sandy soils of the seasonal and temporary wetland areas); House Mouse – *Mus musculus* (cosmopolitan introduced species), African Marsh Rat – *Dasymys incomtus* (dense reed beds); Water (Marsh) Mongoose – *Atilax paludinosus* (in and around the watercourse and dense reed vegetation), Yellow Mongoose - *Cynictis penicillate* (any open space).

Overall the area can be regarded as low sensitive with little fauna present (no protected and threatened species), although some faunal species may utilise the aquatic habitat which form a corridor of movement (although somewhat fractured), especially with the lower lying Crocodile River and as such the aquatic habitat can be regarded as Medium Sensitive

Reptiles and Amphibians

During the survey, no reptiles where confirmed to occur within the study area. Two amphibian species were recorded within the study area (vegetated fringes of flooded area). It is however likely for common, opportunistic and highly adaptable reptile species such as Gecko species, House Snakes and Skinks species to inhabit the area. The amphibian species recorded within the study area were; Common River Frog (*Amietia quecketti*) and Natal Sand Frog (*Tomopterna natalensis).* There is a likelihood for the following frog species to also inhabit the aquatic ecosystem and vegetation fringes: Boettgers's Caco (*Cacosternum boettgeri)* Striped Stream Frog (*Strongylopus fasciatus)* Tandy's Sand Frog (*Tomopterna tandyi*) Guttural Toad (*Amietophrynus gutturalis*), Raucous Toad (*Amietophrynus rangeri*) and Common Platanna (*Xenopus laevis*). Most of these potential toad species are dependent on the water course and associated vegetation and is extremely susceptible to pollution and changes in water quality. In terms of amphibian species, the aquatic ecosystem is regarded as Medium – High Sensitive. The alteration within this ecosystem (bridges and culverts) have likely had only a low, and temporary impact on these species with the flooded area creating additional habitat for such species.

4.6 Site Sensitivity Assessment

The sensitivity map for the study area is depicted below in Figure 8.

4.6.1 *Eragrostis chloromelas - Hyparrhenia hirta Tall Grassland Community*

Conservation status	» Low to Medium » Most species here are common and widespread, but it is a remnant of Egoli Granite Grassland » This vegetation unit falls within the Gauteng C-Plan's Ecological Support Area
Ecosystem function	» Vegetation valuable for stabilisation of soils » Maintenance of pollinator populations » Increasing infiltration of precipitation » In closer proximity to wetland areas, dense vegetation is important to help filter runoff to prevent contamination and siltation of lower-lying river systems
Stability	» High where the vegetation layer is intact and dense » Medium to low where soils become bare, then prone to invasion and erosion
Reversibility of degradation	» Limited possibility, will require intervention, clearing of invasives needed to improve ecosystem functionality » Much of the original species diversity may be lost if original vegetation is significantly impacted
Rating	» ***Low sensitivity***

4.6.2 *Eragrostis curvula - Eragrostis chloromelas Short Grassland Community*

Conservation status	» Low » Secondary grassland located on an old cultivated field » Little resemblance to the Egoli Granite Grassland » This vegetation unit falls within the Gauteng C-Plan's Ecological Support Area
Ecosystem function	» At present, there is impaired functionality during dry seasons » Permanent vegetation cover is necessary to maintain the ecosystem function of stabilising, maintaining and nourishing soil, vegetation will also aid in slowing down runoff to increase infiltration into the soil and prevent degradation of downstream wetland systems
Stability	» Medium to high if habitat is kept intact » Erosion control will be important
Reversibility of degradation	» Possible, will require intervention such as erosion control and oversowing,
Rating	» ***Low sensitivity***

4.6.3 *Eragrostis plana - Acroceras macrum Moist Grassland Community*

a. E. Plana - A. macrum - Verbena aristigera Sub-Community

Conservation status	» Medium » Most species are common and widespread » Falls within the wetland boundary » Disturbed form of Egoli Granite Grassland » This vegetation unit falls within the Gauteng C-Plan's Important Area (CBA)
Ecosystem function	» Vegetation as grazing and stabilisation of soils, accumulates and slows down runoff from higher-lying areas, maximises infiltration of runoff into soils, and filtering of runoff before it seeps further into lower-lying river systems
Stability	» High where the vegetation layer is intact and dense » Medium to low where soils become bare, then prone to invasion and erosion
Reversibility of degradation	» Habitat will be difficult to recreate after significant modification, rehabilitation of vegetation and ecosystem functionality after disturbance will be problematic and slow
Rating	» ***Medium-High sensitivity***

b. E. Plana - A. macrum - Verbena brasiliensis Sub-Community

Conservation status	» Medium » Most species are common and widespread, » Falls within the wetland boundary, » Unique seasonal habitat to fauna » Disturbed form of Egoli Granite Grassland » This vegetation unit falls within the Gauteng C-Plan's Important Area (CBA)
Ecosystem function	» Vegetation as grazing and stabilisation of soils, accumulates and slows down runoff from higher-lying areas, maximises infiltration of runoff into soils, and filtering of runoff before it seeps further into lower-lying river systems, creates unique habitat for flora and fauna
Stability	» High where the vegetation layer is intact and dense » Medium to low where soils become bare, then prone to invasion and erosion
Reversibility of degradation	» Habitat will be difficult to recreate after significant modification, rehabilitation of vegetation and ecosystem functionality after disturbance will be problematic and slow
Rating	» ***Medium-High sensitivity***

4.6.4 *Hyparrhenia tamba - Imperata cylindrica Moist Grassland Community*

Conservation status	» Medium » Falls within the wetland boundary, » Unique seasonal habitat to fauna, » This vegetation unit falls within the Gauteng C-Plan's Important Area (CBA)
Ecosystem function	» Vegetation as stabilisation of soils, accumulates and slows down runoff from higher-lying areas, maximises infiltration of runoff into soils, and filtering of runoff before it seeps further into lower-lying river systems, traps sediments, and assimilate nutrient and toxicants creates unique habitat for flora and fauna
Stability	» High where the vegetation layer is intact and dense » Medium to low where soils become bare, then prone to invasion and erosion
Reversibility of degradation	» Habitat will be difficult to recreate after significant modification, rehabilitation of vegetation and ecosystem functionality after disturbance will be problematic and slow
Rating	» ***Medium-High sensitivity***

4.6.5 *Persicaria decipeins - Schoenoplectus brachyceras Sedgeland Community*

a. P. decipiens – S. brachyceras – Juncus exertus Sub-Community

Conservation status	» Medium - High » Falls within the wetland boundary, » Unique wetland habitat to fauna, » This vegetation unit falls within the Gauteng C-Plan's Important Area (CBA)
Ecosystem function	» Vegetation as stabilisation of soils, accumulates and slows down runoff from higher-lying areas, maximises infiltration of runoff into soils, and filtering of runoff before it seeps further into lower-lying river systems, traps sediments, and assimilate nutrient and toxicants creates unique habitat for flora and fauna
Stability	» High where the vegetation layer is intact and dense » Medium to low where soils become bare, then prone to invasion and erosion
Reversibility of degradation	» Habitat will be difficult to recreate after significant modification, rehabilitation of vegetation and ecosystem functionality after disturbance will be problematic and slow
Rating	» ***Medium-High sensitivity***

b. P. decipiens – S. brachyceras – Phragmites australis Sub-Community

Conservation status	» Medium - High » Falls within the wetland boundary, » Unique wetland habitat to fauna, » This vegetation unit falls within the Gauteng C-Plan's Important Area (CBA)
Ecosystem function	» Stabilisation of soils, accumulates and slows down runoff from higher-lying areas, maximises infiltration of runoff into soils, and filtering of runoff before it seeps further into lower-lying river systems
Stability	» High where the vegetation layer is intact and dense » Medium to low where soils become bare, then prone to invasion and erosion
Reversibility of degradation	» Habitat will be difficult to recreate after significant modification, rehabilitation of vegetation and ecosystem functionality after disturbance will be problematic and slow
Rating	» ***Medium-High sensitivity***

4.6.6 *Leersia hexandra - Phragmites australis Reed Bed Community*

Conservation status	» Medium - High » Falls within the wetland boundary, » Unique wetland habitat to fauna, » This vegetation unit falls within the Gauteng C-Plan's Important Area (CBA)
Ecosystem function	» Stabilisation of soils, accumulates and slows down runoff and attenuate floods, streamflow augmentation, filtering of water, sediment trapping, and nutrient and toxicant accumulation
Stability	» High where the vegetation layer is intact and dense
Reversibility of degradation	» Habitat will be initially difficult to recreate following significant modification although this vegetation can re-establish and recover effectively after the stabilisation of the area and the establishment of a few species, rehabilitation of vegetation and ecosystem functionality after disturbance will initially be problematic and moderately to slow.
Rating	» ***Medium-High sensitivity***

4.6.7 *Populus x canescens - Salix babylonica Riparian Woodland*

Conservation status	» Low » Highly transformed and degraded habitat, » Very little indigenous species present, » Mainly invasive alien trees
Ecosystem function	» Very limited, some nesting and roosting sites for few avifaunal species, » pollen for some insect species, » minimal stabilisation of soil
Stability	» Low » Low groundcover – Soils vulnerable to disturbance and erosion
Reversibility of degradation	» Limited possibility, will require intervention, clearing of invasives needed to improve ecosystem functionality.
Rating	» ***Low sensitivity***

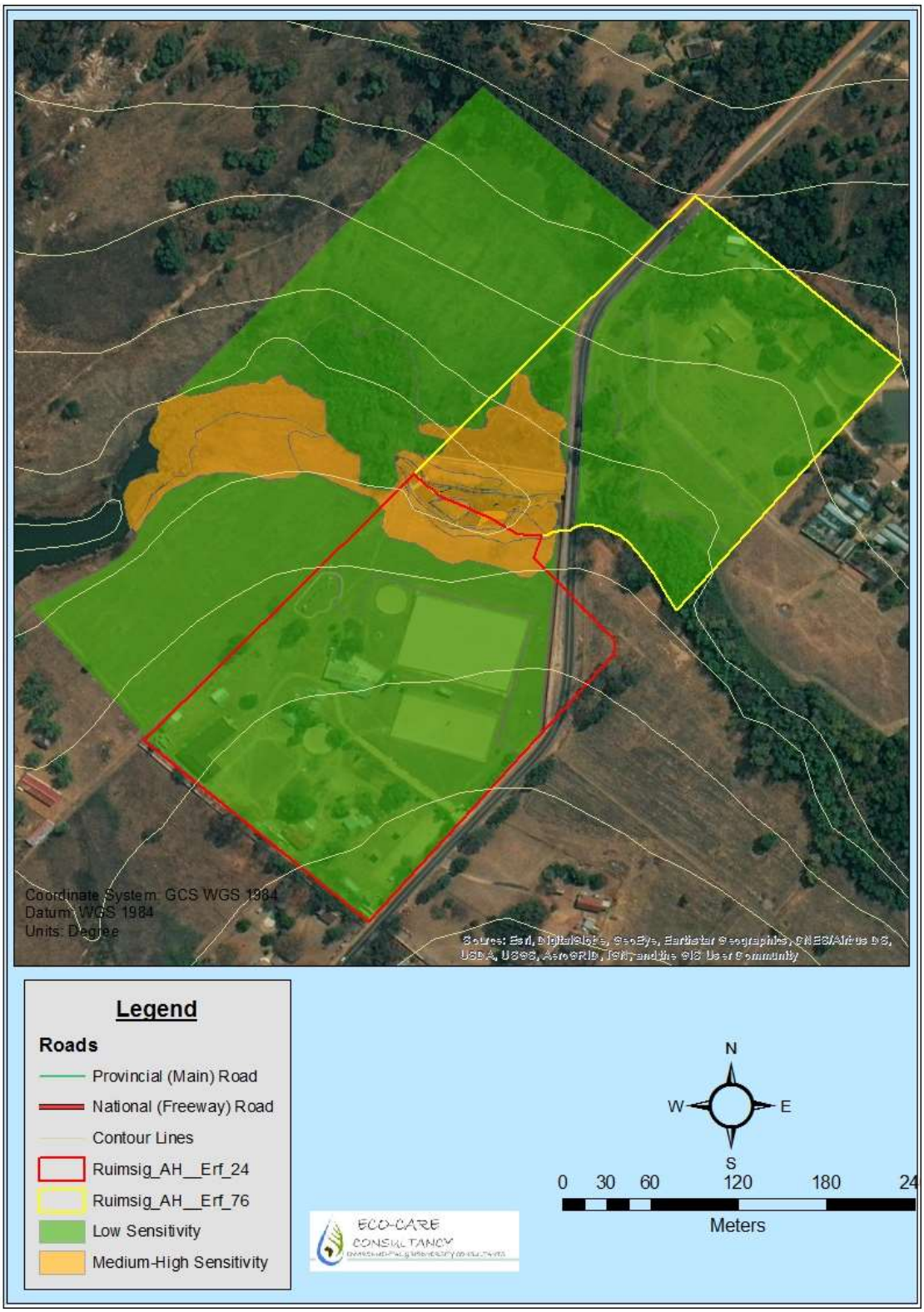


Figure 8: Ecological Sensitivity Map compiled for the study area and immediate surroundings.

4.7 Existing Land Use and Associated Impacts

The description of the land use within the larger area has been done according to the catchment area of the prominent hydrological feature of the area as classified and defined within the Aquatic Assessment for the relevant project.

I. Within the Catchment:

Most of the catchment area is in a severely degraded and transformed state due to the current land use which is predominantly for dense urban residential developments and urban small holding developments (Figure 14). Most the central and south-eastern portions of the catchment have been developed into dense urban residential areas. With the north-western portion of the catchment mainly utilised as small holding developments. An industrial park with dense infrastructure (Laser Park and Honeydew Shopping Centre) is located within the central northern section of the catchment. The top north-western corner of the catchment includes a section of the Zandspruit informal settlement. Infrastructure development within the urban small holdings vary considerably from relative little infrastructure to highly developed areas. Few of these urban small holding properties are being used for agricultural purposes. It appears that most activities associated with these properties are of a recreational form either aimed at private use or open to the public. Some of these properties contain dense woody patches (woodlots or invaded alien tree patches). A few small dam structures are present throughout the catchment, most of which is confined within the tributary valley-bottom wetlands and the golf course. Probably the most significant topographical feature within the catchment is the Eagle Canyon Golf Course with its associated artificial wetlands and dam structures as well as largely monotonous vegetation covering.

II. The affected properties and immediate surrounding environment:

The affected properties can be divided into two portion according to their land use. The southern portion is primarily used for horse activities and other recreational activities. Most of this section is transformed and contain infrastructure including stables, horse pens, residential infrastructure and a recreational play area for kids. Most of the persisting vegetation within this area consist out of a regularly mowed lawn covering and commercial exotic tree species. The northern section consists out of an open, mostly undeveloped space, comprising of the watercourse and wetland as well as fringing terrestrial grassland. The environment immediately north and west of the affected properties are mostly relative open with little development whilst the environment to the south and east contain more dense developments and infrastructure.

The open space to the north and west can divided into two major ecosystem types, each with their own set of disturbances and impacts, namely upland/terrestrial and [1]aquatic (wetland and watercourse) habitats.

» The most significant impacts relating to the terrestrial ecosystem relate to the miss-management of open spaces, including uncontrolled veld fires, exotic infestations, trampling (numerous footpaths) and littering. This has resulted in the disturbance and transformation of the natural vegetation of the area and even some destabilisation of soil (striations in the landscape visible from satellite imagery). This has subsequently led to;
  - a reduction in species diversity (fauna and flora),
  - the ability of the natural vegetation to provide roughage to attenuate surface flow to the lower lying areas (aquatic habitats),
  - improve infiltration and soil moisture, and
  - prevent erosion (sheet erosion).

» Within the aquatic ecosystem major alterations to the hydrology, geomorphology and vegetation have occurred, mainly due to;
  - the artificial damming of water (two bridges);
  - the alteration in flow pattern (flow velocity and channelisation) through the ill-placement of culverts, and
  - the transformation of vegetation due to the high density of invasive alien vegetation, the replacement of natural vegetation due to an enlarged flooded area and construction activities within the aquatic habitat.

  Subsequently these alterations have resulted in the aquatic ecosystem being vulnerable to:
  - sedimentation and alteration of the channel structure,
  - erosion in the form of bank and channel erosion,
  - further invasion with invasive alien species (especially woody species),
  - changes in water quality (increase in sediment load, turbidity, nutrient and toxicant inputs), and
  - loss of biodiversity, fauna and flora, due to unsuitable and unstable conditions created.

Furthermore, the ability of this area to fulfil its ecological functions and services has been greatly altered due to the highly fractured nature of the landscape, with open, "natural" spaces occurring as small isolated patches. The consequences of fragmentation vary with time since isolation, distance from other remnants of natural vegetation and the degree of connectivity with other remnants. One of

[1] Even though wetlands area not regarded as true aquatic habitats but rather an ecotone between the aquatic and terrestrial habitat, wetlands are for the purpose of this report regarded as part of the aquatic environment.

the major aspects of fragmentation important for conservation, is the edge effect and the increased vulnerability of the fragmented ecosystem to extrinsic disturbances of which larger areas are being less adversely affected by the fragmentation process. Some landscape connectivity is available along the watercourse although these areas have also been largely impacted through the numerous roads and fences crossing the watercourse throughout its entire longitudinal distribution. Landscape connectivity is also somewhat broken due to the numerous dams and the intensive invaded woody patches braking up the natural distribution of indigenous wetland vegetation.

Negative impacts associated with such fragmentations include:

» reduction/loss of biodiversity due to local extinctions of species,
» reduction/loss of genetic diversity, and
» disruption of important migration routes.

III. <u>The potential contribution of the activities associated within the property boundaries to the above-mentioned impacts (site specific activities).</u>

A. Transformation of Egoli Granite Grassland (Vulnerable) and Critical Biodiversity Areas (Gauteng C-Plan).

The transformation of grassland through the development of infrastructure relating to the stables and paddocks as well as other infrastructure on site has resulted in the creation of hard, impenetrable surfaces and the local loss of Egoli Granite Grassland which is regarded as Endangerd. Additional loss of this grassland can be attributed to the sever grazing (mowing effect) of the grassy cover around the developments. This development is relative small in size and from the results obtained within the surrounding degraded grassland, likely constituted a similar vegetation cover and contributed little to the original extent of this vegetation type and ultimately the status of the Egoli Granite Grassland. This area forms part of a highly fractured landscape surrounded by developments, old fallow land, numerous fences and large roads (Pierre Road, Alec Street and Short Street). The fractured nature caused this area to be significantly prone to the edge effect the area, especially in terms of invasion with weeds and invasive species, litter, bare areas and erosion. From site observations and interpretation of the collected data an estimated area of less than 10% (<0.852ha) is in a more or less reference state and the additional developed areas would not have significantly contributed to this size as these areas have been prone to past disturbances including regular mowing (previous landowners) and intense grazing of grassland, old infrastructure (which have now been decommissioned), racetracks and pre-existing infrastructure still present. This 10% contribute less than 0.6110^{-5}ha to the total extent of Egoli Granite Grassland and can subsequently be regarded as acceptable loss. Furthermore, this area included within the ESA (Ecological Support Areas) provides little buffering and

maintenance functionality for the CBA (Critical Biodiversity Area). The CBA area (Important Areas) itself, included within the affected properties, is already in a degraded and altered state, mainly due to the invasion with alien plants and weeds. This "patch" of ESA & CBA thus, will not contribute significantly to the provincial conservation targets. However, the degraded form of vegetation, still provide some coverage, no matter the degree of transformation, providing some roughage to slow down surface runoff and allow for some water retention in the soil layer. Some biological processes are also allowed, albeit in an altered state (e.g. habitat, forage and pollination potential for some highly adaptable smaller mammals and invertebrates).

Regarding the non-compliance activities, almost all of these activities are associated with the azonal aquatic habitat rather than the Egoli Granite Grassland Habitat (zonal). Most of these activities impacted more on the hydrology and geomorphology of the aquatic system rather than the vegetation associated with this system (on which basis this area was classified as a CBA), although minor alterations to the vegetation likely occurred due to the construction of the concrete palisade fence and due to an increased flooded area (damming due to the bridges). On the contrary, some of these activities have improved the vegetation condition, for example the eradication of some of the invasive alien trees (which in any way altered the ability of the area to function as a CBA), and the stabilisation of banks with gabions.

From the above mentioned, it can be concluded that the non-compliance activities have had very little impact on the on-site status of the Egoli Granite Grassland as well as the Critical Biodiversity Areas. Furthermore, due to this small local impact in combination with the fact that this landscape is highly fractured, very little impact on the cumulative loss of this vegetation type as well as CBA is likely to occur.

B. Alteration in Biodiversity (Fauna & Flora)

Terrestrial Ecosystem

Due to the disturbed and fractured nature of this area the biological components of this area have subsequently been greatly altered. Even though biodiversity has been altered, some form still persists none the less, mainly in the form of highly adaptable and opportunistic species. Disturbances include regular human activity, relative high traffic associated with roads, uncontrolled burning and increasing density of alien invasive species (especially woody species). This has resulted in the vegetation constituting the area being largely transformed, as already described, and currently comprise out of low diversity of plant species, mostly cosmopolitan species adapted to such regular disturbances. The

dominance of [2]Increaser II, [3]sub-climatic and pioneer grasses as well as numerous herbaceous weeds and invasives are indicative of this. The value and function of this vegetation cover should, however not be underestimated as these species contribute to soil stabilisation, moisture retention and the slowing down of surface runoff along the slopes and from hard surfaces such as roads. Continued uncontrolled activities and disturbance of this vegetation layer may result in unstable soil conditions, aggravated erosion and may eventually impact the lower lying aquatic habitat. Due to the above described impacts on the vegetation structure, conservation worthy species have not been recorded within the area as the persistence of such species (individuals and populations) are hindered due to unsuitable conditions. As a result of the transformed vegetation cover, regular human activity, and the isolated nature ("small island") of this area, the terrestrial faunal diversity is also low and compromise of highly adaptable and opportunistic species, mostly small mammals and some invertebrate species, with little potential for the occurrence of threatened species.

The current disturbance and transformations within the study area have not significantly contributed to these impacts due to small nature of the construction activities within the terrestrial habitat and the fact that this development have occurred on already largely transformed land. Regarding the listed non-compliance activities, none of these activities have significantly impacted on the terrestrial flora and fauna components.

Aquatic Ecosystem

Plant diversity and composition have largely been influenced and adversely impacted through the invasion of alien invasive woody species creating dense patches, replacing natural vegetation. Species diversity, correlating with the various habitats created along the moisture gradient of such an ecosystem has been greatly reduced as these invasive trees replace the vegetation of the different hydrogeomorphological zones (HGM) with a relative monotonous and unstable vegetation cover comprising normally of no more than four tree species with little ground cover (mostly weeds) due to the shade effect. This condition

[2] **Ecological Status: Increaser II Species** – These species increase and dominate overgrazed and disturbed veld and normally include numerous, generally undesirable, sub-climatic and pioneer species.

