

**BOTANICAL SPECIALIST
REPORT FOR SUBDIVISION OF
FARM HOGSBACK PLATEAU NO.
21, RAYMOND MHLABA
MUNICIPALITY**

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Executive Summary

Habitat Link Consulting has approached Clayton Weatherall-Thomas to do a botanical specialist report subdivision of Farm Hogsback Plateau no. 21, situated in the village of Hogsback, Victoria East Division, Raymond Mhlaba Municipality. It is proposed that the farm 20,77 ha in size, be subdivided into 7 smaller portions for residential purposes, and rezoned accordingly.

The development of the property will entail:

- Subdivision of the property in seven (7) portions
- Six low density residential small-holdings, varying in size between 2,3ha and 4,8ha
- A private cemetery, fenced off as a separate functional unit ($\pm 1975\text{m}^2$)
- The residential small-holdings will obtain access from the abutting access roads.
- The cemetery will obtain access from Waterfall Drive in the west via a 4m wide panhandle.
- Location of the development footprints through an environmental impact assessment.
- The installation of engineering services according to the standards set by the Raymond Mhlaba Municipality

Construction Phase impacts include:

1. Construction of access roads;
2. Clearing for fencing;
3. Erecting fencing along boundaries of subdivided properties;
4. Construction of service infrastructure; and
5. Construction of houses on subdivided properties

As the proposed activity is the subdivision of a larger property in a rural area, impacts of the operation phase are limited, and will not be assessed.

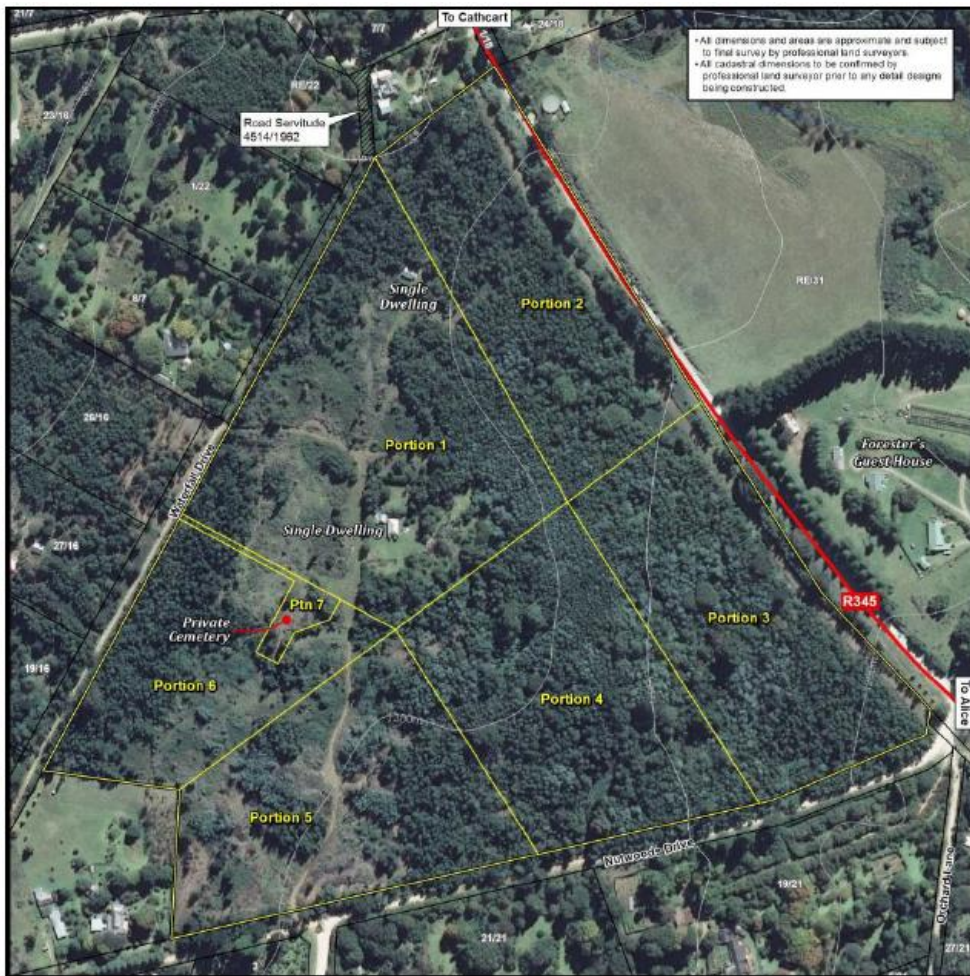


Figure 1 Remainder of Farm Hogsback Plateau, to be subdivided into 7 portions.

The Scope of this Botanical Screening is to:

1. Identify the vegetation type using available online information, including VEGMAP
2. Identify the threat status and sensitivities of the vegetation type
3. Consult all relevant Bioregional Plans and other Conservation Assessments and Plans for the municipality, including the ECBCP and the Threatened Ecosystem
4. Complete a site visit to determine the status of the vegetation on site, including the presence of dominant and threatened plant species and the presence of Alien Invasive Plants (AIPs)
5. Compile a comprehensive and annotated plant species list of the site
6. Map the present ecological status of the site, as well as the sensitivity of the site
7. Assess the impact of the activity on the ecology and vegetation on site using objective methodology
8. Make recommendations to limit the environmental impact of the activity on site

9. Prepare a report indicating the current environmental sensitivities and mitigation measures for the site

The site is situated in the hamlet of Hogsback, consisting of landscaped smallholdings, and surrounded by forestry areas. Natural forest and patches of grassland are found further away. The historical vegetation type is Amathole Montane Grassland, classified as Least Threatened. It has been identified as a CBA by ECBCP, although the site has little biodiversity value, and as a Phase 2 FEPA and a Fish Sanctuary, although no water resources are situated on site.