[3] **Successional State: Pioneer Stage**: Pioneers are the first species to occupy disturbed areas such as patches of bare soil, heavily eroded roadsides and damgaged agricultural lands. These species tend to be hardy, mostly annual plants capable of persisting in these harsh and unfavourable conditions and are vital for initial soil stabilisation and the protection of bare patches against the adverse impacts of wind, flooding etc. These species stabilise the area for the next successional phase. **Sub-climax Stage**: Annuals of the pioneer stage is replaced by mostly perennials which have more stable production capacity, form strong tufts and may have strong stolons and rhizomes, thus further increasing soil stability and moisture as well organic content.

has been greatly improved within the affected aquatic habitat through the eradication of most of these invasive woody species. This has allowed for the re-instatement of some natural vegetation along the different HGM zones and the encouragement of species and habitat diversity. Even though some artificial re-seeding has occurred it is likely that these species will be replaced, over time, with natural species, if allowed. The fact that this area is also fenced off (concrete palisade fence) will also most likely encourage this successional improvement through the control of access to this area, and subsequently avoid disturbances such as trampling and uncontrolled plant collection (reeds). Regarding the faunal character of the aquatic ecosystem, large alterations within the catchment as well as the aquatic habitat itself has likely resulted in a change in faunal species composition. Such alteration includes an increase in runoff from the extensive hard surfaces within the catchment and the regulation of flow due to numerous obstructions in the form of dams, and have resulted in the system changing from a largely non-perennial system to a perennial system. A consequence of this change in hydrological regime would have had a definite impact on the faunal character allowing the colonisation of more dependent aquatic species within the permanent inundated areas. The same scenario is highly likely for the study area due to the damming and regulation of water caused by the bridge and culvert systems. This has created some damming within the southern portion of the channel (south of the island) with the northern portion remaining non-perennial. A variety of aquatic habitats have been created within this area and include shallow riffle areas where the water flows over the exposed bedrock, pools where the water have been dammed, non-perennial portion (north of the island), densely vegetated permanent saturated wetland zone along the south eastern portion, seasonal saturated "floodplain" to the north-west of the main channel etc. Subsequently this variety of habitats allow for the co-existence of a variety of faunal species. Water quality and isolation (due to obstructions) have however influence the diversity and abundance of these species along this ecosystem. The palisade fence may also have a potential positive effect due to a reduction of human activities and disturbances with large enough gaps between the structures to allow movement.

Thus, with regards to the non-compliance activities, these activities have had a negligible impact on the terrestrial faunal and floral character, but have had a definite impact on the aquatic ecosystem, these impacts can be summarised as follows:

- Encouragement of floral diversity and indigenous species composition due to invasive alien tree eradication.
- Some loss of vegetation due to the damming of water behind the bridge and culvert systems.
- Re-enforcement of HGM zones following invasive alien tree removal, have encouraged the expression of more defined habitats along these zone,

subsequently increasing habitat and niche diversity within potential faunal species.

» Alteration in vegetation composition within the permanent inundated areas, likely to be low due to the size of flooding, with an increase in hydrophytes such as *Phragmites australis* and *Thypha capensis* (Preferred habitat for Greater Cane Rat - *Thryonomys swinderianus*).
» Alteration in faunal species, due to permanent flooded area (increase in habitat diversity), most likely a slight increase in aquatic fauna due to suitable habitat (e.g. small barb species – *Enteromius* spp.; Southern mouthbrooder – *Pseudocrenilabrus philander*; Fresh water crabs – *Potamonautes* spp.; Frogs and toads – *Amietia-, Ptychodena, Strongylopus- & Phrynobatrachus* species etc.).
» A slight decrease in habitat and niche diversity due to the removal of organic debris that has washed down the watercourse during floods and have settled within the study area (preferred habitat for Swamp musk shrew – *Crocidura mariquensis*).
» The construction of the palisade fence may likely cause an increase in faunal and floral diversity due to the control of human activities and associated disturbances within the aquatic system.

C. Obstruction of potential migration routes.

Even though, as described above, some of these habitat alterations, especially within the aquatic environment may contribute to habitat diversity and subsequently a higher potential for biotic diversity, these dams along with other forms of obstructions (roads, culverts, fences) provide barriers for some of the true aquatic species preventing potential movement of species (especially upstream). Species that are capable of moving between the land and water are to a lesser extent obstructed. These barriers and the fractured nature of the landscape is probably the most important limiting feature to diversity. However, these barricades likely do not have significant impacts on bird movement and migration routes, which likely use these relative undeveloped areas as corridors of movement between the different aquatic ecosystem, especially the large Crocodile River system.

The two bridge systems and their associated culvert systems provide some barrier to natural movement of some species, although diversity is likely, regardless of these barriers, low in this area due to the numerous obstacles and barriers upstream as well as downstream. The cumulative contribution to this impact is subsequently regarded as negligible.

D. Increase in Erosion and Sedimentation

Within mid- and footslopes of the study area (terrestrial habitat) a slight decrease in ground cover density has resulted in small areas prone to sheet erosion and soil compaction. The level of erosion is regarded as mostly low in its current condition but may be accelerated and aggravated if the vegetation cover is for some reason significantly disturbed and reduced. Topsoil erosion may expose the harder underlying horizons of soils such as Wasbank, Glenco and Glenrosa which may provide obstruction to root penetration thus, hindering re-growth and stabilisation of these potential areas. As discussed in depth in the Aquatic Study, the lower lying aquatic habitat (northern channel and dammed area) is prone to sediment deposition, although the source of this sediment is likely from upstream disturbances. Channel bank erosion is probably the most important form of erosion within the aquatic habitat, although the level of this form of erosion in its current state is regarded as moderate-low with most of the vulnerable areas being stabilised with gabions.

E. Invasive Alien Plant Invasion.

This region (including the study area) is especially prone to the invasion of alien woody plants with the aquatic environment being more so than the terrestrial environment. These patches of invasive alien woodlands can potentially:

» alter the soil chemistry (affecting water quality in aquatic environments),
» replace indigenous vegetation,
» increase fire risk,
» potentially create unstable soil conditions (low ground cover due to shade effect) prone to erosion,
» contribute to the effect of habitat fragmentation (especially with the aquatic environment), and
» decrease habitat diversity (especially within the aquatic environment), and subsequently decrease biodiversity.

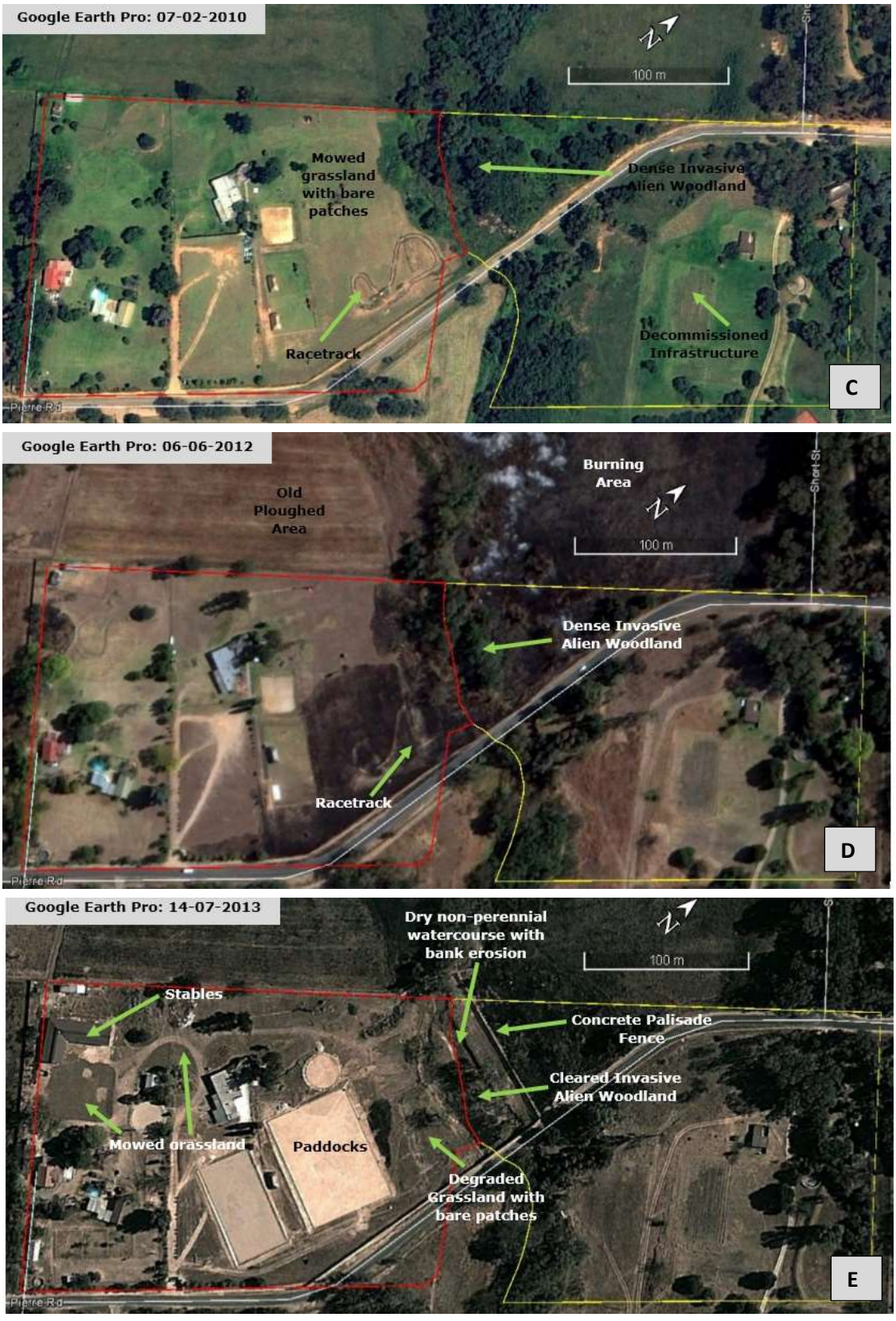
However, some of these patches do provide some "artificial" habitat and food source for species that may not have utilised this areas in such means, for example;

» nesting and perching sites for avifaunal species such as Ibises, Hamerkop (*Scopus umbretta*), Herons, Egrets, etc., especially within the taller *Eucalyptus* and *Salix* specimens.
» pollen for Honey Bees (Apis millifera), especially *Eucalyptus* trees,
» habitat for Flap-Neck Chameleon (*Chamaeleo dilepis*), especially in densely invaded *Acacia mellifera* and *A. dealbata* woodlands.

Even though the negatives overshadow the positive impacts and it is meaningfully beneficial to eradicate most of these species, it is important to take such faunal species which may be associated with the invasive trees into account during the planning, implementation phases (Rehabiltation and Maintenance).

These trees should be inspected before commencement and such faunal species should preferably be removed and relocated. If important nesting sites (e.g. Hamerkop nests) have been identified, the tree should preferably be left intact for the time being. Trees that contain nests of less vulnerable species may be eradicated by should occur preferably during the winter month before breeding activities commence and these nests become active.

The clearance of most woody alien trees within the study area have greatly contributed to the condition of the area and these activities are encouraged to continue.


Google Earth Pro: 07-02-2010
N
100 m
Mowed grassland with bare patches
Dense Invasive Alien Woodland
Racetrack
Decommissioned Infrastructure
C
Google Earth Pro: 06-06-2012
Old Ploughed Area
Burning Area
N
100 m
Short St
Dense Invasive Alien Woodland
Racetrack
D
Google Earth Pro: 14-07-2013
Dry non-perennial watercourse with bank erosion
N
100 m
Stables
Concrete Palisade Fence
Cleared Invasive Alien Woodland
Mowed grassland
Paddocks
Degraded Grassland with bare patches
E

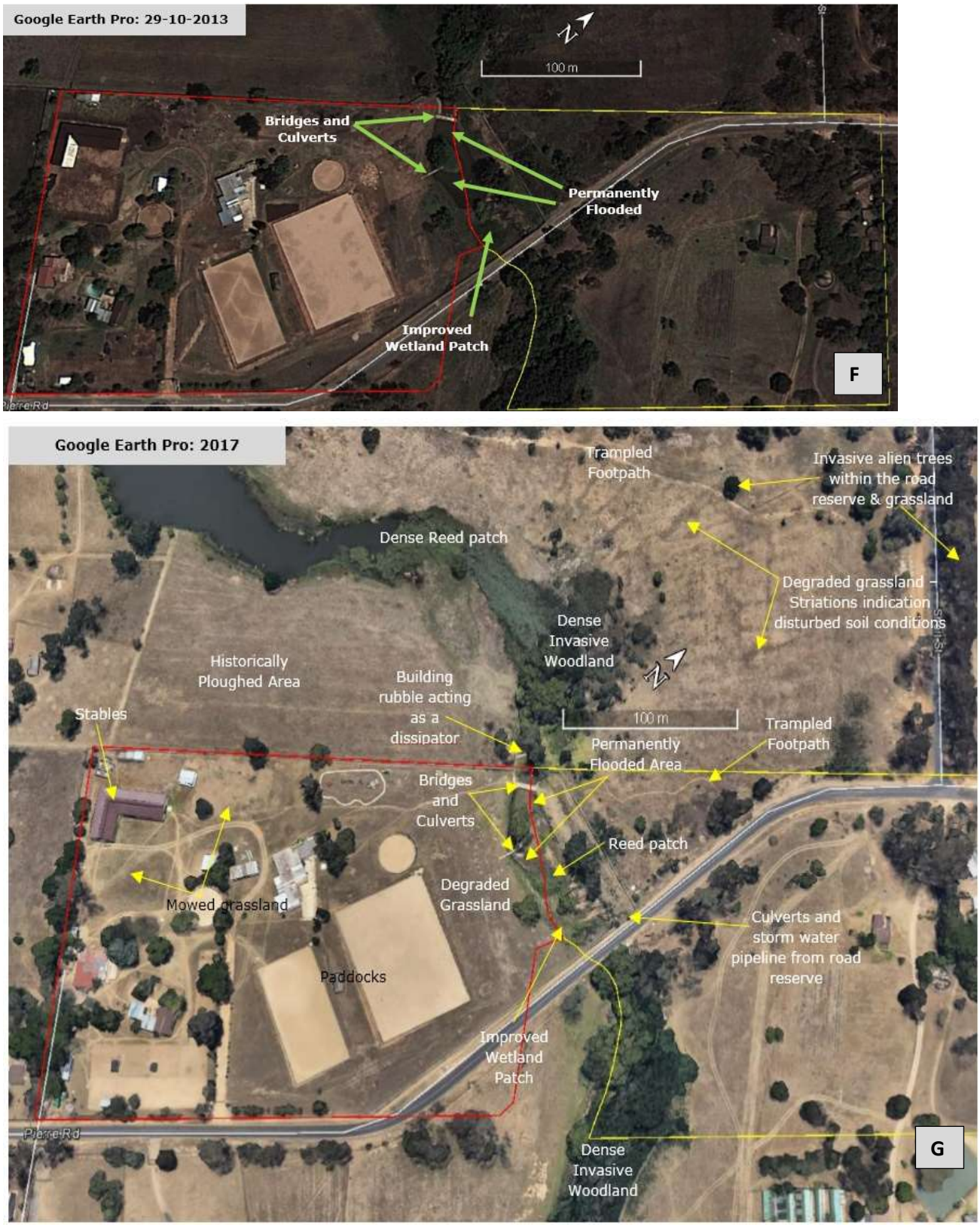


Figure 9: Historical to current satellite imagery indication the change in land use, disturbances and transformations within the study area as well as immediate surroundings.

Photo 10: *Chlamydomonas spp.* Bloom due to nutrient enriched water. Also, not the solid wastes collected in the reed beds.

Photo 11: Portion of the exposed northern channel (due to sediment deposition) densely covered with the pioneer weed (hydrophyte) *Persicaria decipiens*.

Photo 12: The culvert system of Pierre Road has been placed above the natural channel morphology of the watercourse resulting in water damming up before the culvert.

Photo 13: View of the bridge and culvert system.

Photo 14: Concrete palisade fence traversing the seasonal and termporay wetland zones.

Photo 15: Building rubble used as a dissipator below the head cut created by the culverts of the bridge.

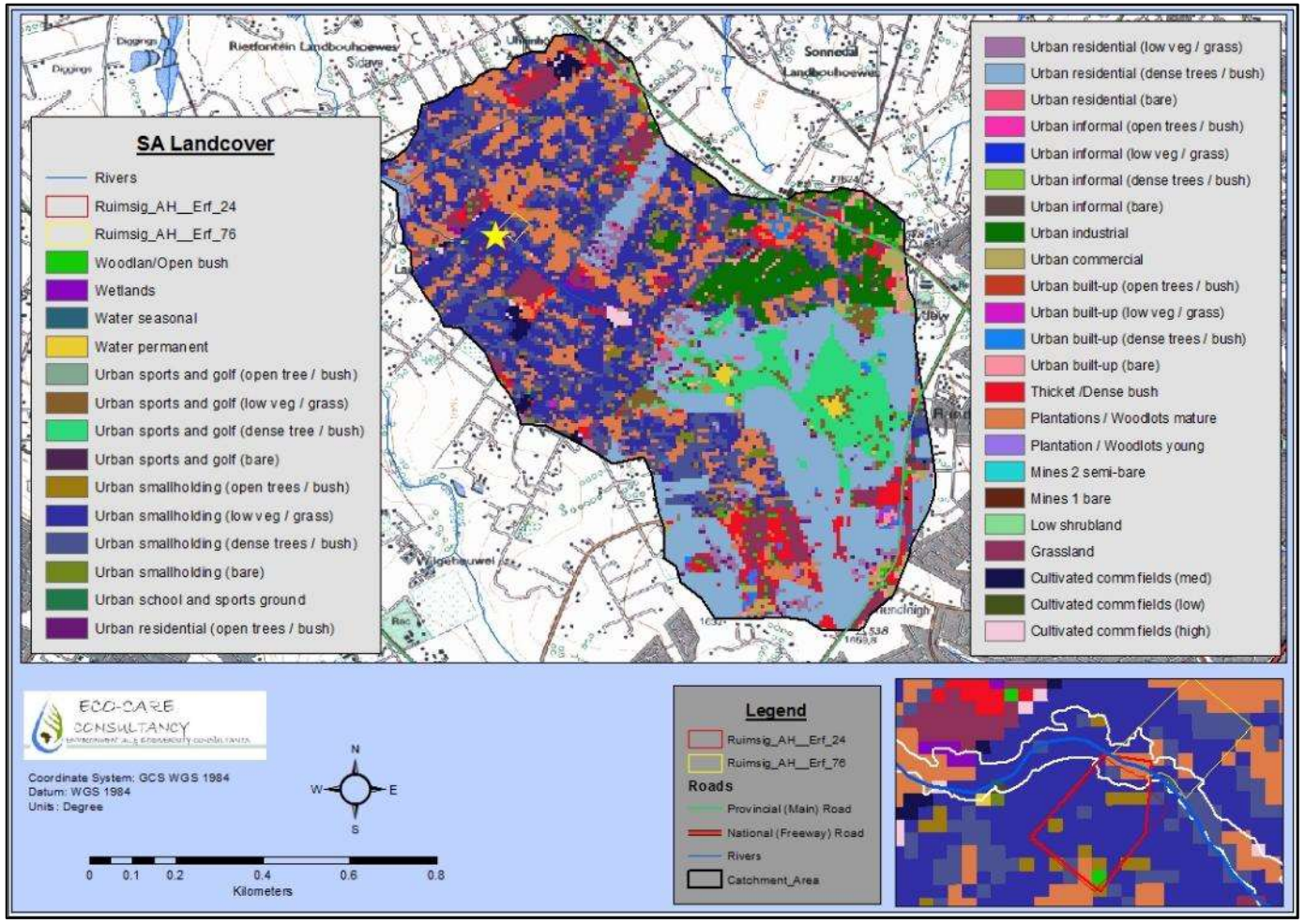


Figure 10: Map showing the primary land uses occurring in the catchment (Geo Terra Image, 2014).

5 IMPACT ASSESSMENT

During the impact assessment study, a number of potential key issues / impacts were identified and these were assessed based on the methodology supplied by Savannah Environmental (Pty) Ltd.

For a, thorough description of the proposed impacts and threats caused by the non-compliance activities refer to Section 3.7. These impacts can be summarised as follows:

» Loss of local Biodiversity.
  - Local Impacts:
    - Fragmentation and isolation of open spaces ("natural areas")
    - High levels of human activities (movement)
    - High levels of road traffic
    - Uncontrolled burning
    - Increasing density of existing invasive alien woodlands as well as invasion of new areas.
    - Change in nature of aquatic habitat (alteration in vegetation structure, hydrological and geomorphological character & water quality) due to flow regulation and damming through the bridges and associated culverts.
  - Potential consequences
    - Unstable vegetation cover
    - Exposure to erosion
    - Reduction in roughage leading to soil compaction, increase in surface runoff and a reduction in the soil moisture content
    - Continual reduction and extinction of local species (fauna and flora)
    - Further fragmentation of populations (fauna and flora)
    - Loss of generic variation (fauna and flora)
    - Collapse of biological cycles maintained by the local biota and their associated abiotic environment.
  - Contribution from study area and current associated activities:
    - Alteration in the nature of the aquatic habitat
    - Slight decrease of ground cover

» Disruptions of potential migration routes
  - Local Impacts.
  - Dense clusters of invasive alien woodlands.
  - Hydrological barriers such as dams and culverts.
  - Road crossings.
  - Boundary fences.
  - Potential consequences:
    - Further isolation of aquatic species.

- Unable to reach potential breeding sites/suitable breeding habitats.
- Loss in genetic variation.
- Reduction in genetic fitness.
- Ultimate extinction of local populations.

▪ Contribution from study area and current associated activities.

- Hydrological barriers in the form of the two bridges and associated culvert systems.
- Boundary fence.

• <u>Increase in Erosion and Sedimentation.</u>

▪ Local Impacts:

- Dense clusters of Invasive Alien Woodland with low ground cover.
- Reduction of ground cover and soil compaction.
- Increase in runoff from roads and disturbed shoulders.

▪ Potential consequence.

- Exaggeration of current eroded areas (current state of erosion is regarded as low) and the formation of areas.
- Resulting in unstable vegetation conditions.
- Reduction in roughage.
- Increase in runoff, carrying eroded material into lower lying areas (aquatic habitat).
- Impacting aquatic habitat through siltation, change in water chemistry and turbidity.

▪ Contribution from study area and current associated activities.

- Increase in runoff from hard surfaces and bare areas (e.g. paddocks).
- Reduction in vegetation cover along the palisade fence.
- Channel bank erosion.

• <u>Invasion with Alien Plant species.</u>

▪ Local Impacts:

- Most severe invasion associated with the watercourse and associated wetland habitats.
- Dense Invasive Alien Woodland just west of the study area (~0.51ha in size).
- Large and dense Invasive Woodland just east of the study area (east of Pierre Road), more than 2ha in size.
- Moderate to high levels of invasion (woody and weedy invasives) along the road reserves (high invasion along Short Road and moderate invasion along Pierre Road).
- Low to moderate levels of invasion with exotic tree species and high levels of invasion with weed species, within the undeveloped areas (open veld).
- Key woody invasive alien species recorded, include:

  Populus x canescens, Salix babylonica, Acacia dealbata, A. mearnsii, Sesbania punicea, Melia azedarach, Eucalyptus

camaldulensis, E. grandis, Robinia pseudoacacia and *Cestrum aurantiacum*.

- Potential consequences:
  - Outcompeting and replacement of natural vegetation.
  - Loss in habitat and niche diversity (especially within the aquatic environment).
  - Reduction in overall floral diversity.
  - Ultimate reduction in faunal diversity.
  - Shade effect cause a reduction in groundcover, subsequently exposing and destabilising soil and leaving it prone to erosion.
  - Destabilisation of channel banks.
  - Increase in fire risk and intensity of fires (Crown fires and spotting behaviour of especially Eucalyptus species).
  - Change in soil chemistry (nitrogen fixating ability of some trees, especially Acacia trees).
  - Create favourable conditions for the increase in existing species and the invasion of new species.
  - Alter hydrological character of watercourse (e.g. reduction in flow volume and velocity, channelisation of waterflow resulting in less lateral flow and bank over-low critical for the maintenance of wetland habitats).
  - Change in water quality (increase in nitrogen and potential increase in turbidity of water due to the encouragement of erosion).
- Contribution from study area and current associated activities
  - Moderate-High levels of invasion with invasive alien trees within the aquatic ecosystem (greatly reduced through eradication), mostly smaller trees and saplings with singular large specimens. IAPs recorded include:

    Cestrum aurantaicum, Robina pseudoacacia, Sesbania punicea, Acacia dealbata, Populus x canescens, Salix babylonica and *Eucalyptus camaldulensis.*
  - Low-moderate levels of invasion with invasive alien trees within the terrestrial habitat, mostly saplings. IAPs recorded include:

    Acacia dealbata, Pinus taeda, Eucalyptus camaldulensis, Sesbania punicea, Melia azedarach, and *Cereus jamacaru.*
  - Few commercial, "non-invasive" trees have been introduced around the buildings to improve the aesthetics and include:

    Yucca gloriosa, Cypressus sempervirens, Platycladus orientalis, Cotoneaster lacteus, Photinia serratifolia, Eucalyptus cinereal, Acer buergerianum, Grevillea robusta and *Albizia julibrissin.*

- <u>Transformation of Egoli Granite Grassland (Vulnerable) and Critical Biodiversity Areas (Gauteng C-Plan) and the reduced ability to meet the conservation targets set out for these units (Cumulative).</u>
  - Local Impacts:
    - Urban development (Mainly small holdings).

- Fracturing of landscape and the isolation of "natural" spaces.
- Road construction (tar and gravel).
- Severe invasion with IAPs, especially within the wetland areas with moderate to high levels within the terrestrial grassland.
- Uncontrolled fires.
- Some loss due to historical cultivation (ploughing) activities.

▪ Potential consequences:
- Reduction and loss of natural species constituting the grassland and characterising the Egoli Granite Grassland as well as the vegetation used as basis for the inclusion of the area as either ESA or CBA (important area).
- Ultimately leading to the transformation of a stable "natural" vegetation cover to a less stable vegetation cover characterised with cosmopolitan species indigenous species, weeds and IAPs.
- Due to the edge effect created through the fracturing of the landscape and a less stable vegetation cover areas may become even more prone to excessive IAP invasion.
- Alteration in ecological functioning of vegetation type (ESA and CBA), including attenuation of runoff into lower lying wetland areas, stabilisation of soil, habitat and niche provision etc.
- Eventual inability to sustain associated natural biological processes and cycles.
- Change in status of Egoli Granite Grassland.

▪ Contribution from study area and current associated activities:
- Loss of already, largely degraded grassland through construction of paddocks and stables.
- Moderate-High levels of invasion with invasive alien trees within the aquatic ecosystem (constitute most of the CBA). Condition has been greatly improved through eradication activities.
- Low-moderate levels of invasion with invasive alien trees within the terrestrial habitat (Egoli Granite Grassland, ESA and CBA).
- Minimal loss of vegetation due to the construction of the palisade fence.
- Minimal loss of vegetation due to the damming effect created by the bridges.

5.1 Assessment of Impacts

The major impacts (identified above) that have occured, are assessed below, as well as before and after mitigation.

5.1.1 LOSS OF LOCAL BIODIVERSITY

Impact Nature: Unstable vegetation cover; Exposure to erosion; Reduction in roughage leading to soil compaction, increase in surface runoff and a reduction in the soil moisture content; Continual reduction and extinction of local species (fauna and flora); Further fragmentation of populations (fauna and flora); Loss of generic variation (fauna and flora); Collapse of biological cycles maintained by the local biota and their associated abiotic environment.		
	Without Mitigation	**With Mitigation**
Extent	Local – Impact Site (1)	Local – Impact Site (1)
Duration	Long-term (4)	Medium-term (3)
Magnitude	Low (4)	Minor (2)
Probability	Improbable (2)	Improbable (2)
Significance	**Low (18)**	**Low (12)**
Status	Slightly Negative	Slightly Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources	No	No
Can impacts be mitigated?	Yes, to a large extent	
Mitigation	» No additional development and construction activities may be allowed within the aquatic ecosystem, apart from maintenance and clean-up activities as specified below. » Any additional activities (e.g. removal of sediment, re-placement of culverts etc.) pertaining to the maintenance of the aquatic ecosystem, may only permitted with the approval of an aquatic/wetland specialist. » The strip of less degraded grassland between the paddocks and the aquatic ecosystem should be maintained as a buffer area with no additional development within this being allowed. **Trampling and unnecessary disturbance** » Designated footpaths should be identified and set out within the buffer area and aquatic ecosystem to contain movement (human traffic as well as uncontrolled horse movement) as far a possible within designated areas and to avoid unnecessary disturbance of the fauna and flora. **Erosion** » Regular monitoring should be done for potential erosion (annually) after the rainy season as well as	

	after abnormal high rainfall and flooding events. » Any eroded areas observed should be rehabilitated as soon as possible. » Areas cleared of vegetation during the construction of the fence should be allowed to rehabilitate. » Rehabilitation should be closely monitored by the applicant and Auditor and if deemed not sufficient enough by the Auditor, a specialist should be contacted to provide additional recommendation in terms of potential re-seeding. » No firebreaks may be allowed within the wetland areas (i.e. cutting of grass to prevent spread of fire). **Litter and solid pollutants** » It is recommended that the cleanup activities of solid waste, debris and rubble within the watercourse should continue. » It is recommended that monthly cleanup inspections are implemented wherein all solid wastes that have washed from upstream is cleaned up as regular pollution upstream occurs. » Organic debris entering the study area should, as far as possible, not be removed but should be allowed to remain where it has settled as these patches contribute to habitat diversity. **Invasive Alien Species** » The eradication and management of alien invasive trees should continue. » A site-specific eradication and management programme for alien invasive trees should be included in the Operation Environmental Management Programme. The management plan should include an eradication and management plan for other potential alien invasive species (weeds and shrubs) that may invade these "newly available" habitats. » Eradication of medium to large invasive alien trees should occur systematically over an extended period – the affected area should be divided in plots of appropriate size (±50m²) and total eradication should occur within one plot at a time with extended periods in-between to allow for sufficient natural vegetation to re-settle. This systematic approach is to ensure that a not to large unstable area is left vulnerable at a time as these areas may become prone to erosion.

	» In the case where a plot with a low abundance of alien invasive trees and a sufficient natural plant covering has been cleared, commencement of the following plot may occur immediately. » Clearing within the aquatic ecosystem should preferably occur in the late winter. » Chemical treatment of alien invasive species within the aquatic ecosystem should be avoided as far as possible. » Chemical treatment of alien invasive species outside of the aquatic ecosystem should be limited to cut-stump treatment and plugs with great care and management implemented to prevent any potential unnecessary spillage. No foliar-spray or pellet application may be allowed. » The felled specimens should be removed out of the aquatic boundaries as soon as possible (within a week of felling) and care should be taken to prevent any potential for re-seeding. » The remaining stump and root systems of larger alien invasive trees may not be removed/dug from the soil as this may lead to unstable soil conditions. » Annual follow-ups of these plots are critical to manage any potential seedlings. **Re-establishment of indigenous vegetation** It is expected that in time the areas cleared of Invasive Alien Trees will be re-colonised with indigenous species. Some re-seeding has occurred in order to stablise some areas. These areas are also likely to be replaced with natural species over time. » If natural re-introduction and settling of indigenous vegetation is not according to satisfactory standards as per the Auditor and areas become exposed to erosion, a specialist should be contacted to re-assess the current condition of the site and provide additional recommendation which may include using artificial techniques including re-seeding and the use of sediment barriers (sandbags, sandbags, retaining walls etc.) to prevent erosion in these areas. » If re-seeding is regarded as a necessity, the seed mix should comprise a mix of rapidly germinating indigenous wetland plants such as grasses, sedges, reeds and rushes suited to the eco-region and adapted to stabilising areas (as should be recommended by the appointed specialist). » Regular monitoring of these sites should be

	conducted. » Avoid any additional activities within these areas until it has rehabilitated to a satisfactory level determined by the Auditor, as this may reduce and even prevent the successful rehabilitation of the area. »	
Residual Impacts	» Residual impacts are expected to be low	
Cumulative Impacts	Further fragmentation of the landscape causing the extinction of some species from the area and the potential collapse of biological cycles and processes (e.g. nutrient cycling, food webs, symbiotic relationships etc.)	
	Without Mitigation	**With Mitigation**
Extent	Local – Whole Site (1)	Local – Whole Site (1)
Duration	Long-term (4)	Long-term (4)
Magnitude	Small (0)	Small (0)
Probability	Improbable (2)	Very Improbable (1)
Significance	**Low (10)**	**Low (5)**
Status	Slightly Negative	Slightly Negative
Reversibility	Low	Low
Irreplaceable loss of resources	Moderate	Low
Can impacts be mitigated?	Yes, to a large extent	

5.1.2 Disruption of potential migration routes

Impact Nature: Further isolation of aquatic species, Unable to reach potential breeding sites/suitable breeding habitats, Loss in genetic variation, Reduction in genetic fitness, Ultimate extinction of local populations.		
	Without Mitigation	**With Mitigation**
Extent	Local – Whole Site & Neighbouring Sites (2)	Local – Whole Site (1)
Duration	Long-term (4)	Long-term (4)
Magnitude	Low (4)	Minor (2)
Probability	Improbable (2)	Improbable (2)
Significance	**Low (20)**	**Low (14)**
Status	Negative	Slightly Negative

Reversibility	Moderate	High
Irreplaceable loss of resources	Low	Low
Can impacts be mitigated?	To some extent. Mitigation aimed at maintaining local aquatic populations and to allow some degree of downstream movement. Upstream movement will only be possible during very high flood levels.	
Mitigation	» No additional development and construction activities may be allowed within the aquatic ecosystem, apart from maintenance and clean-up activities as specified below. » Any additional activities pertaining to the maintenance of the aquatic ecosystem, may only be permitted with the approval of an aquatic/wetland specialist. » Regular monitoring of the aquatic system to ensure quality of system remains: ▪ Clean-up of litter and solid pollutants, being washed from upstream sources. ▪ Regular inspections of the culverts and bridges, after large rainfall and flooding event should be conducted. ▪ Debris blocking the culverts and building up against the bridges should be removed (also applicable for the Pierre road culvert). ▪ Regular inspection for erosion and prompt action to stabilise erosion to prevent deterioration of water quality due to turbidity and sedimentation. ▪ Regular monitoring of the sediment build-up within the channels (avoid closure of channels and pools due to sedimentation). ▪ Regular monitoring of reed beds (*Phragmites austrialis*) within the channel (avoid channel closure due to the increase of this patch). ▪ In the case where one of the above-mentioned impacts have been observed to have increased in severity posing a potential risk to the aquatic system an aquatic specialist should be contacted to provide additional mitigation measures.	
Residual Impacts	» Residual impacts are expected to be low – Potential migration downstream through the culverts will be possible (as long as water level doesn't drop below the culvert level); Upstream migration from lower lying areas will only be possible during periods of high flooding.	
Cumulative Impacts	Further fragmentation of the landscape causing the	

	extinction of some species from the area and the potential collapse of biological cycles and processes (e.g. nutrient cycling, food webs, symbiotic relationships etc.)	
Extent	Local (2)	Local (2)
Duration	Long-term (4)	Long-term (4)
Magnitude	Small (0)	Small (0)
Probability	Improbable (2)	Very Improbable (1)
Significance	**Low (12)**	**Low (6)**
Status	Slightly Negative	Slightly Negative
Reversibility	Low	Low
Irreplaceable loss of resources	Moderate	Low
Can impacts be mitigated?	Yes, to a large extent	

5.1.3 Increase in Erosion and Sedimentation

Impact Nature: Exaggeration of current eroded areas (current state of erosion is regarded as low) and the formation of areas; Resulting in unstable vegetation conditions; Reduction in roughage; Increase in runoff, carrying eroded material into lower lying areas (aquatic habitat); Impacting aquatic habitat through siltation, change in water chemistry and turbidity.		
	Without Mitigation	**With Mitigation**
Extent	Local – Whole Site & Neighbouring Sites (2)	Local – Impact Site (1)
Duration	Long-term (4)	Short duration (2)
Magnitude	Low (4)	Minor (2)
Probability	Highly Probable (4)	Improbable (2)
Significance	**Medium (40)**	**Low (10)**
Status	Negative	Slightly Negative
Reversibility	Moderate	High
Irreplaceable loss of resources	Low	Low
Can impacts be mitigated?	Yes, to a large extent	

Mitigation	» No additional development and construction activities may be allowed within the aquatic ecosystem, apart from maintenance and clean-up activities as species below. » Any additional activities pertaining to the maintenance of the aquatic ecosystem, may only permitted with the approval of an aquatic/wetland specialist. » The strip of less degraded grassland between the paddocks and the aquatic ecosystem should be maintained as a buffer area with no development within this being allowed. **Trampling and unnecessary disturbance** » Designated footpaths should be identified and set out within the buffer area and aquatic ecosystem to contain movement within designated areas and to avoid unnecessary disturbance of the fauna and flora. **Erosion** » Regular monitoring should be done for potential erosion (annually after the rainy season as well as after abnormal high rainfall and flooding events). » Any eroded areas observed should be rehabilitated as soon as possible. » Areas cleared of vegetation during the construction of the fence should be allowed to continue with rehabilitation. » Rehabilitation should be closely monitored by the applicant and Auditor and if deemed not sufficient enough by the Auditor, a specialist should be contacted to provide additional recommendation in terms of potential re-seeding. **Re-establishment of indigenous vegetation** It is expected that in time the areas cleared of Invasive Alien Trees will be re-colonised with indigenous species. However, there is a window period where these areas may be prone to erosion (some re-seeding has occurred in order to stablise some areas, these areas are also likely to be replaced with natural species over time). » To increase the rate and effectivity of re-establishment as little as possible movement and activities should be allowed within these areas, until a satisfactory level of vegetation has re-established. » All mitigation measures specified within the **Invasion with Alien Plant Species** (Section 5.1.4) should be followed.

	» If natural re-introduction and settling of indigenous vegetation is not according to satisfactory standards and the risk of erosion becomes problematic, a specialist should be contacted to re-assess the current condition of the site and provide additional recommendation which may include using artificial techniques including re-seeding and the use of sediment barriers (sandbags, sandbags, retaining walls etc.) to prevent erosion in these areas. » If re-seeding is regarded as a necessity, the seed mix should comprise a mix of rapidly germinating indigenous wetland plants such as grasses, sedges, reeds and rushes suited to the eco-region and adapted to stabilising areas (as should be recommended by the appointed specialist). » Regular monitoring of these sites should be conducted.	
Residual Impacts	» Residual impacts are expected to be low	
Cumulative Impacts	Cumulative impacts within the surrounding environment due to the spread of erosion beyond the initial disturbed area and on steeper slopes or vulnerable soil types would continue to spread into intact areas even with a good vegetation cover. Furthermore, the eroded material could enter the downstream aquatic ecosystems and may impact on these systems through siltation of pools and changes in the chemistry and turbidity of the water.	
Extent	Local – Whole Site & Neighbouring Sites (2)	Local – Whole Site (1)
Duration	Long-term (4)	Medium-term (3)
Magnitude	Moderate (6)	Low (4)
Probability	Improbable (2)	Very Improbable (1)
Significance	**Low (24)**	**Low (8)**
Status	Negative	Slightly Negative
Reversibility	Moderate	High
Irreplaceable loss of resources	Moderate	Low
Can impacts be mitigated?	Yes, to a large extent	

5.1.4 Invasion with Alien Plant Species

Impact Nature: Outcompeting and replacement of natural vegetation; Loss in habitat and niche diversity (especially within the aquatic environment); Reduction in overall floral diversity; Ultimate reduction in faunal diversity;

Shade effect cause a reduction in groundcover, subsequently exposing and destabilising soil and leaving it prone to erosion; Destabilisation of channel banks; Increase in fire risk and intensity of fires (Crown fires and spotting behaviour of especially Eucalyptus species); Change in soil chemistry (nitrogen fixating ability of some trees, especially Acacia trees); Create favourable conditions for the increase in existing species and the invasion of new species; Alter hydrological character of watercourse (e.g. reduction in flow volume and velocity, channelisation of waterflow resulting in less lateral flow and bank over-low critical for the maintenance of wetland habitats); Change in water quality (increase in nitrogen and potential increase in turbidity of water due to the encouragement of erosion).		
	Without Mitigation	**With Mitigation**
Extent	Local – Whole Site & Neighbouring Sites (2)	Local – Impact Site (1)
Duration	Long-term (4)	Medium-term (3)
Magnitude	Moderate (6)	Minor (2)
Probability	Highly Probable (4)	Improbable (2)
Significance	**Medium (48)**	**Low (12)**
Status	Negative	Slightly Negative
Reversibility	Low	High
Irreplaceable loss of resources	High	Low
Can impacts be mitigated?	Yes, to a large extent	
Mitigation	» The eradication and management of alien invasive trees should persist. » A site-specific eradication and management programme for alien invasive trees should be included in the Operation Environmental Management Programme. » The management plan should include ; » Inspections of the trees planned to be eradicated, any faunal species that can be removed should be identified and removed outside of the impact area, trees containing nests of vulnerable avi-faunal species (e.g. Hamerkop – *Scopus umbretta*) should not be cut down. » an eradication and management plan for other potential alien invasive species (weeds and shrubs)	

	that may invade these "newly available" habitats. » Eradication of medium to large invasive alien trees should occur systematically over an extended period – the affected area should be divided in plots of appropriate size (±50m²) and total eradication should occur within one plot at a time with extended periods in-between to allow for sufficient natural vegetation to re-settle. This systematic approach is to ensure that a not to large unstable area is left vulnerable at a time as these areas may become prone to erosion. » In the case where a plot with a low abundance of alien invasive trees and a sufficient natural plant covering has been cleared, commencement of the following plot may occur immediately. » Clearing within the aquatic ecosystem should preferably occur in the late winter. » Chemical treatment of alien invasive species within the aquatic ecosystem should be avoided as far as possible. » Chemical treatment of alien invasive species outside of the aquatic ecosystem should be limited to cut-stump treatment and plugs with great care and management implemented to prevent any potential unnecessary spillage. No foliar-spray or pellet application may be allowed. » The felled specimens should be removed out of the aquatic boundaries as soon as possible (within a week of felling) and care should be taken to prevent any potential for re-seeding. » The remaining stump and root systems of larger alien invasive trees may not be removed/dug from the soil as this may lead to unstable soil conditions. » Annual follow-ups of these plots are critical to manage any potential seedlings. **Re-establishment of indigenous vegetation** It is expected that in time the areas cleared of Invasive Alien Trees will be re-colonised with indigenous species. Some re-seeding has occurred in order to stablise some areas. These areas are also likely to be replaced with natural species over time. » If natural re-introduction and settling of indigenous vegetation is not according to satisfactory standards and areas become exposed to erosion, a specialist should be contacted to re-assess the current condition of the site and provide additional recommendation which may include using artificial techniques including

	re-seeding and the use of sediment barriers (sandbags, sandbags, retaining walls etc.) to prevent erosion in these areas. » If re-seeding is regarded as a necessity, the seed mix should comprise a mix of rapidly germinating indigenous wetland plants such as grasses, sedges, reeds and rushes suited to the eco-region and adapted to stabilising areas (as should be recommended by the appointed specialist). » Regular monitoring of these sites should be conducted. » Avoid any additional activities within these areas until it has rehabilitated to a satisfactory level as determined by the Auditor this may reduce and even prevent the successful rehabilitation of the area. »	
Residual Impacts	» Residual impacts are expected to be positive and high due to the improvement of the vegetation cover and likely the ecological functions associated with such a vegetation coverage.	
Cumulative Impacts	Cumulative impacts within the surrounding environment due to the spread and settlement of alien invasive species beyond the initial disturbed area would lead to the replacement of natural indigenous vegetation and spread into more natural areas. Potentially impacting the functioning of downstream aquatic habitats.	
Extent	Local – Whole Site & Neighbouring Sites (2)	Local – Impact Site (1)
Duration	Long-term (4)	Medium-term (3)
Magnitude	Moderate (6)	Minor (2)
Probability	Probable (3)	Improbable (2)
Significance	**Medium (36)**	**Low (12)**
Status	Negative	Slightly Negative
Reversibility	Low	High
Irreplaceable loss of resources	High	Low
Can impacts be mitigated?	Yes, to a large extent	

5.1.5 Transformation of Egoli Granite Grassland (Vulnerable) and Critical Biodiversity Areas (Gauteng C-Plan).

Impact Nature: Reduction and loss of natural species constituting the grassland and characterising the Egoli Granite Grassland as well as the vegetation used as basis for the inclusion of the area as either ESA or CBA (important area); Ultimately leading to the transformation of a stable "natural" vegetation cover to a less stable vegetation cover characterised with cosmopolitan species indigenous species, weeds and IAPs; Due to the edge effect created through the fracturing of the landscape and a less stable vegetation cover areas may become even more prone to excessive IAP invasion; Alteration in ecological functioning of vegetation type (ESA and CBA), including attenuation of runoff into lower lying wetland areas, stabilisation of soil, habitat and niche provision etc; Eventual inability to sustain associated natural biological processes and cycles; Change in status of Egoli Granite Grassland.		
	Without Mitigation	**With Mitigation**
Extent	Local – Whole Site & Neighbouring Sites (2)	Local – Impact Site (1)
Duration	Long-term (4)	Medium-term (3)
Magnitude	Low (4)	Minor (2)
Probability	Improbable (2)	Improbable (2)
Significance	**Low (20)**	**Low (12)**
Status	Negative	Slightly Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources	No	No
Can impacts be mitigated?	Yes, to a large extent	
Mitigation	» Refer to mitigation measures provided in Section **5.1.1**	
Residual Impacts	» Residual impacts area expected to be low.	
Cumulative Impacts	Reduced ability to meet the conservation targets set out for these units.	
Extent	Regional (3)	Local – Whole Site & Neighbouring Sites (2)
Duration	Long-term (4)	Medium-term (3)
Magnitude	Low (4)	Small (0)
Probability	Improbable (2)	Highly Improbable (1)
Significance	**Low (22)**	**Low (5)**

Status	Negative	Slightly Negative
Reversibility	Low	Moderate
Irreplaceable loss of resources	High	Low
Can impacts be mitigated?	Yes, to a large extent	

6 DISCUSSION AND CONCLUSION

According to the classification of vegetation types of South Africa by Mucina and Rutherford (2006) the affected area is situated within Egoli Granite Grassland. This vegetation type is characterised as a tall grassland which may be species poor in some areas. Woody species are associated with rocky outcrops and rock sheets. This grassland is found within moderate undulating plains and low hills. Furthermore, Mucina and Rutherford have classified this vegetation type as Endangered with only 31.8% being natural. This vegetation type is furthermore listed within the National List of Ecosystems that are Threatened (GN1002 of 2011), also as Endangered. Transformation within the vegetation type is mainly due to urbanisation, cultivation or by building of roads.

During the site investigation, it was determined that only about 30% of the study area is consistent with a moderately degraded form of Egoli Granite Grassland. The remainder of the area have been severely transformed through infrastructure (roads, buildings, paddocks, stables etc.) and invasive plants (especially *Acacia* and *Eucalyptus* trees). The grassland is intersected by a watercourse, creating additional vegetation features and habitats and contributing to the general habitat diversity of the area and species diversity (faunal and floral).

The terrestrial or zonal ecosystem of the study area is found along the midslopes and upper portions of the footslopes of a highly undulating landscape, and is dominated by a relative dense cover of tufted grasses and a high diversity of herbs. The grassland within the study area, are mostly representative of a secondary grassland occurring on historically disturbed areas. The diagnostic species of this ecosystem are *Hyparrhenia hirta* and *Eragrostis chloromelas*. The southern half of the study area consist of very little natural vegetation with most of the area being developed (housing, stables and paddocks) and the surrounding vegetation being regularly mowed. The grassland north of the watercourse appears to be in a lightly better condition with some primary vegetation. The persistence of this grassland south and north of the watercourse fulfill a vital function in slowing down and filtering surface water flowing into the lower lying areas and to stabilise and protect the soils form erosion. Subsequently the remaining grassland form an important buffer and further transformation and

disturbance within these areas should be avoided. These grasslands can be further subdivided into to distinguishable units according to variations in their structure and species dominance, namely a shorter tufted grassland with *Eragrostis chloromelas* being slightly more dominant then *Hyparrhenia hirta* and a taller tufted grassland with *Hyparrhenia hirta* being the more dominant species. Also, closely associated with this terrestrial / upland habitat is the temporary and seasonal grassy wetland areas. These moisture loving grasslands are characterised by mixture of tufted and creeping grasses such as *Acroceras macrum, Eragrostis plana, Sporobolus africanus, Eragrostis chloromelas and Paspalum urvillei*.

These grassland habitats contain a relative high diversity of herbs of which most are IAPs and weeds (mostly *Verbena aristigera, Bidens bonariensis, Bidens brasiliensis, Sida rhombifolia and Plantago lanceolata*). The tree component within the grassland habitat is made up of solely IAPs and include *Acacia dealbata, Pinus taeda* and *Sesbania punicea* within the terrestrial upland grassland and *Acacia dealbata, Populus x canescens, Salix babylonica, Robinia pseudoacacia and Sesbania punicea* within the moist grassland.

The aquatic (azonal) ecosystem occurs along the lower portions of the footslopes and the valley-bottom sections of the undulating landscape and is characterised by a mixture of grasses, sedges and tall reeds with some invasive alien trees. Vegetation vary along a hydrological gradient (Hydrogeomorphological Zones). Most of this ecosystem have been greatly altered and transformed in the past due to extensive IAP invasion, but attempts have been made to improve the general condition of this ecosystem through the eradication of most of these species within the study area. This has resulted in some of the vegetation features re-establishing along with its associated ecological functions and services. Diagnostic species of this ecosystem include *Schoenoplectus brachyceras, Paspalum urvillei, Persicaria decipeins, Phragmites australis and Juncus exertus*. Areas with prolonged inundation may be dominated by monotonous stands of *Phragmites australis*. This associated vegetation fulfills vital ecological functions including; flood attenuation, flow augmentation, filtering of sediments, assimilation of nutrients and toxicants and the creation of unique habitats for fauna.

Seven communities or units have been identified within the study area along with 4 sub-communities / sub-units and are summarised below:

» **Terrestrial Upland Grassland**
- *Eragrostis chloromelas – Hyparrhenia* hirta Tall Grassland Community
  - Conservation Value = Low to Medium
  - Sensitivity = Low

- *Eragrostis curvula – Eragrostis chloromelas* Short Grassland Community
  - Conservation Value = Low
  - Sensitivity = Low

» **Terrestrial Moist Grassland**

- *Eragrostis plana – Acroceras macrum* Moist Grassland Community
  - *E. Plana – A. macrum – Verbena aristigera* Sub-Community
    - Conservation Value = Medium
    - Sensitivity = Medium-High
  - *E. plana – A. macrum – Verbena brasiliensis* Sub-Community
    - Conservation Value = Medium
    - Sensitivity = Medium-High
- *Hyparrhenia tamba – Imperata cylindrica Moist Grassland-Community*
  - Conservation Value = Medium
  - Sensitivity = Medium-High

» **Seasonal Inundated Sedgelands**

- *Persicaria decipiens – Schoenoplectus brachyceras* Sedgeland Community
  - *P. decipiens – S. brachyceras – Juncus exertus* Sub-Community
    - Conservation Value = Medium-High
    - Sensitivity = Medium-High
  - *P. decipiens – S. brachyceras – Pharagmites australis* Sub-Community
    - Conservation Value = Medium-High
    - Sensitivity = Medium-High

» **Permanent Inundated Reed Beds**

- *Leersia hexandra – Phragmites australis* Reed Community
  - Conservation Value = Medium-High
  - Sensitivity = Medium-High

» **Invasive Riparian Woodland**

- *Populus x canescens – Salix babylonica* Riparian Woodland
  - Conservation Value = Low
  - Sensitivity = Low

No protected species or important plant populations have been noted within the study area.

Indication of mammal activities were low within the study area as a result of the numerous of disturbances including; high levels of human movement and traffic, urban development, roads and uncontrolled burning as well as the transformation of habitat through the invasion of IAPs. Most animals likely to occur within the

study area will be associated with the habitats of the aquatic ecosystem. Furthermore, these species will likely not subside within this area of the ecosystem but rather move through it to other habitats upstream and/or downstream. Most of these species will be highly adaptable and opportunist species. The aquatic ecosystem forms an important corridor of movement for such animals, lending connectivity to downstream habitats associated with the Crocodile River. As such, this area is regarded as a Medium-High sensitive area.

The various aquatic habitats found within the study area provide potential suitable habitat for various frog species, although only two species were confirmed (*Amietia quecketii and Tomopterna natalensis*). Due to the unique habitat for such amphibian species provided by the aquatic ecosystem, this area is regarded as Medium-High sensitive.

No threatened and/or protected faunal species were found within the study area.

Current land use activities and disturbances within the study area likely contribute minimal to the overall disturbances and transformation within the vegetation type as well as the ESA and CBA areas as most of these activities occur on historically transformed and disturbed areas. These activities also do not greatly contribute to the reduction in functionality and services provided by this area as this area is already highly altered, with most of the ecological functions reduced and limited due to the highly fractured nature of the landscape and subsequently the isolation of open spaces ("natural areas") and the exposure to the edge effect. The most important ecological feature within this landscape is the aquatic ecosystem which is still largely connected (minor connectivity loss due to small dams and road crossings) creating a corridor of open space within the highly developed and fractured landscape, and also allowing connectivity with downstream habitats such as the Crocodile River. Furthermore, although causing some alterations to the character of the aquatic ecosystem, the non-compliance activities do not prevent this ecosystem from providing its ecosystem services and functions, albeit in a slightly altered form. Probably the most significant impacts within the study area as well as the surrounding properties are the invasion and transformation of habitats through the invasion of alien plants, especially woody species. Especially the aquatic ecosystem is prone to severe cases of invasion. Such invasion with woody alien plants may cause:

- Outcompeting and replacement of natural vegetation,
- Loss in habitat and niche diversity (especially within the aquatic environment),
- Reduction in overall floral diversity,
- Ultimate reduction in faunal diversity,
- Shade effect cause a reduction in groundcover, subsequently exposing and destabilising soil and leaving it prone to erosion.

- Destabilisation of channel banks,
- Increase in fire risk and intensity of fires (Crown fires and spotting behaviour of especially Eucalyptus species).
- Change in soil chemistry (nitrogen fixating ability of some trees, especially Acacia trees).
- Create favourable conditions for the increase in existing species and the invasion of new species,
- Alter hydrological character of watercourse (e.g. reduction in flow volume and velocity, channelisation of waterflow resulting in less lateral flow and bank over-low critical for the maintenance of wetland habitats).
- Change in water quality (increase in nitrogen and potential increase in turbidity of water due to the encouragement of erosion).

The current condition and health of the aquatic ecosystem within the study area has been greatly improved through the eradication of some of these species, allowing for the re-establishment of clear HGM zones with associated indigenous wetland vegetation.

The potential impacts within the study area can be summarised as follows:

- **Impact 1: Loss of local biodiversity.**
  - Significance with mitigation = Low (18)
  - Significance without mitigation = Low (12)
  - Cumulative Impact: Further fragmentation of the landscape causing the extinction of some species from the area and the potential collapse of biological cycles and processes (e.g. nutrient cycling, food webs, symbiotic relationships etc.).
    - Significance with mitigation = Low (10)
    - Significance without mitigation = Low (5)

- **Impact 2: Disruption of potential migration routes.**
  - Significance with mitigation = Low (20)
  - Significance without mitigation = Low (14)
  - Cumulative Impact: Further fragmentation of the landscape causing the extinction of some species from the area and the potential collapse of biological cycles and processes (e.g. nutrient cycling, food webs, symbiotic relationships etc.).
    - Significance with mitigation = Low (12)
    - Significance without mitigation = Low (6)

- **Impact 3: Increase in Erosion and Sedimentation.**
  - Significance with mitigation = Medium (40)
  - Significance without mitigation = Low (10)

- Cumulative Impact: Cumulative impacts within the surrounding environment due to the spread of erosion beyond the initial disturbed area and on steeper slopes or vulnerable soil types would continue to spread into intact areas even with a good vegetation cover. Furthermore, the eroded material could enter the downstream aquatic ecosystems and may impact on these systems through siltation of pools and changes in the chemistry and turbidity of the water.
    - Significance with mitigation = Low (24)
    - Significance without mitigation = Low (8)

» **Impact 4: Invasion with Alien Invasive Plant Species.**
    - Significance with mitigation = Medium (48)
    - Significance without mitigation = Low (12)
- Cumulative Impact: Cumulative impacts within the surrounding environment due to the spread and settlement of alien invasive species beyond the initial disturbed area would lead to the replacement of natural indigenous vegetation and spread into more natural areas. Potentially impacting the functioning of downstream aquatic habitats.
    - Significance with mitigation = Medium (36)
    - Significance without mitigation = Low (12)

» **Impact 5: Transformation of Egoli Granite Grassland (Vulnerable) and Critical Biodiversity Areas (Gauteng C-Plan).**
    - Significance with mitigation = Low (20)
    - Significance without mitigation = Low (12)
- Cumulative Impact: Reduced ability to meet the conservation targets set out for these units.
    - Significance with mitigation = Low (22)
    - Significance without mitigation = Low (5)

Overall the impacts of the non-complaince activities on the ecology of the system is small and may slightly alter some of the functions and services locally although, most of these functions will still persist in some form. Cumulative, these impacts, contribute very little to the general condition and functionality of the grassland as well as the aquatic ecosystem of the region and consequently these activities may be authorised

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8 APPENDICES:

Appendix X. Listed Plant Species

List of plant species of conservation concern which are known to occur in the vicinity of study area. The list is derived from the POSA website (*NE – Note Evaluated).

Colours Relate as follow:
Threatened Status: Critically (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Critically Rare, Rare, Declining and Data Deficient (DDD), Not Evaluated (NE)

» Protected according to National Forest Act X998 / NFA (No 84 of X998).

» Invasive Alien Plant

» Weeds (Indigenous and/or exotic)

Family	Species	Threat status
ACANTHACEAE	*Barleria macrostegia Nees*	LC
ACANTHACEAE	*Barleria obtusa Nees*	LC
ACANTHACEAE	*Blepharis innocua C.B.Clarke*	LC
ACANTHACEAE	*Blepharis squarrosa (Nees) T.Anderson*	LC
ACANTHACEAE	*Blepharis stainbankiae C.B.Clarke*	LC
ACANTHACEAE	*Chaetacanthus costatus Nees*	LC
ACANTHACEAE	*Hypoestes forskaolii (Vahl) R.Br.*	LC
ACANTHACEAE	*Hypoestes triflora (Forssk.) Roem. & Schult.*	LC
ACANTHACEAE	*Justicia anagalloides (Nees) T.Anderson*	LC
ACHARIACEAE	*Kiggelaria africana L.*	LC
ALISMATACEAE	*Alisma plantago-aquatica L.*	Not Evaluated
ALLIACEAE	*Tulbaghia acutiloba Harv.*	LC
ALLIACEAE	*Tulbaghia leucantha Baker*	LC
AMARANTHACEAE	*Achyranthes aspera L. var. aspera*	Not Evaluated

Family	Species	Threat status
AMARANTHACEAE	*Aerva leucura Moq.*	LC
AMARANTHACEAE	*Alternanthera pungens Kunth*	Not Evaluated
AMARANTHACEAE	*Amaranthus hybridus L. subsp. hybridus var. hybridus*	Not Evaluated
AMARANTHACEAE	*Cyathula uncinulata (Schrad.) Schinz*	LC
AMARANTHACEAE	*Gomphrena celosioides Mart.*	Not Evaluated
AMARANTHACEAE	*Guilleminea densa (Willd. ex Roem. & Schult.) Moq.*	Not Evaluated
AMARANTHACEAE	*Pupalia lappacea (L.) A.Juss. var. lappacea*	LC
AMARYLLIDACEAE	*Boophone disticha (L.f.) Herb.*	Declining
AMARYLLIDACEAE	*Crinum graminicola I.Verd.*	LC
AMARYLLIDACEAE	*Haemanthus humilis Jacq. subsp. hirsutus (Baker) Snijman*	LC
AMARYLLIDACEAE	*Nerine angustifolia (Baker) Baker*	LC
AMARYLLIDACEAE	*Scadoxus puniceus (L.) Friis & Nordal*	LC
ANACARDIACEAE	*Lannea discolor (Sond.) Engl.*	LC
ANACARDIACEAE	*Lannea edulis (Sond.) Engl. var. edulis*	LC
ANACARDIACEAE	*Ozoroa paniculosa (Sond.) R.& A.Fern. var. paniculosa*	LC
ANACARDIACEAE	*Schinus molle L.*	Not Evaluated
ANACARDIACEAE	*Searsia dentata (Thunb.) F.A.Barkley*	LC
ANACARDIACEAE	*Searsia discolor (E.Mey. ex Sond.) Moffett*	LC
ANACARDIACEAE	*Searsia leptodictya (Diels) T.S.Yi, A.J.Mill. & J.Wen forma leptodictya*	Not Evaluated
ANACARDIACEAE	*Searsia magalismontana (Sond.) Moffett subsp. magalismontana*	LC
ANACARDIACEAE	*Searsia pyroides (Burch.) Moffett var. gracilis (Engl.) Moffett*	LC
ANACARDIACEAE	*Searsia pyroides (Burch.) Moffett var. integrifolia (Engl.) Moffett*	LC
ANACARDIACEAE	*Searsia pyroides (Burch.) Moffett var. pyroides*	LC
ANACARDIACEAE	*Searsia rigida (Mill.) F.A.Barkley var. dentata (Engl.)*	LC

Family	Species	Threat status
	Moffett	
ANACARDIACEAE	*Searsia rigida (Mill.) F.A.Barkley var. margaretae (Burtt Davy ex Moffett) Moffett*	LC
ANACARDIACEAE	*Searsia rigida (Mill.) F.A.Barkley var. rigida*	LC
ANACARDIACEAE	*Searsia zeyheri (Sond.) Moffett*	LC
ANEMIACEAE	*Mohria vestita Baker*	LC
ANTHERICACEAE	*Chlorophytum bowkeri Baker*	LC
ANTHERICACEAE	*Chlorophytum cooperi (Baker) Nordal*	LC
ANTHERICACEAE	*Chlorophytum fasciculatum (Baker) Kativu*	LC
ANTHERICACEAE	*Chlorophytum transvaalense (Baker) Kativu*	LC
APIACEAE	*Afrosciadium magalismontanum (Sond.) P.J.D.Winter*	LC
APIACEAE	*Centella asiatica (L.) Urb.*	LC
APIACEAE	*Cyclospermum leptophyllum (Pers.) Sprague ex Britton & P.Wilson*	Not Evaluated
APIACEAE	*Daucus carota L.*	Not Evaluated
APIACEAE	*Foeniculum vulgare Mill. var. vulgare*	Not Evaluated
APIACEAE	*Heteromorpha arborescens (Spreng.) Cham. & Schltdl. var. abyssinica (Hochst. ex A.Rich.) H.Wolff*	LC
APIACEAE	*Pimpinella transvaalensis H.Wolff*	LC
APOCYNACEAE	*Acokanthera oppositifolia (Lam.) Codd*	LC
APOCYNACEAE	*Ancylobotrys capensis (Oliv.) Pichon*	LC
APOCYNACEAE	*Araujia sericifera Brot.*	Not Evaluated
APOCYNACEAE	*Asclepias adscendens (Schltr.) Schltr.*	LC
APOCYNACEAE	*Asclepias albens (E.Mey.) Schltr.*	LC
APOCYNACEAE	*Asclepias aurea (Schltr.) Schltr.*	LC
APOCYNACEAE	*Asclepias brevipes (Schltr.) Schltr.*	LC
APOCYNACEAE	*Asclepias eminens (Harv.) Schltr.*	LC
APOCYNACEAE	*Asclepias fallax (Schltr.) Schltr.*	LC
APOCYNACEAE	*Asclepias stellifera Schltr.*	LC

Family	Species	Threat status
APOCYNACEAE	*Aspidoglossum biflorum E.Mey.*	LC
APOCYNACEAE	*Aspidoglossum interruptum (E.Mey.) Bullock*	LC
APOCYNACEAE	*Aspidoglossum lamellatum (Schltr.) Kupicha*	LC
APOCYNACEAE	*Aspidoglossum ovalifolium (Schltr.) Kupicha*	LC
APOCYNACEAE	*Aspidoglossum restioides (Schltr.) Kupicha*	LC
APOCYNACEAE	*Brachystelma chloranthum (Schltr.) Peckover*	LC
APOCYNACEAE	Brachystelma circinatum E.Mey.	LC
APOCYNACEAE	Brachystelma nanum (Schltr.) N.E.Br.	LC
APOCYNACEAE	Brachystelma oianthum Schltr.	LC
APOCYNACEAE	*Carissa bispinosa (L.) Desf. ex Brenan*	LC
APOCYNACEAE	Ceropegia rendallii N.E.Br.	LC
APOCYNACEAE	*Cryptolepis cryptolepidioides (Schltr.) Bullock*	LC
APOCYNACEAE	*Cryptolepis oblongifolia (Meisn.) Schltr.*	LC
APOCYNACEAE	*Gomphocarpus fruticosus (L.) Aiton f. subsp. decipiens (N.E.Br.) Goyder & Nicholas*	LC
APOCYNACEAE	*Gomphocarpus fruticosus (L.) Aiton f. subsp. fruticosus*	LC
APOCYNACEAE	*Gomphocarpus glaucophyllus Schltr.*	LC
APOCYNACEAE	*Gomphocarpus rivularis Schltr.*	LC
APOCYNACEAE	Huernia transvaalensis Stent	LC
APOCYNACEAE	*Nerium oleander L.*	Not Evaluated
APOCYNACEAE	Orbea lutea (N.E.Br.) Bruyns subsp. lutea	LC
APOCYNACEAE	*Pachycarpus schinzianus (Schltr.) N.E.Br.*	LC
APOCYNACEAE	*Parapodium costatum E.Mey.*	LC
APOCYNACEAE	*Raphionacme galpinii Schltr.*	LC
APOCYNACEAE	*Raphionacme hirsuta (E.Mey.) R.A.Dyer*	LC
APOCYNACEAE	Riocreuxia polyantha Schltr.	LC
APOCYNACEAE	*Secamone alpini Schult.*	LC
APOCYNACEAE	*Sisyranthus randii S.Moore*	LC
APOCYNACEAE	Stapelia gigantea N.E.Br.	LC

Family	Species	Threat status
APOCYNACEAE	*Vinca major L.*	Not Evaluated
APOCYNACEAE	*Xysmalobium undulatum (L.) Aiton f. var. undulatum*	LC
AQUIFOLIACEAE	*Ilex mitis (L.) Radlk. var. mitis*	Declining
ARALIACEAE	Cussonia paniculata Eckl. & Zeyh. subsp. paniculata	LC
ARALIACEAE	Cussonia paniculata Eckl. & Zeyh. subsp. sinuata (Reyneke & Kok) De Winter	LC
ARALIACEAE	*Hydrocotyle verticillata Thunb.*	LC
ASPARAGACEAE	*Asparagus africanus Lam.*	LC
ASPARAGACEAE	*Asparagus angusticladus (Jessop) J.-P.Lebrun & Stork*	LC
ASPARAGACEAE	*Asparagus asparagoides (L.) Druce*	LC
ASPARAGACEAE	*Asparagus buchananii Baker*	LC
ASPARAGACEAE	*Asparagus cooperi Baker*	LC
ASPARAGACEAE	*Asparagus flavicaulis (Oberm.) Fellingham & N.L.Mey. subsp. flavicaulis*	LC
ASPARAGACEAE	*Asparagus laricinus Burch.*	LC
ASPARAGACEAE	*Asparagus setaceus (Kunth) Jessop*	LC
ASPARAGACEAE	*Asparagus suaveolens Burch.*	LC
ASPARAGACEAE	*Asparagus virgatus Baker*	LC
ASPHODELACEAE	*Aloe arborescens Mill.*	LC
ASPHODELACEAE	Aloe cryptopoda Baker	LC
ASPHODELACEAE	*Aloe greatheadii Schönland var. davyana (Schönland) Glen & D.S.Hardy*	LC
ASPHODELACEAE	Aloe verecunda Pole-Evans	LC
ASPHODELACEAE	*Bulbine capitata Poelln.*	LC
ASPHODELACEAE	*Bulbine favosa (Thunb.) Schult. & Schult.f*	LC
ASPHODELACEAE	*Chortolirion angolense (Baker) A.Berger*	LC
ASPHODELACEAE	Kniphofia ensifolia Baker subsp. ensifolia	LC
ASPHODELACEAE	Kniphofia porphyrantha Baker	LC
ASPHODELACEAE	*Trachyandra asperata Kunth var. swaziensis Oberm.*	LC
ASPHODELACEAE	*Trachyandra saltii (Baker) Oberm. var. saltii*	LC

Family	Species	Threat status
ASPLENIACEAE	*Asplenium aethiopicum (Burm.f.) Bech.*	LC
ASPLENIACEAE	*Asplenium capense (Kunze) Bir, Fraser-Jenk. & Lovis*	LC
ASTERACEAE	*Acanthospermum australe (Loefl.) Kuntze*	Not Evaluated
ASTERACEAE	*Adenostemma caffrum DC.sens.lat.*	LC
ASTERACEAE	*Artemisia afra Jacq. ex Willd. var. afra*	LC
ASTERACEAE	*Aster harveyanus Kuntze*	LC
ASTERACEAE	*Aster peglerae Bolus*	LC
ASTERACEAE	*Aster squamatus (Spreng.) Hieron.*	Not Evaluated
ASTERACEAE	*Athrixia elata Sond.*	LC
ASTERACEAE	*Berkheya insignis (Harv.) Thell.*	LC
ASTERACEAE	*Berkheya radula (Harv.) De Wild.*	LC
ASTERACEAE	*Berkheya seminivea Harv. & Sond.*	LC
ASTERACEAE	*Berkheya setifera DC.*	LC
ASTERACEAE	*Berkheya speciosa (DC.) O.Hoffm. subsp. lanceolata Roessler*	LC
ASTERACEAE	*Berkheya zeyheri Oliv. & Hiern subsp. zeyheri*	LC
ASTERACEAE	*Bidens bipinnata L.*	Not Evaluated
ASTERACEAE	*Bidens pilosa L.*	Not Evaluated
ASTERACEAE	*Brachylaena rotundata S.Moore*	LC
ASTERACEAE	*Callilepis leptophylla Harv.*	Declining
ASTERACEAE	*Campuloclinium macrocephalum (Less.) DC.*	Not Evaluated
ASTERACEAE	*Cichorium intybus L. subsp. intybus*	Not Evaluated
ASTERACEAE	*Cineraria albicans N.E.Br.*	LC
ASTERACEAE	*Cineraria alchemilloides DC. subsp. alchemilloides*	Rare
ASTERACEAE	*Cineraria austrotransvaalensis Cron*	NT
ASTERACEAE	*Cineraria lobata L'Hér. subsp. lobata*	LC

Family	Species	Threat status
ASTERACEAE	*Cineraria longipes S.Moore*	VU
ASTERACEAE	*Cirsium vulgare (Savi) Ten.*	Not Evaluated
ASTERACEAE	*Conyza podocephala DC.*	LC
ASTERACEAE	*Conyza scabrida DC.*	LC
ASTERACEAE	*Cosmos bipinnatus Cav.*	Not Evaluated
ASTERACEAE	*Cotula hispida (DC.) Harv.*	LC
ASTERACEAE	*Cotula nigellifolia (DC.) K.Bremer & Humphries var. nigellifolia*	LC
ASTERACEAE	*Crassocephalum x picridifolium (DC.) S.Moore*	Not Evaluated
ASTERACEAE	*Dicoma anomala Sond. subsp. gerrardii (Harv. ex F.C.Wilson) S.Ortíz & Rodr.Oubiña*	LC
ASTERACEAE	*Dimorphotheca spectabilis Schltr.*	LC
ASTERACEAE	*Euryops laxus (Harv.) Burtt Davy*	LC
ASTERACEAE	*Euryops transvaalensis Klatt subsp. transvaalensis*	LC
ASTERACEAE	*Felicia fruticosa (L.) G.Nicholson subsp. brevipedunculata (Hutch.) Grau*	LC
ASTERACEAE	*Felicia muricata (Thunb.) Nees subsp. muricata*	LC
ASTERACEAE	*Galinsoga parviflora Cav.*	Not Evaluated
ASTERACEAE	*Gazania krebsiana Less. subsp. serrulata (DC.) Roessler*	LC
ASTERACEAE	*Geigeria burkei Harv. subsp. burkei var. intermedia (S.Moore) Merxm.*	LC
ASTERACEAE	*Geigeria burkei Harv. subsp. burkei var. zeyheri (Harv.) Merxm.*	LC
ASTERACEAE	*Geigeria ornativa O.Hoffm. subsp. ornativa*	LC
ASTERACEAE	*Gerbera ambigua (Cass.) Sch.Bip.*	LC
ASTERACEAE	*Gerbera piloselloides (L.) Cass.*	LC
ASTERACEAE	*Gerbera viridifolia (DC.) Sch.Bip.*	LC
ASTERACEAE	*Haplocarpha scaposa Harv.*	LC
ASTERACEAE	*Helichrysum acutatum DC.*	LC

Family	Species	Threat status
ASTERACEAE	*Helichrysum athrixiifolium (Kuntze) Moeser*	LC
ASTERACEAE	*Helichrysum aureonitens Sch.Bip.*	LC
ASTERACEAE	*Helichrysum aureum (Houtt.) Merr. var. monocephalum (DC.) Hilliard*	LC
ASTERACEAE	*Helichrysum caespititium (DC.) Harv.*	LC
ASTERACEAE	*Helichrysum callicomum Harv.*	LC
ASTERACEAE	*Helichrysum cephaloideum DC.*	LC
ASTERACEAE	*Helichrysum cerastioides DC. var. cerastioides*	LC
ASTERACEAE	*Helichrysum chionosphaerum DC.*	LC
ASTERACEAE	*Helichrysum difficile Hilliard*	LC
ASTERACEAE	*Helichrysum harveyanum Wild*	LC
ASTERACEAE	*Helichrysum lepidissimum S.Moore*	LC
ASTERACEAE	*Helichrysum mundtii Harv.*	LC
ASTERACEAE	*Helichrysum nudifolium (L.) Less. var. nudifolium*	LC
ASTERACEAE	*Helichrysum nudifolium (L.) Less. var. oxyphyllum (DC.) Beentje*	LC
ASTERACEAE	*Helichrysum oreophilum Klatt*	LC
ASTERACEAE	*Helichrysum paronychioides DC.*	LC
ASTERACEAE	*Helichrysum polycladum Klatt*	LC
ASTERACEAE	*Helichrysum rugulosum Less.*	LC
ASTERACEAE	*Helichrysum setosum Harv.*	LC
ASTERACEAE	*Helichrysum stenopterum DC.*	LC
ASTERACEAE	*Hilliardiella aristata (DC.) H.Rob.*	LC
ASTERACEAE	*Hilliardiella hirsuta (DC.) H.Rob.*	LC
ASTERACEAE	*Hypochaeris brasiliensis (Less.) Griseb.*	Not Evaluated
ASTERACEAE	*Hypochaeris microcephala (Sch.Bip.) Cabrera var. albiflora (Kuntze) Cabrera*	Not Evaluated
ASTERACEAE	*Hypochaeris radicata L.*	Not Evaluated
ASTERACEAE	*Lactuca inermis Forssk.*	LC

Family	Species	Threat status
ASTERACEAE	*Laggera crispata (Vahl) Hepper & J.R.I.Wood*	LC
ASTERACEAE	*Laggera decurrens (Vahl) Hepper & J.R.I.Wood*	LC
ASTERACEAE	*Lopholaena coriifolia (Sond.) E.Phillips & C.A.Sm.*	LC
ASTERACEAE	*Macledium zeyheri (Sond.) S.Ortíz subsp. zeyheri*	LC
ASTERACEAE	*Nidorella anomala Steetz*	LC
ASTERACEAE	*Nidorella hottentotica DC.*	LC
ASTERACEAE	*Nolletia rarifolia (Turcz.) Steetz*	LC
ASTERACEAE	*Osteospermum muricatum E.Mey. ex DC. subsp. muricatum*	LC
ASTERACEAE	*Othonna natalensis Sch.Bip.*	LC
ASTERACEAE	*Pentzia monocephala S.Moore*	LC
ASTERACEAE	*Phymaspermum athanasioides (S.Moore) Källersjö*	LC
ASTERACEAE	*Pseudognaphalium luteo-album (L.) Hilliard & B.L.Burtt*	
ASTERACEAE	*Pseudognaphalium oligandrum (DC.) Hilliard & B.L.Burtt*	LC
ASTERACEAE	*Pulicaria scabra (Thunb.) Druce*	LC
ASTERACEAE	*Schistostephium crataegifolium (DC.) Fenzl ex Harv.*	LC
ASTERACEAE	*Schistostephium heptalobum (DC.) Oliv. & Hiern*	LC
ASTERACEAE	*Schkuhria pinnata (Lam.) Kuntze ex Thell.*	Not Evaluated
ASTERACEAE	*Senecio affinis DC.*	LC
ASTERACEAE	*Senecio consanguineus DC.*	LC
ASTERACEAE	*Senecio coronatus (Thunb.) Harv.*	LC
ASTERACEAE	*Senecio erubescens Aiton var. crepidifolius DC.*	LC
ASTERACEAE	*Senecio erubescens Aiton var. erubescens*	LC
ASTERACEAE	*Senecio glanduloso-pilosus Volkens & Muschl.*	LC
ASTERACEAE	*Senecio gregatus Hilliard*	LC
ASTERACEAE	*Senecio harveianus MacOwan*	LC
ASTERACEAE	*Senecio hieracioides DC.*	LC
ASTERACEAE	*Senecio inaequidens DC.*	LC
ASTERACEAE	*Senecio inornatus DC.*	LC

Family	Species	Threat status
ASTERACEAE	*Senecio isatideus DC.*	LC
ASTERACEAE	*Senecio laevigatus Thunb. var. integrifolius Harv.*	LC
ASTERACEAE	*Senecio laevigatus Thunb. var. laevigatus*	LC
ASTERACEAE	*Senecio lydenburgensis Hutch. & Burtt Davy*	LC
ASTERACEAE	*Senecio othonniflorus DC.*	LC
ASTERACEAE	*Senecio oxyriifolius DC. subsp. oxyriifolius*	LC
ASTERACEAE	*Senecio scitus Hutch. & Burtt Davy*	LC
ASTERACEAE	*Senecio venosus Harv.*	LC
ASTERACEAE	*Seriphium plumosum L.*	Not Evaluated
ASTERACEAE	*Sonchus dregeanus DC.*	LC
ASTERACEAE	*Sonchus integrifolius Harv. var. integrifolius*	LC
ASTERACEAE	*Sonchus oleraceus L.*	Not Evaluated
ASTERACEAE	*Tagetes minuta L.*	Not Evaluated
ASTERACEAE	*Taraxacum officinale Weber*	Not Evaluated
ASTERACEAE	*Tarchonanthus camphoratus L.*	LC
ASTERACEAE	*Tarchonanthus parvicapitulatus P.P.J.Herman*	LC
ASTERACEAE	*Tithonia diversifolia (Hemsl.) A.Gray*	Not Evaluated
ASTERACEAE	*Tolpis capensis (L.) Sch.Bip.*	LC
ASTERACEAE	*Ursinia nana DC. subsp. leptophylla Prassler*	LC
ASTERACEAE	*Ursinia tenuiloba DC.*	LC
ASTERACEAE	*Vernonia galpinii Klatt*	LC
ASTERACEAE	*Vernonia staehelinoides Harv.*	LC
ASTERACEAE	*Vernonia sutherlandii Harv.*	LC
ASTERACEAE	*Xanthium strumarium L.*	Not Evaluated
ASTERACEAE	*Zinnia peruviana (L.) L.*	Not Evaluated

Family	Species	Threat status
AYTONIACEAE	*Asterella marginata (Nees) S.W.Arnell*	
AYTONIACEAE	*Plagiochasma rupestre (J.R.& G.Forst.) Steph. var. rupestre*	
AYTONIACEAE	*Plagiochasma rupestre (J.R.& G.Forst.) Steph. var. volkii Bischl.*	
BALANTIOPSIDACEAE	*Trachyphyllum gastrodes (Welw. & Duby) A.Gepp*	
BARTRAMIACEAE	*Philonotis falcata (Hook.) Mitt.*	
BARTRAMIACEAE	*Philonotis hastata (Duby) Wijk & Margad.*	
BIGNONIACEAE	*Tecoma stans (L.) Juss. ex Kunth var. stans*	Not Evaluated
BORAGINACEAE	*Anchusa riparia A.DC.*	LC
BORAGINACEAE	*Cynoglossum lanceolatum Forssk.*	LC
BORAGINACEAE	*Ehretia rigida (Thunb.) Druce subsp. nervifolia Retief & A.E.van Wyk*	LC
BORAGINACEAE	*Heliotropium nelsonii C.H.Wright*	LC
BORAGINACEAE	*Lithospermum cinereum A.DC.*	LC
BRASSICACEAE	*Eruca sativa Mill.*	Not Evaluated
BRASSICACEAE	*Heliophila rigidiuscula Sond.*	LC
BRASSICACEAE	*Lepidium africanum (Burm.f.) DC. subsp. africanum*	LC
BRASSICACEAE	*Lepidium bonariense L.*	Not Evaluated
BRASSICACEAE	*Lepidium mossii Thell.*	DDD
BRASSICACEAE	*Lepidium transvaalense Marais*	LC
BRASSICACEAE	*Nasturtium officinale R.Br.*	Not Evaluated
BRASSICACEAE	*Raphanus raphanistrum L.*	Not Evaluated
BRASSICACEAE	*Rorippa fluviatilis (E.Mey. ex Sond.) Thell. var. fluviatilis*	LC
BRASSICACEAE	*Rorippa nudiuscula Thell.*	LC
BRASSICACEAE	*Sisymbrium burchellii DC. var. burchellii*	LC
BRASSICACEAE	*Sisymbrium orientale L.*	Not Evaluated

Family	Species	Threat status
BRYACEAE	*Anomobryum julaceum (Schrad. ex P.Gaertn., B.Mey. & Schreb.) Schimp.*	
BRYACEAE	*Bryum alpinum Huds. ex With.*	
BRYACEAE	*Bryum argenteum Hedw.*	
BRYACEAE	*Bryum pycnophyllum (Dixon) Mohamed*	
BUDDLEJACEAE	*Buddleja saligna Willd.*	LC
BUDDLEJACEAE	*Buddleja salviifolia (L.) Lam.*	LC
BUDDLEJACEAE	*Nuxia congesta R.Br. ex Fresen.*	LC
BUDDLEJACEAE	*Nuxia glomerulata (C.A.Sm.) I.Verd.*	LC
CAMPANULACEAE	*Wahlenbergia lycopodioides Schltr. & Brehmer*	LC
CAMPANULACEAE	*Wahlenbergia magaliesbergensis Lammers*	LC
CAMPANULACEAE	*Wahlenbergia undulata (L.f.) A.DC.*	LC
CAMPANULACEAE	*Wahlenbergia virgata Engl.*	LC
CANNACEAE	*Canna indica L.*	Not Evaluated
CAPPARACEAE	*Cleome maculata (Sond.) Szyszyl.*	LC
CAPPARACEAE	*Cleome monophylla L.*	LC
CAPPARACEAE	*Maerua cafra (DC.) Pax*	LC
CARYOPHYLLACEAE	*Cerastium arabidis E.Mey. ex Fenzl*	LC
CARYOPHYLLACEAE	*Dianthus mooiensis F.N.Williams subsp. kirkii (Burtt Davy) S.S.Hooper*	Not Evaluated
CARYOPHYLLACEAE	*Dianthus mooiensis F.N.Williams subsp. mooiensis var. mooiensis*	Not Evaluated
CARYOPHYLLACEAE	*Pollichia campestris Aiton*	LC
CARYOPHYLLACEAE	*Silene burchellii Otth var. angustifolia Sond.*	Not Evaluated
CARYOPHYLLACEAE	*Silene gallica L.*	Not Evaluated
CARYOPHYLLACEAE	*Silene undulata Aiton*	LC
CELASTRACEAE	*Gymnosporia buxifolia (L.) Szyszyl.*	LC
CELASTRACEAE	*Gymnosporia polyacanthus (Sond.) Szyszyl. subsp. vaccinifolia (P.Conrath) M.Jordaan*	LC

Family	Species	Threat status
CELASTRACEAE	*Maytenus undata (Thunb.) Blakelock*	LC
CELASTRACEAE	*Pterocelastrus echinatus N.E.Br.*	LC
CELTIDACEAE	*Celtis africana Burm.f.*	LC
CHENOPODIACEAE	*Chenopodium album L.*	Not Evaluated
CHENOPODIACEAE	*Chenopodium carinatum R.Br.*	Not Evaluated
CHENOPODIACEAE	*Chenopodium mucronatum Thunb.*	LC
CHENOPODIACEAE	*Chenopodium pumilio R.Br.*	Not Evaluated
CHENOPODIACEAE	*Salsola kali L.*	Not Evaluated
CHRYSOBALANACEAE	*Parinari capensis Harv. subsp. capensis*	LC
COLCHICACEAE	*Ornithoglossum vulgare B.Nord.*	LC
COMBRETACEAE	*Combretum apiculatum Sond. subsp. apiculatum*	LC
COMBRETACEAE	*Combretum erythrophyllum (Burch.) Sond.*	LC
COMMELINACEAE	*Commelina africana L. var. africana*	LC
COMMELINACEAE	*Commelina africana L. var. krebsiana (Kunth) C.B.Clarke*	LC
COMMELINACEAE	*Commelina africana L. var. lancispatha C.B.Clarke*	LC
COMMELINACEAE	*Commelina benghalensis L.*	LC
COMMELINACEAE	*Commelina subulata Roth*	LC
COMMELINACEAE	*Cyanotis speciosa (L.f.) Hassk.*	LC
CONVOLVULACEAE	*Convolvulus farinosus L.*	LC
CONVOLVULACEAE	*Convolvulus ocellatus Hook.f. var. ocellatus*	LC
CONVOLVULACEAE	*Convolvulus sagittatus Thunb.*	LC
CONVOLVULACEAE	*Convolvulus thunbergii Roem. & Schult.*	LC
CONVOLVULACEAE	*Cuscuta campestris Yunck.*	Not Evaluated
CONVOLVULACEAE	*Evolvulus alsinoides (L.) L.*	LC
CONVOLVULACEAE	*Ipomoea alba L.*	Not Evaluated

Family	Species	Threat status
CONVOLVULACEAE	*Ipomoea bathycolpos Hallier f.*	LC
CONVOLVULACEAE	*Ipomoea crassipes Hook. var. crassipes*	LC
CONVOLVULACEAE	*Ipomoea indica (Burm.f.) Merr.*	Not Evaluated
CONVOLVULACEAE	*Ipomoea oblongata E.Mey. ex Choisy*	LC
CONVOLVULACEAE	*Ipomoea obscura (L.) Ker Gawl. var. obscura*	LC
CONVOLVULACEAE	*Ipomoea ommanneyi Rendle*	LC
CONVOLVULACEAE	*Ipomoea purpurea (L.) Roth*	Not Evaluated
CONVOLVULACEAE	*Ipomoea simplex Thunb.*	LC
CONVOLVULACEAE	*Xenostegia tridentata (L.) D.F.Austin & Staples subsp. angustifolia (Jacq.) Lejoly & Lisowski*	LC
CRASSULACEAE	*Adromischus umbraticola C.A.Sm. subsp. umbraticola*	NT
CRASSULACEAE	*Cotyledon orbiculata L. var. oblonga (Haw.) DC.*	LC
CRASSULACEAE	*Crassula alba Forssk. var. alba*	LC
CRASSULACEAE	*Crassula expansa Dryand. subsp. expansa*	LC
CRASSULACEAE	*Crassula lanceolata (Eckl. & Zeyh.) Endl. ex Walp. subsp. transvaalensis (Kuntze) Toelken*	LC
CRASSULACEAE	*Crassula setulosa Harv. var. jenkinsii Schönland*	LC
CRASSULACEAE	*Crassula setulosa Harv. var. setulosa forma setulosa*	Not Evaluated
CRASSULACEAE	*Crassula vaginata Eckl. & Zeyh. subsp. vaginata*	LC
CRASSULACEAE	*Kalanchoe paniculata Harv.*	LC
CRASSULACEAE	*Kalanchoe rotundifolia (Haw.) Haw.*	LC
CRASSULACEAE	*Kalanchoe thyrsiflora Harv.*	LC
CUCURBITACEAE	*Acanthosicyos naudinianus (Sond.) C.Jeffrey*	LC
CUCURBITACEAE	*Citrullus lanatus (Thunb.) Matsum. & Nakai*	LC
CUCURBITACEAE	*Coccinia adoensis (A.Rich.) Cogn.*	LC
CUCURBITACEAE	*Cucumis hirsutus Sond.*	LC
CUCURBITACEAE	*Cucumis zeyheri Sond.*	LC
CUCURBITACEAE	*Kedrostis africana (L.) Cogn.*	LC

Family	Species	Threat status
CUCURBITACEAE	*Peponium caledonicum (Sond.) Engl.*	LC
CUCURBITACEAE	*Peponium mackenii (Naudin) Engl.*	LC
CUCURBITACEAE	*Trochomeria macrocarpa (Sond.) Hook.f. subsp. macrocarpa*	LC
CYPERACEAE	*Bulbostylis burchellii (Ficalho & Hiern) C.B.Clarke*	LC
CYPERACEAE	*Bulbostylis contexta (Nees) M.Bodard*	LC
CYPERACEAE	*Bulbostylis humilis (Kunth) C.B.Clarke*	LC
CYPERACEAE	*Bulbostylis oritrephes (Ridl.) C.B.Clarke*	LC
CYPERACEAE	*Bulbostylis schoenoides (Kunth) C.B.Clarke*	LC
CYPERACEAE	*Cyperus albostriatus Schrad.*	LC
CYPERACEAE	*Cyperus austro-africanus C.Archer & Goetgh.*	LC
CYPERACEAE	*Cyperus congestus Vahl*	LC
CYPERACEAE	*Cyperus eragrostis Lam.*	Not Evaluated
CYPERACEAE	*Cyperus esculentus L. var. esculentus*	LC
CYPERACEAE	*Cyperus leptocladus Kunth*	LC
CYPERACEAE	*Cyperus longus L. var. tenuiflorus (Rottb.) Boeck.*	LC
CYPERACEAE	*Cyperus margaritaceus Vahl var. margaritaceus*	LC
CYPERACEAE	*Cyperus marginatus Thunb.*	LC
CYPERACEAE	*Cyperus obtusiflorus Vahl var. flavissimus (Schrad.) Boeck.*	LC
CYPERACEAE	*Cyperus obtusiflorus Vahl var. obtusiflorus*	LC
CYPERACEAE	*Cyperus rupestris Kunth var. rupestris*	LC
CYPERACEAE	*Cyperus semitrifidus Schrad.*	LC
CYPERACEAE	*Cyperus sexangularis Nees*	LC
CYPERACEAE	*Cyperus sphaerospermus Schrad.*	LC
CYPERACEAE	*Cyperus uitenhagensis (Steud.) C.Archer & Goetgh.*	LC
CYPERACEAE	*Dracoscirpoides surculosa Muasya, Reynders & Goetgh.*	LC
CYPERACEAE	*Eleocharis dregeana Steud.*	LC
CYPERACEAE	*Ficinia stolonifera Boeckeler*	LC

Family	Species	Threat status
CYPERACEAE	*Fimbristylis complanata (Retz.) Link*	LC
CYPERACEAE	*Fuirena pubescens (Poir.) Kunth var. pubescens*	LC
CYPERACEAE	*Fuirena stricta Steud. var. stricta*	LC
CYPERACEAE	*Isolepis costata Hochst. ex A.Rich.*	LC
CYPERACEAE	*Isolepis fluitans (L.) R.Br. var. fluitans*	LC
CYPERACEAE	*Kyllinga alata Nees*	LC
CYPERACEAE	*Kyllinga erecta Schumach. var. erecta*	LC
CYPERACEAE	*Kyllinga melanosperma Nees*	LC
CYPERACEAE	*Pycreus macranthus (Boeckeler) C.B.Clarke*	LC
CYPERACEAE	*Pycreus mundii Nees*	LC
CYPERACEAE	*Rhynchospora brownii Roem. & Schult.*	LC
CYPERACEAE	*Schoenoplectus brachyceras (Hochst. ex A.Rich.) Lye*	LC
CYPERACEAE	*Schoenoplectus corymbosus (Roth ex Roem. & Schult.) J.Raynal*	LC
CYPERACEAE	*Schoenoplectus muricinux (C.B.Clarke) J.Raynal*	LC
CYPERACEAE	*Schoenoplectus muriculatus (Kük.) Browning*	LC
CYPERACEAE	*Schoenoxiphium sparteum (Wahlenb.) C.B.Clarke*	LC
CYPERACEAE	*Scirpoides burkei (C.B.Clarke) Goetgh., Muasya & D.A.Simpson*	LC
CYPERACEAE	*Scleria bulbifera Hochst. ex A.Rich.*	LC
DICRANACEAE	*Campylopus introflexus (Hedw.) Brid.*	
DICRANACEAE	*Campylopus pyriformis (F.W.Schultz) Brid.*	
DIOSCOREACEAE	*Dioscorea retusa Mast.*	LC
DIOSCOREACEAE	*Dioscorea sylvatica Eckl. var. sylvatica*	VU
DIPSACACEAE	*Cephalaria zeyheriana Szabó*	LC
DIPSACACEAE	*Scabiosa columbaria L.*	LC
DITRICHACEAE	*Ceratodon purpureus (Hedw.) Brid. subsp. stenocarpus (Bruch & Schimp. ex Müll.Hal.) Dixon*	
DITRICHACEAE	*Ditrichum brachypodum (Müll.Hal.) Broth.*	
DROSERACEAE	*Drosera collinsiae N.E.Br. ex Burtt Davy*	LC

Family	Species	Threat status
DRYOPTERIDACEAE	*Dryopteris athamantica (Kunze) Kuntze*	LC
EBENACEAE	*Diospyros austro-africana De Winter var. microphylla (Burch.) De Winter*	LC
EBENACEAE	*Diospyros lycioides Desf. subsp. guerkei (Kuntze) De Winter*	LC
EBENACEAE	*Diospyros lycioides Desf. subsp. lycioides*	LC
EBENACEAE	*Diospyros whyteana (Hiern) F.White*	LC
EBENACEAE	*Euclea crispa (Thunb.) Gürke subsp. crispa*	LC
EBENACEAE	*Euclea undulata Thunb.*	LC
ELATINACEAE	*Bergia decumbens Planch. ex Harv.*	LC
ERICACEAE	*Erica alopecurus Harv. var. alopecurus*	LC
ERICACEAE	*Erica alopecurus Harv. var. glabriflora Bolus*	LC
ERICACEAE	*Erica drakensbergensis Guthrie & Bolus*	LC
ERICACEAE	*Erica woodii Bolus var. woodii*	LC
ERIOSPERMACEAE	*Eriospermum cooperi Baker var. cooperi*	LC
ERIOSPERMACEAE	*Eriospermum flagelliforme (Baker) J.C.Manning*	LC
ERIOSPERMACEAE	*Eriospermum porphyrium Archibald*	LC
EUPHORBIACEAE	*Acalypha angustata Sond.*	LC
EUPHORBIACEAE	*Acalypha caperonioides Baill. var. caperonioides*	DDT
EUPHORBIACEAE	*Acalypha glabrata Thunb. var. glabrata*	LC
EUPHORBIACEAE	*Acalypha glabrata Thunb. var. pilosa Pax*	LC
EUPHORBIACEAE	*Acalypha peduncularis E.Mey. ex Meisn.*	LC
EUPHORBIACEAE	*Acalypha villicaulis Hochst.*	LC
EUPHORBIACEAE	*Clutia natalensis Bernh.*	LC
EUPHORBIACEAE	*Clutia pulchella L. var. pulchella*	LC
EUPHORBIACEAE	*Dalechampia capensis A.Spreng.*	LC
EUPHORBIACEAE	*Euphorbia epicyparissias E.Mey. ex Boiss.*	LC
EUPHORBIACEAE	*Euphorbia hirta L.*	Not Evaluated
EUPHORBIACEAE	*Euphorbia inaequilatera Sond. var. inaequilatera*	LC

Family	Species	Threat status
EUPHORBIACEAE	*Euphorbia pseudotuberosa Pax*	LC
EUPHORBIACEAE	*Euphorbia pubescens Vahl*	LC
EUPHORBIACEAE	*Euphorbia rhombifolia Boiss.*	LC
EUPHORBIACEAE	*Euphorbia striata Thunb. var. striata*	LC
EUPHORBIACEAE	*Spirostachys africana Sond.*	LC
EUPHORBIACEAE	*Tragia minor Sond.*	LC
EUPHORBIACEAE	*Tragia okanyua Pax*	LC
FABACEAE	*Acacia ataxacantha DC.*	LC
FABACEAE	*Acacia baileyana F.Muell.*	Not Evaluated
FABACEAE	*Acacia caffra (Thunb.) Willd.*	LC
FABACEAE	*Acacia cyclops A.Cunn. ex G.Don*	Not Evaluated
FABACEAE	*Acacia dealbata Link*	Not Evaluated
FABACEAE	*Acacia elata A.Cunn. ex Benth.*	Not Evaluated
FABACEAE	*Acacia hereroensis Engl.*	LC
FABACEAE	*Acacia karroo Hayne*	LC
FABACEAE	*Acacia longifolia (Andrews) Willd.*	Not Evaluated
FABACEAE	*Acacia permixta Burtt Davy*	LC
FABACEAE	*Alysicarpus rugosus (Willd.) DC. subsp. perennirufus J.Léonard*	LC
FABACEAE	*Argyrolobium speciosum Eckl. & Zeyh.*	LC
FABACEAE	*Argyrolobium tuberosum Eckl. & Zeyh.*	LC
FABACEAE	*Astragalus atropilosulus (Hochst.) Bunge subsp. burkeanus (Harv.) J.B.Gillett var. burkeanus*	LC
FABACEAE	*Chamaecrista biensis (Steyaert) Lock*	LC
FABACEAE	*Chamaecrista capensis (Thunb.) E.Mey. var. flavescens (Thunb.) E.Mey.*	LC
FABACEAE	*Chamaecrista comosa E.Mey. var. capricornia (Steyaert) Lock*	LC

Family	Species	Threat status
FABACEAE	*Chamaecrista mimosoides (L.) Greene*	LC
FABACEAE	*Crotalaria sphaerocarpa Perr. ex DC. subsp. sphaerocarpa*	LC
FABACEAE	*Desmodium repandum (Vahl) DC.*	LC
FABACEAE	*Dichilus lebeckioides DC.*	LC
FABACEAE	*Dichilus pilosus Conrath ex Schinz*	LC
FABACEAE	*Dichilus strictus E.Mey.*	LC
FABACEAE	*Dolichos angustifolius Eckl. & Zeyh.*	LC
FABACEAE	*Elephantorrhiza burkei Benth.*	LC
FABACEAE	*Elephantorrhiza elephantina (Burch.) Skeels*	LC
FABACEAE	*Eriosema burkei Benth. ex Harv. var. burkei*	LC
FABACEAE	*Eriosema cordatum E.Mey.*	LC
FABACEAE	*Eriosema nutans Schinz*	LC
FABACEAE	*Eriosema salignum E.Mey.*	LC
FABACEAE	*Eriosema transvaalense C.H.Stirt.*	LC
FABACEAE	*Erythrina lysistemon Hutch.*	LC
FABACEAE	*Gleditsia triacanthos L.*	Not Evaluated
FABACEAE	*Indigastrum burkeanum (Benth. ex Harv.) Schrire*	LC
FABACEAE	*Indigofera comosa N.E.Br.*	LC
FABACEAE	*Indigofera confusa Prain & Baker f.*	LC
FABACEAE	*Indigofera cryptantha Benth. ex Harv. var. cryptantha*	LC
FABACEAE	*Indigofera dimidiata Vogel ex Walp.*	LC
FABACEAE	*Indigofera frondosa N.E.Br.*	LC
FABACEAE	*Indigofera hedyantha Eckl. & Zeyh.*	LC
FABACEAE	*Indigofera hilaris Eckl. & Zeyh. var. hilaris*	LC
FABACEAE	*Indigofera melanadenia Benth. ex Harv.*	LC
FABACEAE	*Indigofera oxalidea Welw. ex Baker*	LC
FABACEAE	*Indigofera oxytropis Benth. ex Harv.*	LC
FABACEAE	*Indigofera spicata Forssk. var. spicata*	LC

Family	Species	Threat status
FABACEAE	*Indigofera zeyheri Spreng. ex Eckl. & Zeyh.*	LC
FABACEAE	*Lablab purpureus (L.) Sweet subsp. uncinatus Verdc.*	LC
FABACEAE	*Leobordea eriantha (Benth.) B.-E.van Wyk & Boatwr.*	LC
FABACEAE	*Lespedeza cuneata (Dum.Cours.) G.Don*	Not Evaluated
FABACEAE	*Lessertia mossii R.G.N.Young*	DDT
FABACEAE	*Leucaena leucocephala (Lam.) de Wit subsp. leucocephala*	Not Evaluated
FABACEAE	*Lotononis laxa Eckl. & Zeyh.*	LC
FABACEAE	*Lotononis macrosepala Conrath*	LC
FABACEAE	*Lotus discolor E.Mey. subsp. discolor*	LC
FABACEAE	*Melilotus albus Medik.*	Not Evaluated
FABACEAE	*Melilotus indicus (L.) All.*	Not Evaluated
FABACEAE	*Melolobium subspicatum Conrath*	VU
FABACEAE	*Mundulea sericea (Willd.) A.Chev. subsp. sericea*	LC
FABACEAE	*Neorautanenia ficifolia (Benth. ex Harv.) C.A.Sm.*	LC
FABACEAE	*Pearsonia aristata (Schinz) Dummer*	LC
FABACEAE	*Pearsonia bracteata (Benth.) Polhill*	NT
FABACEAE	*Pearsonia cajanifolia (Harv.) Polhill subsp. cajanifolia*	LC
FABACEAE	*Pearsonia sessilifolia (Harv.) Dummer subsp. sessilifolia*	LC
FABACEAE	*Peltophorum africanum Sond.*	LC
FABACEAE	*Rhynchosia caribaea (Jacq.) DC.*	LC
FABACEAE	*Rhynchosia monophylla Schltr.*	LC
FABACEAE	*Rhynchosia nervosa Benth. ex Harv. var. nervosa*	LC
FABACEAE	*Rhynchosia sordida (E.Mey.) Schinz*	LC
FABACEAE	*Rhynchosia totta (Thunb.) DC. var. totta*	LC
FABACEAE	*Rhynchosia venulosa (Hiern) K.Schum.*	Not Evaluated
FABACEAE	*Robinia pseudoacacia L.*	Not Evaluated

Family	Species	Threat status
FABACEAE	*Senna italica Mill. subsp. arachoides (Burch.) Lock*	LC
FABACEAE	*Sphenostylis angustifolia Sond.*	LC
FABACEAE	*Sutherlandia frutescens (L.) R.Br.*	LC
FABACEAE	*Tephrosia capensis (Jacq.) Pers. var. capensis*	LC
FABACEAE	*Tephrosia elongata E.Mey. var. elongata*	LC
FABACEAE	*Tephrosia longipes Meisn. subsp. longipes var. longipes*	LC
FABACEAE	*Tephrosia lupinifolia DC.*	LC
FABACEAE	*Tephrosia multijuga R.G.N.Young*	LC
FABACEAE	*Tephrosia semiglabra Sond.*	LC
FABACEAE	*Trifolium africanum Ser. var. africanum*	LC
FABACEAE	*Trifolium africanum Ser. var. lydenburgense J.B.Gillett*	LC
FABACEAE	*Vigna unguiculata (L.) Walp. subsp. unguiculata var. unguiculata*	LC
FABACEAE	*Vigna vexillata (L.) A.Rich. var. davyi (Bolus) B.J.Pienaar*	LC
FABACEAE	*Vigna vexillata (L.) A.Rich. var. vexillata*	LC
FABACEAE	*Zornia linearis E.Mey.*	LC
FISSIDENTACEAE	*Fissidens bryoides Hedw.*	
FUMARIACEAE	*Fumaria muralis Sond. ex W.D.J.Koch subsp. muralis*	Not Evaluated
GENTIANACEAE	*Chironia palustris Burch. subsp. transvaalensis (Gilg) I.Verd.*	LC
GENTIANACEAE	*Chironia purpurascens (E.Mey.) Benth. & Hook.f. subsp. humilis (Gilg) I.Verd.*	LC
GENTIANACEAE	*Chironia purpurascens (E.Mey.) Benth. & Hook.f. subsp. purpurascens*	LC
GENTIANACEAE	*Sebaea exigua (Oliv.) Schinz*	LC
GENTIANACEAE	*Sebaea junodii Schinz*	LC
GERANIACEAE	*Monsonia angustifolia E.Mey. ex A.Rich.*	LC
GERANIACEAE	*Monsonia attenuata Harv.*	LC
GERANIACEAE	*Pelargonium dolomiticum R.Knuth*	LC
GERANIACEAE	*Pelargonium luridum (Andrews) Sweet*	LC

Family	Species	Threat status
GUNNERACEAE	*Gunnera perpensa L.*	Declining
HALORAGACEAE	*Laurembergia repens (L.) P.J.Bergius subsp. brachypoda (Welw. ex Hiern) Oberm.*	LC
HALORAGACEAE	*Myriophyllum aquaticum (Vell.) Verdc.*	Not Evaluated
HYACINTHACEAE	*Albuca setosa Jacq.*	LC
HYACINTHACEAE	*Dipcadi marlothii Engl.*	LC
HYACINTHACEAE	*Drimia calcarata (Baker) Stedje*	LC
HYACINTHACEAE	*Drimia depressa (Baker) Jessop*	LC
HYACINTHACEAE	*Drimia intricata (Baker) J.C.Manning & Goldblatt*	LC
HYACINTHACEAE	*Drimia multisetosa (Baker) Jessop*	LC
HYACINTHACEAE	*Drimiopsis burkei Baker subsp. burkei*	LC
HYACINTHACEAE	*Eucomis autumnalis (Mill.) Chitt. subsp. clavata (Baker) Reyneke*	Not Evaluated
HYACINTHACEAE	*Eucomis pallidiflora Baker subsp. pallidiflora*	LC
HYACINTHACEAE	*Ledebouria burkei (Baker) J.C.Manning & Goldblatt*	
HYACINTHACEAE	*Ledebouria cooperi (Hook.f.) Jessop*	LC
HYACINTHACEAE	*Ledebouria luteola Jessop*	LC
HYACINTHACEAE	*Ledebouria marginata (Baker) Jessop*	LC
HYACINTHACEAE	*Ledebouria revoluta (L.f.) Jessop*	LC
HYACINTHACEAE	*Ornithogalum juncifolium Jacq. var. juncifolium*	LC
HYACINTHACEAE	*Ornithogalum tenuifolium F.Delaroche subsp. tenuifolium*	Not Evaluated
HYACINTHACEAE	*Schizocarphus nervosus (Burch.) Van der Merwe*	LC
HYDROCHARITACEAE	*Lagarosiphon muscoides Harv.*	LC
HYPERICACEAE	*Hypericum aethiopicum Thunb. subsp. sonderi (Bredell) N.Robson*	LC
HYPERICACEAE	*Hypericum lalandii Choisy*	LC
HYPERICACEAE	*Hypericum revolutum Vahl subsp. revolutum*	LC
HYPOXIDACEAE	*Hypoxis acuminata Baker*	LC
HYPOXIDACEAE	*Hypoxis argentea Harv. ex Baker var. argentea*	LC

Family	Species	Threat status
HYPOXIDACEAE	*Hypoxis filiformis Baker*	LC
HYPOXIDACEAE	*Hypoxis galpinii Baker*	LC
HYPOXIDACEAE	*Hypoxis hemerocallidea Fisch., C.A.Mey. & Avé-Lall.*	Declining
HYPOXIDACEAE	*Hypoxis interjecta Nel*	LC
HYPOXIDACEAE	*Hypoxis iridifolia Baker*	LC
HYPOXIDACEAE	*Hypoxis rigidula Baker var. pilosissima Baker*	LC
HYPOXIDACEAE	*Hypoxis rigidula Baker var. rigidula*	LC
ICACINACEAE	*Apodytes dimidiata E.Mey. ex Arn. subsp. dimidiata*	LC
ICACINACEAE	*Cassinopsis ilicifolia (Hochst.) Kuntze*	LC
IRIDACEAE	*Babiana bainesii Baker*	LC
IRIDACEAE	*Gladiolus antholyzoides Baker*	LC
IRIDACEAE	*Gladiolus crassifolius Baker*	LC
IRIDACEAE	*Gladiolus dalenii Van Geel subsp. dalenii*	LC
IRIDACEAE	*Gladiolus longicollis Baker subsp. platypetalus (Baker) Goldblatt & J.C.Manning*	LC
IRIDACEAE	*Gladiolus papilio Hook.f.*	LC
IRIDACEAE	*Gladiolus permeabilis D.Delaroche subsp. edulis (Burch. ex Ker Gawl.) Oberm.*	LC
IRIDACEAE	*Gladiolus woodii Baker*	LC
IRIDACEAE	*Hesperantha candida Baker*	LC
IRIDACEAE	*Hesperantha coccinea (Backh. & Harv.) Goldblatt & J.C.Manning*	LC
IRIDACEAE	*Hesperantha leucantha Baker*	LC
IRIDACEAE	*Moraea pallida (Baker) Goldblatt*	LC
IRIDACEAE	*Moraea stricta Baker*	LC
IRIDACEAE	*Tritonia nelsonii Baker*	LC
JUNCACEAE	*Juncus dregeanus Kunth subsp. dregeanus*	LC
JUNCACEAE	*Juncus effusus L.*	LC
JUNCACEAE	*Juncus exsertus Buchenau*	LC
JUNCACEAE	*Juncus lomatophyllus Spreng.*	LC

Family	Species	Threat status
JUNCACEAE	*Juncus oxycarpus E.Mey. ex Kunth*	LC
LAMIACEAE	*Acrotome hispida Benth.*	LC
LAMIACEAE	*Acrotome inflata Benth.*	LC
LAMIACEAE	*Aeollanthus buchnerianus Briq.*	LC
LAMIACEAE	*Leonotis nepetifolia (L.) R.Br.*	LC
LAMIACEAE	*Leonotis ocymifolia (Burm.f.) Iwarsson*	LC
LAMIACEAE	*Leucas martinicensis (Jacq.) R.Br.*	LC
LAMIACEAE	*Mentha aquatica L.*	LC
LAMIACEAE	*Ocimum obovatum E.Mey. ex Benth. subsp. obovatum var. obovatum*	LC
LAMIACEAE	*Plectranthus cylindraceus Hochst. ex Benth.*	LC
LAMIACEAE	*Plectranthus grallatus Briq.*	LC
LAMIACEAE	*Plectranthus hereroensis Engl.*	LC
LAMIACEAE	*Pycnostachys reticulata (E.Mey.) Benth.*	LC
LAMIACEAE	*Rotheca hirsuta (Hochst.) R.Fern.*	LC
LAMIACEAE	*Salvia radula Benth.*	LC
LAMIACEAE	*Salvia reflexa Hornem.*	Not Evaluated
LAMIACEAE	*Salvia runcinata L.f.*	LC
LAMIACEAE	*Salvia tiliifolia Vahl*	Not Evaluated
LAMIACEAE	*Satureja biflora (Buch.-Ham. ex D.Don) Briq.*	LC
LAMIACEAE	*Scutellaria racemosa Pers.*	Not Evaluated
LAMIACEAE	*Stachys natalensis Hochst. var. natalensis*	LC
LAMIACEAE	*Syncolostemon pretoriae (Gürke) D.F.Otieno*	LC
LAMIACEAE	*Teucrium trifidum Retz.*	LC
LINACEAE	*Linum thunbergii Eckl. & Zeyh.*	LC
LOBELIACEAE	*Cyphia stenopetala Diels*	LC
LOBELIACEAE	*Lobelia erinus L.*	LC
LOBELIACEAE	*Lobelia flaccida (C.Presl) A.DC. subsp. flaccida*	LC

Family	Species	Threat status
LOBELIACEAE	*Monopsis decipiens (Sond.) Thulin*	LC
LORANTHACEAE	*Agelanthus natalitius (Meisn.) Polhill & Wiens subsp. zeyheri (Harv.) Polhill & Wiens*	LC
LORANTHACEAE	*Tapinanthus rubromarginatus (Engl.) Danser*	LC
LUNULARIACEAE	*Lunularia cruciata (L.) Dumort. ex Lindb.*	
LYTHRACEAE	*Nesaea sagittifolia (Sond.) Koehne var. sagittifolia*	LC
LYTHRACEAE	*Nesaea schinzii Koehne*	LC
MALPIGHIACEAE	*Sphedamnocarpus pruriens (A.Juss.) Szyszyl. subsp. galphimiifolius (A.Juss.) P.D.de Villiers & D.J.Botha*	LC
MALPIGHIACEAE	*Sphedamnocarpus pruriens (A.Juss.) Szyszyl. subsp. pruriens*	LC
MALVACEAE	*Abutilon austro-africanum Hochr.*	LC
MALVACEAE	*Abutilon piloso-cinereum A.Meeuse*	LC
MALVACEAE	*Abutilon sonneratianum (Cav.) Sweet*	LC
MALVACEAE	*Dombeya rotundifolia (Hochst.) Planch. var. rotundifolia*	LC
MALVACEAE	*Grewia flava DC.*	LC
MALVACEAE	*Grewia occidentalis L. var. occidentalis*	LC
MALVACEAE	*Hermannia cordata (E.Mey. ex E.Phillips) De Winter*	LC
MALVACEAE	*Hermannia depressa N.E.Br.*	LC
MALVACEAE	*Hermannia floribunda Harv.*	LC
MALVACEAE	*Hermannia lancifolia Szyszyl.*	LC
MALVACEAE	*Hermannia umbratica I.Verd.*	LC
MALVACEAE	*Hibiscus aethiopicus L. var. ovatus Harv.*	LC
MALVACEAE	*Hibiscus engleri K.Schum.*	LC
MALVACEAE	*Hibiscus lunarifolius Willd.*	LC
MALVACEAE	*Hibiscus micranthus L.f. var. micranthus*	LC
MALVACEAE	*Hibiscus microcarpus Garcke*	LC
MALVACEAE	*Hibiscus subreniformis Burtt Davy*	LC
MALVACEAE	*Hibiscus trionum L.*	
MALVACEAE	*Lavatera arborea L.*	Not Evaluated

Family	Species	Threat status
MALVACEAE	*Modiola caroliniana (L.) G.Don*	Not Evaluated
MALVACEAE	*Pavonia burchellii (DC.) R.A.Dyer*	LC
MALVACEAE	*Pavonia columella Cav.*	LC
MALVACEAE	*Sida alba L.*	LC
MALVACEAE	*Sida chrysantha Ulbr.*	LC
MALVACEAE	*Sida dregei Burtt Davy*	LC
MALVACEAE	*Sida rhombifolia L. subsp. rhombifolia*	LC
MALVACEAE	*Sida ternata L.f.*	LC
MALVACEAE	*Triumfetta sonderi Ficalho & Hiern*	LC
MELIACEAE	*Melia azedarach L.*	Not Evaluated
MELIANTHACEAE	*Melianthus comosus Vahl*	LC
MESEMBRYANTHEMACEAE	*Khadia acutipetala (N.E.Br.) N.E.Br.*	LC
MESEMBRYANTHEMACEAE	*Khadia beswickii (L.Bolus) N.E.Br.*	VU
MESEMBRYANTHEMACEAE	*Lithops lesliei (N.E.Br.) N.E.Br. subsp. lesliei*	NT
MNIACEAE	*Pohlia elongata Hedw.*	
MOLLUGINACEAE	*Mollugo cerviana (L.) Ser. ex DC. var. cerviana*	LC
MOLLUGINACEAE	*Psammotropha myriantha Sond.*	LC
MORACEAE	*Ficus abutilifolia (Miq.) Miq.*	LC
MORACEAE	*Ficus cordata Thunb. subsp. cordata*	LC
MORACEAE	*Ficus ingens (Miq.) Miq.*	LC
MORACEAE	*Ficus salicifolia Vahl*	LC
MYRICACEAE	*Morella serrata (Lam.) Killick*	LC
MYROTHAMNACEAE	*Myrothamnus flabellifolius Welw.*	DDT
NEPHROLEPIDACEAE	*Nephrolepis exaltata (L.) Schott*	Not Evaluated
NYCTAGINACEAE	*Mirabilis jalapa L.*	Not Evaluated
NYMPHAEACEAE	*Nymphaea nouchali Burm.f. var. caerulea (Savigny) Verdc.*	LC

Family	Species	Threat status
OLACACEAE	*Ximenia caffra Sond. var. caffra*	LC
OLEACEAE	*Ligustrum japonicum Thunb.*	Not Evaluated
OLEACEAE	*Menodora africana Hook.*	LC
OLEACEAE	*Olea europaea L. subsp. africana (Mill.) P.S.Green*	LC
OLINIACEAE	*Olinia emarginata Burtt Davy*	LC
ONAGRACEAE	*Epilobium salignum Hausskn.*	LC
ONAGRACEAE	*Oenothera indecora Cambess.*	Not Evaluated
ONAGRACEAE	*Oenothera jamesii Torr. & A.Gray*	Not Evaluated
ONAGRACEAE	*Oenothera laciniata Hill*	Not Evaluated
ONAGRACEAE	*Oenothera rosea L'Hér. ex Aiton*	Not Evaluated
ONAGRACEAE	*Oenothera stricta Ledeb. ex Link subsp. stricta*	Not Evaluated
ONAGRACEAE	*Oenothera tetraptera Cav.*	Not Evaluated
ORCHIDACEAE	*Bonatea antennifera Rolfe*	LC
ORCHIDACEAE	*Brachycorythis conica (Summerh.) Summerh. subsp. transvaalensis Summerh.*	EN
ORCHIDACEAE	*Brachycorythis tenuior Rchb.f.*	LC
ORCHIDACEAE	*Disa patula Sond. var. transvaalensis Summerh.*	LC
ORCHIDACEAE	*Disperis anthoceros Rchb.f. var. anthoceros*	LC
ORCHIDACEAE	*Disperis micrantha Lindl.*	LC
ORCHIDACEAE	*Eulophia calanthoides Schltr.*	LC
ORCHIDACEAE	*Eulophia hians Spreng. var. hians*	LC
ORCHIDACEAE	*Eulophia hians Spreng. var. inaequalis (Schltr.) S.Thomas*	LC
ORCHIDACEAE	*Eulophia hians Spreng. var. nutans (Sond.) S.Thomas*	LC
ORCHIDACEAE	*Eulophia leontoglossa Rchb.f.*	LC
ORCHIDACEAE	*Eulophia ovalis Lindl. var. bainesii (Rolfe) P.J.Cribb & la Croix*	LC

Family	Species	Threat status
ORCHIDACEAE	*Eulophia ovalis Lindl. var. ovalis*	LC
ORCHIDACEAE	*Eulophia tuberculata Bolus*	LC
ORCHIDACEAE	*Eulophia welwitschii (Rchb.f.) Rolfe*	LC
ORCHIDACEAE	*Habenaria barbertoni Kraenzl. & Schltr.*	NT
ORCHIDACEAE	*Satyrium cristatum Sond. var. cristatum*	LC
ORCHIDACEAE	*Satyrium hallackii Bolus subsp. ocellatum (Bolus) A.V.Hall*	LC
OROBANCHACEAE	*Alectra sessiliflora (Vahl) Kuntze var. sessiliflora*	LC
OROBANCHACEAE	*Buchnera simplex (Thunb.) Druce*	LC
OROBANCHACEAE	*Cycnium tubulosum (L.f.) Engl. subsp. tubulosum*	LC
OROBANCHACEAE	*Graderia subintegra Mast.*	LC
OROBANCHACEAE	*Harveya huttonii Hiern*	LC
OROBANCHACEAE	*Harveya pumila Schltr.*	LC
OROBANCHACEAE	*Melasma scabrum P.J.Bergius var. scabrum*	LC
OROBANCHACEAE	*Sopubia cana Harv. var. cana*	LC
OROBANCHACEAE	*Striga asiatica (L.) Kuntze*	LC
OROBANCHACEAE	*Striga bilabiata (Thunb.) Kuntze subsp. bilabiata*	LC
OROBANCHACEAE	*Striga elegans Benth.*	LC
OROBANCHACEAE	*Striga gesnerioides (Willd.) Vatke*	LC
OSMUNDACEAE	*Osmunda regalis L.*	LC
OXALIDACEAE	*Oxalis corniculata L.*	Not Evaluated
OXALIDACEAE	*Oxalis depressa Eckl. & Zeyh.*	LC
OXALIDACEAE	*Oxalis latifolia Kunth*	Not Evaluated
PALLAVICINIACEAE	*Symphyogyna brasiliensis Nees & Mont.*	
PAPAVERACEAE	*Argemone mexicana L. forma mexicana*	Not Evaluated
PAPAVERACEAE	*Argemone ochroleuca Sweet subsp. ochroleuca*	Not Evaluated
PAPAVERACEAE	*Papaver aculeatum Thunb.*	LC

Family	Species	Threat status
PEDALIACEAE	*Ceratotheca triloba (Bernh.) Hook.f.*	LC
PHYLLANTHACEAE	*Phyllanthus glaucophyllus Sond.*	LC
PHYLLANTHACEAE	*Phyllanthus incurvus Thunb.*	LC
PHYLLANTHACEAE	*Phyllanthus parvulus Sond. var. parvulus*	LC
PHYTOLACCACEAE	*Phytolacca dioica L.*	Not Evaluated
PHYTOLACCACEAE	*Phytolacca octandra L.*	Not Evaluated
PILOTRICHACEAE	*Cyclodictyon vallis-gratiae (Hampe ex Müll.Hal.) Kuntze*	
PINACEAE	*Pinus patula Schltdl. & Cham. var. patula*	Not Evaluated
PITTOSPORACEAE	*Pittosporum viridiflorum Sims*	LC
PLANTAGINACEAE	*Plantago lanceolata L.*	LC
PLANTAGINACEAE	*Plantago longissima Decne.*	LC
PLANTAGINACEAE	*Plantago major L.*	
PLUMBAGINACEAE	*Plumbago auriculata Lam.*	LC
PLUMBAGINACEAE	*Plumbago zeylanica L.*	Not Evaluated
POACEAE	*Agrostis eriantha Hack. var. eriantha*	LC
POACEAE	*Agrostis lachnantha Nees var. lachnantha*	LC
POACEAE	*Alloteropsis semialata (R.Br.) Hitchc. subsp. eckloniana (Nees) Gibbs Russ.*	LC
POACEAE	*Andropogon appendiculatus Nees*	LC
POACEAE	*Andropogon chinensis (Nees) Merr.*	LC
POACEAE	*Andropogon eucomus Nees*	LC
POACEAE	*Andropogon huillensis Rendle*	LC
POACEAE	*Anthephora pubescens Nees*	LC
POACEAE	*Aristida adscensionis L.*	LC
POACEAE	*Aristida aequiglumis Hack.*	LC
POACEAE	*Aristida bipartita (Nees) Trin. & Rupr.*	LC
POACEAE	*Aristida canescens Henrard subsp. canescens*	LC

Family	Species	Threat status
POACEAE	*Aristida congesta Roem. & Schult. subsp. barbicollis (Trin. & Rupr.) De Winter*	LC
POACEAE	*Aristida congesta Roem. & Schult. subsp. congesta*	LC
POACEAE	*Aristida diffusa Trin. subsp. burkei (Stapf) Melderis*	LC
POACEAE	*Aristida junciformis Trin. & Rupr. subsp. junciformis*	LC
POACEAE	*Aristida scabrivalvis Hack. subsp. scabrivalvis*	LC
POACEAE	*Aristida stipitata Hack. subsp. graciliflora (Pilg.) Melderis*	LC
POACEAE	*Aristida transvaalensis Henrard*	LC
POACEAE	*Arundinella nepalensis Trin.*	LC
POACEAE	*Arundo donax L.*	Not Evaluated
POACEAE	*Avena fatua L.*	Not Evaluated
POACEAE	*Bewsia biflora (Hack.) Gooss.*	LC
POACEAE	*Bothriochloa bladhii (Retz.) S.T.Blake*	LC
POACEAE	*Brachiaria advena Vickery*	Not Evaluated
POACEAE	*Brachiaria brizantha (A.Rich.) Stapf*	LC
POACEAE	*Brachiaria eruciformis (Sm.) Griseb.*	LC
POACEAE	*Brachiaria nigropedata (Ficalho & Hiern) Stapf*	LC
POACEAE	*Brachiaria serrata (Thunb.) Stapf*	LC
POACEAE	*Briza minor L.*	Not Evaluated
POACEAE	*Bromus leptoclados Nees*	LC
POACEAE	*Chloris pycnothrix Trin.*	LC
POACEAE	*Chloris virgata Sw.*	LC
POACEAE	*Cortaderia selloana (Schult.) Asch. & Graebn.*	Not Evaluated
POACEAE	*Cymbopogon dieterlenii Stapf ex E.Phillips*	LC
POACEAE	*Cymbopogon nardus (L.) Rendle*	LC
POACEAE	*Cymbopogon prolixus (Stapf) E.Phillips*	LC
POACEAE	*Cynodon dactylon (L.) Pers.*	LC

Family	Species	Threat status
POACEAE	*Cynodon hirsutus Stent*	LC
POACEAE	*Cynodon transvaalensis Burtt Davy*	LC
POACEAE	*Digitaria diagonalis (Nees) Stapf var. diagonalis*	LC
POACEAE	*Digitaria eriantha Steud.*	LC
POACEAE	*Digitaria eylesii C.E.Hubb.*	LC
POACEAE	*Digitaria monodactyla (Nees) Stapf*	LC
POACEAE	*Digitaria ternata (A.Rich.) Stapf*	LC
POACEAE	*Digitaria tricholaenoides Stapf*	LC
POACEAE	*Digitaria velutina (Forssk.) P.Beauv.*	LC
POACEAE	*Diheteropogon amplectens (Nees) Clayton var. amplectens*	LC
POACEAE	*Echinochloa crus-galli (L.) P.Beauv.*	LC
POACEAE	*Echinochloa haploclada (Stapf) Stapf*	LC
POACEAE	*Ehrharta erecta Lam. var. erecta*	LC
POACEAE	*Ehrharta erecta Lam. var. natalensis Stapf*	LC
POACEAE	*Eleusine coracana (L.) Gaertn. subsp. africana (Kenn.-O'Byrne) Hilu & de Wet*	LC
POACEAE	*Elionurus muticus (Spreng.) Kunth*	LC
POACEAE	*Enneapogon pretoriensis Stent*	LC
POACEAE	*Enneapogon scoparius Stapf*	LC
POACEAE	*Eragrostis aspera (Jacq.) Nees*	LC
POACEAE	*Eragrostis barbinodis Hack.*	LC
POACEAE	*Eragrostis capensis (Thunb.) Trin.*	LC
POACEAE	*Eragrostis chloromelas Steud.*	LC
POACEAE	*Eragrostis cilianensis (All.) Vignolo ex Janch.*	LC
POACEAE	*Eragrostis curvula (Schrad.) Nees*	LC
POACEAE	*Eragrostis gummiflua Nees*	LC
POACEAE	*Eragrostis heteromera Stapf*	LC
POACEAE	*Eragrostis lehmanniana Nees var. lehmanniana*	LC
POACEAE	*Eragrostis mexicana (Hornem.) Link subsp. virescens*	Not

Family	Species	Threat status
	(J.Presl.) S.D.Koch & Sánchez Vega	Evaluated
POACEAE	*Eragrostis patentipilosa Hack.*	LC
POACEAE	*Eragrostis plana Nees*	LC
POACEAE	*Eragrostis planiculmis Nees*	LC
POACEAE	*Eragrostis racemosa (Thunb.) Steud.*	LC
POACEAE	*Eragrostis sclerantha Nees subsp. sclerantha*	LC
POACEAE	*Eragrostis superba Peyr.*	LC
POACEAE	*Eragrostis tef (Zuccagni) Trotter*	Not Evaluated
POACEAE	*Eustachys paspaloides (Vahl) Lanza & Mattei*	LC
POACEAE	*Harpochloa falx (L.f.) Kuntze*	LC
POACEAE	*Helictotrichon turgidulum (Stapf) Schweick.*	LC
POACEAE	*Hemarthria altissima (Poir.) Stapf & C.E.Hubb.*	LC
POACEAE	*Heteropogon contortus (L.) Roem. & Schult.*	LC
POACEAE	*Hyparrhenia anamesa Clayton*	LC
POACEAE	*Hyparrhenia dregeana (Nees) Stapf ex Stent*	LC
POACEAE	*Hyparrhenia filipendula (Hochst.) Stapf var. pilosa (Hochst.) Stapf*	LC
POACEAE	*Hyparrhenia hirta (L.) Stapf*	LC
POACEAE	*Hyparrhenia tamba (Steud.) Stapf*	LC
POACEAE	*Imperata cylindrica (L.) Raeusch.*	LC
POACEAE	*Ischaemum fasciculatum Brongn.*	LC
POACEAE	*Koeleria capensis (Steud.) Nees*	LC
POACEAE	*Leersia hexandra Sw.*	LC
POACEAE	*Lolium multiflorum Lam.*	Not Evaluated
POACEAE	*Lolium perenne L.*	Not Evaluated
POACEAE	*Lophacme digitata Stapf*	LC
POACEAE	*Loudetia simplex (Nees) C.E.Hubb.*	LC
POACEAE	*Melinis nerviglumis (Franch.) Zizka*	LC

Family	Species	Threat status
POACEAE	*Melinis repens (Willd.) Zizka subsp. repens*	LC
POACEAE	*Microchloa caffra Nees*	LC
POACEAE	*Miscanthus junceus (Stapf) Pilg.*	LC
POACEAE	*Monocymbium ceresiiforme (Nees) Stapf*	LC
POACEAE	*Panicum coloratum L. var. coloratum*	LC
POACEAE	*Panicum maximum Jacq.*	LC
POACEAE	*Panicum natalense Hochst.*	LC
POACEAE	*Panicum schinzii Hack.*	LC
POACEAE	*Paspalum dilatatum Poir.*	Not Evaluated
POACEAE	*Paspalum notatum Flüggé*	Not Evaluated
POACEAE	*Paspalum scrobiculatum L.*	LC
POACEAE	*Paspalum urvillei Steud.*	Not Evaluated
POACEAE	*Paspalum vaginatum Sw.*	LC
POACEAE	*Pennisetum thunbergii Kunth*	LC
POACEAE	*Phalaris arundinacea L.*	Not Evaluated
POACEAE	*Phragmites australis (Cav.) Steud.*	LC
POACEAE	*Phragmites mauritianus Kunth*	LC
POACEAE	*Pogonarthria squarrosa (Roem. & Schult.) Pilg.*	LC
POACEAE	*Polypogon monspeliensis (L.) Desf.*	Not Evaluated
POACEAE	*Polypogon viridis (Gouan) Breistr.*	Not Evaluated
POACEAE	*Rendlia altera (Rendle) Chiov.*	LC
POACEAE	*Schizachyrium sanguineum (Retz.) Alston*	LC
POACEAE	*Setaria lindenbergiana (Nees) Stapf*	LC
POACEAE	*Setaria megaphylla (Steud.) T.Durand & Schinz*	LC
POACEAE	*Setaria nigrirostris (Nees) T.Durand & Schinz*	LC
POACEAE	*Setaria plicatilis (Hochst.) Hack. ex Engl.*	LC

Family	Species	Threat status
POACEAE	*Setaria pumila (Poir.) Roem. & Schult.*	LC
POACEAE	*Setaria sphacelata (Schumach.) Stapf & C.E.Hubb. ex M.B.Moss var. sericea (Stapf) Clayton*	LC
POACEAE	*Setaria sphacelata (Schumach.) Stapf & C.E.Hubb. ex M.B.Moss var. sphacelata*	LC
POACEAE	*Setaria sphacelata (Schumach.) Stapf & C.E.Hubb. ex M.B.Moss var. torta (Stapf) Clayton*	LC
POACEAE	*Setaria verticillata (L.) P.Beauv.*	LC
POACEAE	*Sorghum bicolor (L.) Moench subsp. drummondii (Steud.) de Wet*	LC
POACEAE	*Sorghum halepense (L.) Pers.*	Not Evaluated
POACEAE	*Sporobolus africanus (Poir.) Robyns & Tournay*	LC
POACEAE	*Sporobolus discosporus Nees*	LC
POACEAE	*Sporobolus fimbriatus (Trin.) Nees*	LC
POACEAE	*Sporobolus pectinatus Hack.*	LC
POACEAE	*Sporobolus stapfianus Gand.*	LC
POACEAE	*Stipa dregeana Steud. var. elongata (Nees) Stapf*	LC
POACEAE	*Stipagrostis zeyheri (Nees) De Winter subsp. sericans (Hack.) De Winter*	LC
POACEAE	*Themeda triandra Forssk.*	LC
POACEAE	*Trachypogon spicatus (L.f.) Kuntze*	LC
POACEAE	*Tragus berteronianus Schult.*	LC
POACEAE	*Trichoneura grandiglumis (Nees) Ekman*	LC
POACEAE	*Triraphis andropogonoides (Steud.) E.Phillips*	LC
POACEAE	*Tristachya leucothrix Trin. ex Nees*	LC
POACEAE	*Tristachya rehmannii Hack.*	LC
POACEAE	*Urelytrum agropyroides (Hack.) Hack.*	LC
POACEAE	*Urochloa brachyura (Hack.) Stapf*	LC
POACEAE	*Urochloa panicoides P.Beauv.*	
POLYGALACEAE	*Muraltia empetroides Chodat*	LC
POLYGALACEAE	*Polygala gerrardii Chodat*	LC

Family	Species	Threat status
POLYGALACEAE	*Polygala gracilenta Burtt Davy*	LC
POLYGALACEAE	*Polygala hottentotta C.Presl*	LC
POLYGALACEAE	*Polygala ohlendorfiana Eckl. & Zeyh.*	LC
POLYGALACEAE	*Polygala rehmannii Chodat*	LC
POLYGALACEAE	*Polygala transvaalensis Chodat subsp. transvaalensis*	LC
POLYGONACEAE	*Fallopia convolvulus (L.) Holub*	Not Evaluated
POLYGONACEAE	*Persicaria attenuata (R.Br.) Soják subsp. africana K.L.Wilson*	LC
POLYGONACEAE	*Persicaria decipiens (R.Br.) K.L.Wilson*	LC
POLYGONACEAE	*Persicaria lapathifolia (L.) Gray*	Not Evaluated
POLYGONACEAE	*Persicaria limbata (Meisn.) H.Hara*	Not Evaluated
POLYGONACEAE	*Persicaria meisneriana (Cham. & Schltdl.) M.Gómez*	LC
POLYGONACEAE	*Rumex acetosella L. subsp. angiocarpus (Murb.) Murb.*	
POLYGONACEAE	*Rumex conglomeratus Murb.*	LC
POLYGONACEAE	*Rumex crispus L.*	Not Evaluated
POLYGONACEAE	*Rumex dregeanus Meisn. subsp. montanus B.L.Burtt*	LC
POLYGONACEAE	*Rumex sagittatus Thunb.*	LC
POLYPODIACEAE	*Lepisorus schraderi (Mett.) Ching*	LC
POLYTRICHACEAE	*Pogonatum capense (Hampe) A.Jaeger*	
POLYTRICHACEAE	*Polytrichum commune Hedw.*	
PORELLACEAE	*Porella vallis-gratiae (Gottsche) S.W.Arnell*	
PORTULACACEAE	*Anacampseros subnuda Poelln. subsp. subnuda*	LC
PORTULACACEAE	*Portulaca quadrifida L.*	LC
POTAMOGETONACEAE	*Potamogeton nodosus Poir.*	LC
POTAMOGETONACEAE	*Potamogeton octandrus Poir.*	LC
POTAMOGETONACEAE	*Potamogeton pectinatus L.*	LC
POTAMOGETONACEAE	*Potamogeton schweinfurthii A.Benn.*	LC

Family	Species	Threat status
POTTIACEAE	*Didymodon tophaceus (Brid.) Lisa*	
POTTIACEAE	*Pseudocrossidium crinitum (Schultz) R.H.Zander*	
PRIMULACEAE	*Anagallis arvensis L. subsp. arvensis*	Not Evaluated
PROTEACEAE	*Protea caffra Meisn. subsp. caffra*	LC
PROTEACEAE	*Protea roupelliae Meisn. subsp. roupelliae*	LC
PROTEACEAE	*Protea welwitschii Engl.*	LC
PTERIDACEAE	*Adiantum capillus-veneris L.*	LC
PTERIDACEAE	*Pteris cretica L.*	LC
RANUNCULACEAE	*Clematis brachiata Thunb.*	LC
RANUNCULACEAE	*Ranunculus meyeri Harv.*	LC
RANUNCULACEAE	*Ranunculus multifidus Forssk.*	
RHAMNACEAE	*Helinus integrifolius (Lam.) Kuntze*	LC
RHAMNACEAE	*Phylica paniculata Willd.*	LC
RHAMNACEAE	*Rhamnus prinoides L'Hér.*	LC
RHAMNACEAE	*Ziziphus mucronata Willd. subsp. mucronata*	LC
RHAMNACEAE	*Ziziphus zeyheriana Sond.*	LC
RICCIACEAE	*Riccia atropurpurea Sim*	
ROSACEAE	*Agrimonia bracteata E.Mey. ex C.A.Mey.*	LC
ROSACEAE	*Agrimonia procera Wallr.*	LC
ROSACEAE	*Cliffortia linearifolia Eckl. & Zeyh.*	LC
ROSACEAE	*Cliffortia nitidula (Engl.) R.E.& T.C.E.Fr. subsp. pilosa Weim.*	Not Evaluated
ROSACEAE	*Cotoneaster franchetii Boiss.*	Not Evaluated
ROSACEAE	*Leucosidea sericea Eckl. & Zeyh.*	LC
ROSACEAE	*Pyracantha angustifolia (Franch.) C.K.Schneid.*	Not Evaluated
ROSACEAE	*Rubus rigidus Sm.*	LC
ROSACEAE	*Rubus x proteus C.H.Stirt.*	Not Evaluated

Family	Species	Threat status
RUBIACEAE	*Afrocanthium gilfillanii (N.E.Br.) Lantz*	LC
RUBIACEAE	*Afrocanthium mundianum (Cham. & Schltdl.) Lantz*	LC
RUBIACEAE	*Anthospermum hispidulum E.Mey. ex Sond.*	LC
RUBIACEAE	*Anthospermum rigidum Eckl. & Zeyh. subsp. rigidum*	LC
RUBIACEAE	*Galium capense Thunb. subsp. garipense (Sond.) Puff var. garipense*	LC
RUBIACEAE	*Galium spurium L. subsp. africanum Verdc.*	LC
RUBIACEAE	*Kohautia amatymbica Eckl. & Zeyh.*	LC
RUBIACEAE	*Kohautia caespitosa Schnizl. subsp. brachyloba (Sond.) D.Mantell*	LC
RUBIACEAE	*Kohautia virgata (Willd.) Bremek.*	LC
RUBIACEAE	*Oldenlandia herbacea (L.) Roxb. var. herbacea*	LC
RUBIACEAE	*Oldenlandia rupicola (Sond.) Kuntze var. rupicola*	LC
RUBIACEAE	*Oldenlandia tenella (Hochst.) Kuntze*	LC
RUBIACEAE	*Pachystigma pygmaeum (Schltr.) Robyns*	LC
RUBIACEAE	*Pavetta eylesii S.Moore*	LC
RUBIACEAE	*Pavetta gardeniifolia A.Rich. var. subtomentosa K.Schum.*	LC
RUBIACEAE	*Pavetta zeyheri Sond. subsp. zeyheri*	LC
RUBIACEAE	*Pentanisia angustifolia (Hochst.) Hochst.*	LC
RUBIACEAE	*Pygmaeothamnus zeyheri (Sond.) Robyns var. zeyheri*	LC
RUBIACEAE	*Richardia brasiliensis Gomes*	Not Evaluated
RUBIACEAE	*Rothmannia capensis Thunb.*	LC
RUBIACEAE	*Rubia horrida (Thunb.) Puff*	LC
RUBIACEAE	*Rubia petiolaris DC.*	LC
RUBIACEAE	*Vangueria infausta Burch. subsp. infausta*	LC
RUBIACEAE	*Vangueria parvifolia Sond.*	
RUTACEAE	*Calodendrum capense (L.f.) Thunb.*	LC
RUTACEAE	*Zanthoxylum capense (Thunb.) Harv.*	LC
SALICACEAE	*Dovyalis zeyheri (Sond.) Warb.*	LC

Family	Species	Threat status
SALICACEAE	*Populus deltoides Bartram ex Marshall subsp. deltoides forma deltoides*	Not Evaluated
SALICACEAE	*Salix babylonica L. var. babylonica*	Not Evaluated
SALICACEAE	*Salix mucronata Thunb. subsp. woodii (Seemen) Immelman*	LC
SALICACEAE	*Scolopia zeyheri (Nees) Harv.*	LC
SANTALACEAE	*Osyris lanceolata Hochst. & Steud.*	LC
SANTALACEAE	*Thesium costatum A.W.Hill var. costatum*	LC
SANTALACEAE	*Thesium deceptum N.E.Br.*	LC
SANTALACEAE	*Thesium racemosum Bernh.*	LC
SANTALACEAE	*Thesium rasum (A.W.Hill) N.E.Br.*	LC
SANTALACEAE	*Thesium translucens A.W.Hill*	LC
SANTALACEAE	*Thesium transvaalense Schltr.*	LC
SANTALACEAE	*Thesium utile A.W.Hill*	LC
SAPINDACEAE	*Pappea capensis Eckl. & Zeyh.*	LC
SAPOTACEAE	*Englerophytum magalismontanum (Sond.) T.D.Penn.*	LC
SCROPHULARIACEAE	*Chaenostoma leve (Hiern) Kornhall*	LC
SCROPHULARIACEAE	*Diclis rotundifolia (Hiern) Hilliard & B.L.Burtt*	LC
SCROPHULARIACEAE	*Halleria lucida L.*	LC
SCROPHULARIACEAE	*Jamesbrittenia aurantiaca (Burch.) Hilliard*	LC
SCROPHULARIACEAE	*Jamesbrittenia burkeana (Benth.) Hilliard*	LC
SCROPHULARIACEAE	*Manulea paniculata Benth.*	LC
SCROPHULARIACEAE	*Manulea parviflora Benth. var. parviflora*	LC
SCROPHULARIACEAE	*Mimulus gracilis R.Br.*	LC
SCROPHULARIACEAE	*Nemesia fruticans (Thunb.) Benth.*	LC
SCROPHULARIACEAE	*Nemesia rupicola Hilliard*	LC
SCROPHULARIACEAE	*Selago capitellata Schltr.*	LC
SCROPHULARIACEAE	*Selago densiflora Rolfe*	LC
SCROPHULARIACEAE	*Veronica anagallis-aquatica L.*	LC

Family	Species	Threat status
SCROPHULARIACEAE	*Zaluzianskya katharinae Hiern*	LC
SELAGINELLACEAE	*Selaginella dregei (C.Presl) Hieron.*	LC
SINOPTERIDACEAE	*Cheilanthes contracta (Kunze) Mett. ex Kuhn*	LC
SINOPTERIDACEAE	*Cheilanthes dolomiticola (Schelpe) Schelpe & N.C.Anthony*	LC
SINOPTERIDACEAE	*Cheilanthes eckloniana (Kunze) Mett.*	LC
SINOPTERIDACEAE	*Cheilanthes hirta Sw. var. brevipilosa W.& N.Jacobsen*	
SINOPTERIDACEAE	*Cheilanthes hirta Sw. var. hirta*	LC
SINOPTERIDACEAE	*Cheilanthes involuta (Sw.) Schelpe & N.C.Anthony var. involuta*	LC
SINOPTERIDACEAE	*Cheilanthes involuta (Sw.) Schelpe & N.C.Anthony var. obscura (N.C.Anthony) N.C.Anthony*	LC
SINOPTERIDACEAE	*Cheilanthes multifida (Sw.) Sw. subsp. lacerata N.C.Anthony & Schelpe*	
SINOPTERIDACEAE	*Cheilanthes multifida (Sw.) Sw. var. multifida*	Not Evaluated
SINOPTERIDACEAE	*Cheilanthes quadripinnata (Forssk.) Kuhn*	LC
SINOPTERIDACEAE	*Cheilanthes viridis (Forssk.) Sw. var. glauca (Sim) Schelpe & N.C.Anthony*	LC
SINOPTERIDACEAE	*Cheilanthes viridis (Forssk.) Sw. var. viridis*	LC
SINOPTERIDACEAE	*Pellaea calomelanos (Sw.) Link var. calomelanos*	LC
SOLANACEAE	*Cestrum aurantiacum Lindl.*	Not Evaluated
SOLANACEAE	*Datura ferox L.*	Not Evaluated
SOLANACEAE	*Datura stramonium L.*	Not Evaluated
SOLANACEAE	*Nicotiana glauca Graham*	Not Evaluated
SOLANACEAE	*Physalis angulata L.*	Not Evaluated
SOLANACEAE	*Solanum capense L.*	LC
SOLANACEAE	*Solanum chenopodioides Lam.*	Not Evaluated
SOLANACEAE	*Solanum giganteum Jacq.*	LC

Family	Species	Threat status
SOLANACEAE	*Solanum lichtensteinii Willd.*	LC
SOLANACEAE	*Solanum mauritianum Scop.*	Not Evaluated
SOLANACEAE	*Solanum pseudocapsicum L.*	Not Evaluated
SOLANACEAE	*Solanum seaforthianum Andrews var. disjunctum O.E.Schulz*	Not Evaluated
SOLANACEAE	*Solanum sisymbriifolium Lam.*	Not Evaluated
SOLANACEAE	*Solanum supinum Dunal var. supinum*	LC
SOLANACEAE	*Withania somnifera (L.) Dunal*	LC
STRYCHNACEAE	*Strychnos pungens Soler.*	LC
THELYPTERIDACEAE	*Christella gueinziana (Mett.) Holttum*	LC
THELYPTERIDACEAE	*Thelypteris confluens (Thunb.) C.V.Morton*	LC
THYMELAEACEAE	*Gnidia caffra (Meisn.) Gilg*	LC
THYMELAEACEAE	*Gnidia canoargentea (C.H.Wright) Gilg*	LC
THYMELAEACEAE	*Gnidia gymnostachya (C.A.Mey.) Gilg*	LC
THYMELAEACEAE	*Gnidia kraussiana Meisn. var. kraussiana*	LC
THYMELAEACEAE	*Gnidia microcephala Meisn.*	LC
TYPHACEAE	*Typha capensis (Rohrb.) N.E.Br.*	LC
URTICACEAE	*Didymodoxa caffra (Thunb.) Friis & Wilmot-Dear*	LC
VAHLIACEAE	*Vahlia capensis (L.f.) Thunb. subsp. capensis*	LC
VELLOZIACEAE	*Xerophyta retinervis Baker*	LC
VERBENACEAE	*Chascanum hederaceum (Sond.) Moldenke var. hederaceum*	LC
VERBENACEAE	*Lantana camara L.*	Not Evaluated
VERBENACEAE	*Lantana rugosa Thunb.*	LC
VERBENACEAE	*Lippia javanica (Burm.f.) Spreng.*	LC
VERBENACEAE	*Priva cordifolia (L.f.) Druce var. abyssinica (Jaub. & Spach) Moldenke*	LC
VERBENACEAE	*Verbena aristigera S.Moore*	Not Evaluated

Family	Species	Threat status
VERBENACEAE	*Verbena bonariensis L.*	Not Evaluated
VERBENACEAE	*Verbena brasiliensis Vell.*	Not Evaluated
VISCACEAE	*Viscum rotundifolium L.f.*	LC
VITACEAE	*Cyphostemma lanigerum (Harv.) Desc. ex Wild & R.B.Drumm.*	LC
VITACEAE	*Rhoicissus tridentata (L.f.) Wild & R.B.Drumm. subsp. tridentata*	Not Evaluated
ZINGIBERACEAE	*Hedychium gardnerianum Ker Gawl.*	Not Evaluated
ZYGOPHYLLACEAE	*Tribulus terrestris L.*	LC

Appendix 2. List of Mammals

List of Mammals which are known from the broad area (2627B). Conservation status is according to the IUCN 2010.

Family	Species	Common Name	Threat	Likelihood

			Status	
BATHYERGIDAE	*Cryptomys hottentotus*	Southern African Mole-rat	LC	Confirmed
BOVIDAE	*Aepyceros melampus*	Impala	LC	Very Low
BOVIDAE	*Alcelaphus buselaphus*	Hartebeest	Not listed	Very Low
BOVIDAE	*Alcelaphus caama*	Red Hartebeest	LC	Very Low
BOVIDAE	*Antidorcas marsupialis*	Springbok	LC	Very Low
BOVIDAE	*Cephalophus spp.*	Forest Duikers	Not listed	Very Low
BOVIDAE	*Connochaetes gnou*	Black Wildebeest	LC	Very Low
BOVIDAE	*Connochaetes taurinus*	Blue Wildebeest	Not listed	Very Low
BOVIDAE	*Connochaetes taurinus*		LC	Very Low
BOVIDAE	*Damaliscus pygargus phillipsi*	Blesbok	LC	Very Low
BOVIDAE	*Kobus ellipsiprymnus*	Waterbuck	Not listed	Very Low
BOVIDAE	*Kobus ellipsiprymnus*		LC	Very Low
BOVIDAE	*Oryx gazella*	Gemsbok	LC	Very Low
BOVIDAE	*Raphicerus campestris*	Steenbok	LC	High
BOVIDAE	*Redunca fulvorufula*	Mountain Reedbuck	LC	Very Low
BOVIDAE	*Sylvicapra grimmia*	Bush Duiker	LC	Moderate
BOVIDAE	*Tragelaphus oryx*	Common Eland	LC	Very Low
BOVIDAE	*Tragelaphus strepsiceros*	Greater Kudu	LC	Very Low
CANIDAE	*Canis mesomelas*	Black-backed Jackal	LC	Low
CERCOPITHECIDAE	*Cercopithecus pygerythrus*	Vervet Monkey	LC	Very Low
CERCOPITHECIDAE	*Chlorocebus pygerythrus*	Vervet Monkey	Not listed	Very Low
CERVIDAE	*Dama*	Fallow Deer	Introduced	Very Low
EQUIDAE	*Equus quagga*	Plains Zebra	Not listed	Very Low
ERINACEIDAE	*Atelerix*	Southern African Hedgehog	NT	Low
FELIDAE	*Acinonyx jubatus*	Cheetah	VU	Very Low
FELIDAE	*Caracal*	Caracal	LC	Very Low
FELIDAE	*Felis catus*	Domestic Cat	Introduced	Very High
FELIDAE	*Leptailurus serval*	Serval	NT	Very Low

FELIDAE	*Panthera leo*	Lion	VU	Very Low
FELIDAE	*Panthera pardus*	Leopard	LC	Very Low
GIRAFFIDAE	*Giraffa Camelopardalis*	Nubian Giraffe	LC	Very Low
HERPESTIDAE	*Atilax paludinosus*	Marsh Mongoose	LC	Low
HERPESTIDAE	*Cynictis penicillata*	Yellow Mongoose	LC	Very High
HERPESTIDAE	*Herpestes sanguineus*	Slender Mongoose	LC	Moderate
HIPPOPOTAMIDAE	*Hippopotamus amphibius*	Common Hippopotamus	LC	Very Low
HIPPOSIDERIDAE	*Cloeotis percivali*	Percival's Short-eared Trident Bat	CE	Very Low
HYSTRICIDAE	*Hystrix africaeaustralis*	Cape Porcupine	LC	Very High
LEPORIDAE	*Lepus spp.*	Hares	Not listed	Low
LEPORIDAE	*Lepus saxatilis*	Scrub Hare	LC	Confirmed
LEPORIDAE	*Pronolagus randensis*	Jameson's Red Rock Hare	LC	Very Low
MACROSCELIDIDAE	*Elephantulus myurus*	Eastern Rock Elephant Shrew	LC	Very Low
MURIDAE	*Aethomys spp.*	Veld rats	Not listed	High
MURIDAE	*Lemniscomys rosalia*	Single-Striped Lemniscomys	DDD	Very High
MURIDAE	*Mastomys coucha*	Southern African Mastomys	LC	Moderate
MURIDAE	*Mastomys natalensis*	Natal Mastomys	LC	Moderate
MURIDAE	*Otomys spp.*	Vlei Rats	Not listed	High
MURIDAE	*Otomys angoniensis*	Angoni Vlei Rat	LC	Low
MURIDAE	*Rhabdomys pumilio*	Xeric Four-striped Grass Rat	LC	Very High
MURIDAE	*Tatera spp.*		Not listed	High
MUSTELIDAE	*Aonyx capensis*	African Clawless Otter	LC	Very Low
MUSTELIDAE	*Hydrictis maculicollis*	Spotted-necked Otter	LC (IUCN 2008)	Very Low
MUSTELIDAE	*Ictonyx striatus*	Striped Polecat	LC	Moderate
MUSTELIDAE	*Mellivora capensis*	Honey Badger	NT	Low
NESOMYIDAE	*Mystromys albicaudatus*	African White-tailed Rat	EN	Moderate

NESOMYIDAE	*Steatomys spp.*	Fat Mice	Not listed	Moderate
NYCTERIDAE	*Nycteris thebaica*	Egyptian Slit-faced Bat	LC	High
RHINOLOPHIDAE	*Rhinolophus*	Horseshoe Bats	Not listed	Low
RHINOLOPHIDAE	*Rhinolophus clivosus*	Geoffroy's Horseshoe Bat	NT	Moderate
RHINOLOPHIDAE	*Rhinolophus darlingi*	Darling's Horseshoe Bat	NT	High
RHINOLOPHIDAE	*Rhinolophus simulator*	Bushveld Horseshoe Bat	LC	High
SCIURIDAE	*Xerus inauris*	South African Ground Squirrel	LC	Moderate
SORICIDAE	*Crocidura spp.*	Shrews	Not listed	Moderate
SORICIDAE	*Suncus spp.*	Dwarf Shrews	Not listed	Low
SORICIDAE	*Suncus infinitesimus*	Least Dwarf Shrew	DDD	Very Low
SUIDAE	*Phacochoerus africanus*	Common Wart-hog	LC	Very Low
VESPERTILIONIDAE	*Miniopterus spp.*	Unidentified Vespertilioninae	Not listed	Low
VESPERTILIONIDAE	*Miniopterus natalensis*	Long-fingered Bats	Not listed	High
VESPERTILIONIDAE	*Neoromicia capensis*	Cape Serotine	NT	High
VESPERTILIONIDAE	*Pipistrellus rusticus*	Rusty Pipistrelle	NT	Very Low
VESPERTILIONIDAE	*Scotophilus dinganii*	Yellow-bellied House Bat	LC	Moderate
VIVERIDAE	*Genetta spp.*	Common Large-spotted Genet (Rusty-spotted Genet)	LC	Very Low
VIVERRIDAE	*Genetta*	Genets	Not listed	Very Low
VIVERRIDAE	*Genetta tigrina*	Common Genet	LC	Very Low

Appendix 3. List of Reptiles.

List of reptiles which are known from the broad area (2627B Degree Grid) according to the SARCA database. All species listed as red data species, highlighted in red.

Family	Species	Common Name	Threat Status
AGAMIDAE	*Agama aculeate distanti*	Distant's Ground Agama	LC
AGAMIDAE	*Agama atra*	Southern Rock Agama	LC
CHAMAELEONIDAE	*Chamaeleo dilepis*	Common Flap-neck Chameleon	LC
COLUBRIDAE	*Crotaphopeltis hotamboeia*	Red-lipped Snake	LC
COLUBRIDAE	*Dasypeltis scabra*	Rhombic Egg-eater	LC
COLUBRIDAE	*Dispholidus typus*	Boomslang	LC
COLUBRIDAE	*Telescopus semiannulatus*	Eastern Tiger Snake	LC
CORDYLIDAE	*Cordylus vittifer*	Common Girdled Lizard	LC
CROCODYLIDAE	*Crocodylus niloticus*	Nile Crocodile	VU
ELAPIDAE	*Hemachatus haemachatus*	Rinkhals	LC
GEKKONIDAE	*Lygodactylus capensis*	Common Dwarf Gecko	LC
GEKKONIDAE	*Pachydactylus affinis*	Transvaal Gecko	LC
GEKKONIDAE	*Pachydactylus capensis*	Cape Gecko	LC
GERRHOSAURIDAE	*Gerrhosaurus flavigularis*	Yellow-throated Plated Lizard	LC
LACERTIDAE	*Pedioplanis lineoocellata*	Spotted Sand Lizard	LC
LAMPROPHIIDAE	*Aparallactus capensis*	Black-headed Centipede-eater	LC
LAMPROPHIIDAE	*Atractaspis bibronii*	Bibron's Stiletto Snake	LC
LAMPROPHIIDAE	*Boaedon capensis*	Brown House Snake	LC
LAMPROPHIIDAE	*Lamprophis aurora*	Aurora House Snake	LC
LAMPROPHIIDAE	*Lycodonomorphus inornatus*	Olive House Snake	LC
LAMPROPHIIDAE	*Lycodonomorphus rufulus*	Brown Water Snake	LC
LAMPROPHIIDAE	*Prosymna sundevallii*	Sundevall's Shovel-snout	LC
LAMPROPHIIDAE	*Psammophis brevirostris*	Short-snouted Grass Snake	LC
LAMPROPHIIDAE	*Psammophylax rhombeatus*	Spotted Grass Snake	LC
LAMPROPHIIDAE	*Pseudaspis cana*	Mole Snake	LC
PYTHONIDAE	*Python natalensis*	Southern African Python	LC
SCINCIDAE	*Panaspis wahlbergii*	Wahlberg's Snake-eyed Skink	LC
SCINCIDAE	*Trachylepis capensis*	Cape Skink	LC

SCINCIDAE	*Trachylepis punctatissima*	Speckled Rock Skink	LC
SCINCIDAE	*Trachylepis varia*	Variable Skink	LC
TESTUDINIDAE	*Kinixys lobatsiana*	Lobatse Hinged Tortoise	LC
TESTUDINIDAE	*Stigmochelys pardalis*	Leopard Tortoise	LC
TYPHLOPIDAE	*Afrotyphlops bibronii*	Bibron's Blind Snake	LC
TYPHLOPIDAE	*Rhinotyphlops lalandei*	Delalande's Beaked Blind Snake	LC
VIPERIDAE	*Bitis arietans*	Puff Adder	LC
VIPERIDAE	*Causus rhombeatus*	Rhombic Night Adder	LC

Appendix 4. List of Amphibians.

List of amphibians which are known from the broad area (2628AC Quarter Degree Grid) according to the SARCA database. All species listed as red data species, highlighted in red.

Family	Species	Common Name	Threat Status
Bufonidae	*Schismaderma carens*	Red Toad	LC
Bufonidae	*Sclerophrys capensis*	Raucous Toad	LC
Bufonidae	*Sclerophrys gutturalis*	Guttural Toad	LC
Hyperoliidae	*Kassina*	Bubbling Kassina	LC
Hyperoliidae	*Semnodactylus*	Rattling Frog	LC
Pipidae	*Xenopus laevis*	Common Platanna	LC
Ptychadenidae	*Ptychadena anchietae*	Plain Grass Frog	LC
Pyxicephalidae	*Amietia*		Not listed
Pyxicephalidae	*Amietia*	Delalande's River Frog	LC
Pyxicephalidae	*Amietia*	Cape River Frog	LC
Pyxicephalidae	*Amietia*	Poynton's River Frog	Not evaluated
Pyxicephalidae	*Cacosternum boettgeri*	Common Caco	LC
Pyxicephalidae	*Pyxicephalus adspersus*	Giant Bull Frog	NT
Pyxicephalidae	*Tomopterna cryptotis*	Tremelo Sand Frog	LC
Pyxicephalidae	*Tomopterna natalensis*	Natal Sand Frog	LC

Appendix 4. Species of Conservation Concern.

Species of conservation concern that may occur on the site, and their likelihood of occurrence based on availability of suitable habitat.

Species	Common Name	Likelihood	Suitable habitat	Conservation Status
Mammals				
Chrysospalax villosus	Rough-haired Golden Mole	Low	Prefer dry, sandy grassland on the fringes of marshes and wetlands.	CR
Neamblysomus julianae	Juliana's golden mole	Low	Prefers sandy soil bushveld and grassland with rocky outcrops. Endemic to Savanna biome.	VU
Atelerix frontalis	South African Hedgehog	Moderate	Bush clumps and outcroppings where sufficient coverage is available.	PR
Felis nigripes	Black-footed Cat	Low	Prefers arid open terrain with shrub cover. Utilizes burrows dug by other mammals.	PR
Vulpes chama	Cape Fox	Low	Prefers open plains with or without shrubs, open dry areas with trees, Karoo bushveld and fynbos.	PR
Lutra maculicolus	Spotted-necked Otter	Low	Prefers larger rivers and large permanent pools.	PR
Mystromys albicaudatus	White-tailed Mouse	Low	Prefers open grassland, but have been recorded on rocky ridges with good grass cover and crevices.	EN
Birds (GDARD Priority Red List Species)				
Anthropoides paradiseus	Blue Crane	Low	Large wetlands and associated moist grasslands.	EN

Ciconia nigra	Black Stork	Moderate	Inhabits old, undisturbed, open forests from sea-level up to mountainous regions. It forages in shallow streams, pools, marshes, swampy patches, damp meadows, flood-plains, pools in dry riverbeds and occasionally grasslands especially where there are stands of reeds or long grass. It generally avoids large bodies of water and dense forest.	VU
Eupodotis caerulescens	Blue Korhaan	Low	Open, fairly short grassland and a mixture of grassland and karroo dwarf-shrubland, with termite mounds and few or no trees	VU
Eupodotis senegalensis	White-bellied Korhaan	Low	Open grassland, but prefers higher grass than other species of korhaan.	Unspecified
Falco naumanni	Lesser Kestrel	High	Often in the vicinity of human settlements. It forages in open grassland habitats, natural and managed grasslands, and non-intensive cultivation. It is mainly a migratory species	PR
Circus ranivorus	African Marsh Harrier	Moderate	The species breeds in wetlands, foraging primarily over reeds and lake margins.	PR
Polomaetus bellicosus	Martial Eagle	Low	It inhabits open woodland, wooded savanna, bushy grassland and thornbush	VU
Sagittarius serpentarius	Secretary Bird	Low	Inhabits grasslands, ranging from open plains to lightly wooded savanna, but is also found in agricultural areas and sub-desert	NT
Invertebrates (GDARD High priority species)				

Lepidochrysops praeterita		Low	Host plant species *Becium obovatum* confirmed on site in the grassland areas. But species seems to be limited to the Walkerville –Glenharvie - Potchefstroom ridge system. Previously recorded from grid square 2628AC (GDACE, 2009).	IUCN Red List
Aloeides dentatis subsp. dentatis (Roodepoort Type)		High	Grassland, flat and mostly rocky terrain. Previously recorded from grid square 2626AC. Ridge is potential habitat	IUCN Red List
Aloeides dentatis subps. dentatis (Suikerbosrand Type)		High	Grassland, flat and mostly rocky terrain. Previously recorded from grid square 2626AC. Ridge is potential habitat.	IUCN Red List
Metisella menix		High	Grasslands and wetlands. Occur throughout the entire province.	IUCN Red List
Orachrysops mijburghi		Medium	Grasslands and rocky ridge terrain. Previously recorded in other 2628 grid squares	IUCN Red List
Crysoritis aureus		Medium	Grasslands and rocky ridge terrain. Previously recorded in other 2628 grid squares	IUCN Red List