The site can be described as highly degraded to transformed, and until recently would have been completely dominated by a variety of Alien Invasive Plants, in particular forestry tree species and garden escapes. Large areas of the site have recently been cleared for firewood, using a bulldozer. It can be assumed that the high alien species cover, in particular the *Acacia mearnsii*, has considerably altered the soil properties of the site, causing the site to be considered transformed and very little chance the original natural grassland will re-establish.

The dominant tree on site is the AIP *Acacia mearnsii*, as well as *Pinus patula*, *P. radiata*, *Populus tremula* and *Prunus serotina*. A number of horticultural shrubs are common, both under the canopy and in the open, including *Cystisus scoparius*, *Phytolacca octandra*, *Digitalis purpurea*, *Rhododendron indicum*, and *Rubus fruticosus*. Plant cover under the dense stands of invader trees is low, and dominated by the previously mentioned shrubs, although *Dietes grandiflora* was found there. Areas that have been recently cleared are dominated by AIPs namely *Carduus macrocephalus*, *Gamochaeta pensylvanica*, *Taraxacum officinale*, *Trifolium repens* and the grass *Poa annua*, as well as the indigenous *Cynodon dactylon*, *Cotula coronopifolia*, *Delairea odorata*, *Helichrysum argyrophyllum*, *Helichrysum dasyanthum*, *Pseudognaphalium luteo-album*, *Senecio pterophorus*, *Stoebe plumosa*, *Panicum maximum*. The Protected species *Hypoxis hemerocallidea* occurred in an open area as well.

There were 49 plant species recorded from the site (Appendix 3), of which 25 were not indigenous, and 15 declared invaders under the National Environmental Management: Biodiversity Act No. 10 of 2004 – Alien and Invasive Species Lists (published 29 July 2016). The dominant invasive species are trees such as *Acacia mearnsii*, *Pinus patula*, *P. radiata*, *Populus tremula* and *Prunus serotina*, and large shrubs, including *Cystisus scoparius*, *Phytolacca octandra*, *Digitalis purpurea*, *Rhododendron indicum*, *Rubus fruticosus*. A number of invasive species occur in recently disturbed areas as well, namely *Carduus macrocephalus*, *Gamochaeta pensylvanica*, *Taraxacum officinale*, *Trifolium repens* and the grass *Poa annua*. These species must form part of the alien management plan. All Category 1b species should be eradicated immediately.

No Species of Conservation Concern (SCCs) was recorded on site (Appendix 3). No tree species are listed under the National Forests Act No. 84 of 1998. Three species are protected under Schedule 4 of the Nature and Environmental Conservation Ordinance of 1974, namely *Gomphocarpus fruticosus*, *Dietes grandiflora* and *Halleria lucida*. Even though these are all relatively common species, permits are required from DEDEAT for their clearance. *G. fruticosus*, *D. grandiflora* and *Hypoxis hemerocallidea* are Protected under ECECB as well.

The majority of the site is classified as having a **LOW** sensitivity, even though the area has been identified as a Terrestrial CBA, with the area around the existing dwelling classified as **VERY LOW**.

A number of if impacts were identified and assessed. These impacts are:

Impact	Significance	With Mitigation
Direct loss of natural vegetation due to clearing	NEGLIGIBLE	NEGLIGIBLE
Direct loss of Threatened or Protected Species	NEGLIGIBLE	NEGLIGIBLE
Loss of Ecological Connectivity	NEGLIGIBLE	NEGLIGIBLE
Disturbance of the surface resulting in increased risk of AIPs	MODERATE	NEGLIGIBLE
Rehabilitation of the mining permit area and clearance of Alien Invasive Plants	NEGLIGIBLE	LOW

The following recommendations are made to avoid, manage or mitigate any possible environmental impacts on the biological environment:

1. Minimise natural vegetation clearance and the footprint for the disturbed area as far as possible
2. No blanket clearing of vegetation with a bulldozer, only areas that will be developed in the near future should be cleared
3. Where required, rehabilitate and revegetate areas as soon as possible using indigenous plant species
4. Relevant permits must be applied for to remove all protected species
5. Clear Alien Invasive Species from the property

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ACRONYMS

AIP	ALIEN INVASIVE PLANTS
BID	BACKGROUND INFORMATION DOCUMENT
CBA	CRITICAL BIODIVERSITY AREA
ECECB	EASTERN CAPE ENVIRONMENTAL CONSERVATION BILL OF 2003
NFA	NATIONAL FORESTS ACT 84 OF 1998
NFEPA	NATIONAL FRESHWATER ECOSYSTEM PRIORITY AREA
POSA	PLANTS OF SOUTHERN AFRICA
SANBI	SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE
SCC	SPECIES OF CONSERVATION CONCERN
TOPS	THREATENED OR PROTECTED SPECIES

1 Introduction

Habitat Link Consulting has approached Clayton Weatherall-Thomas to do a botanical specialist report subdivision of Farm Hogsback Plateau no. 21, situated in the village of Hogsback, Victoria East Division, Raymond Mhlaba Municipality. It is proposed that the farm 20,77 ha in size, be subdivided into 7 smaller portions for residential purposes, and rezoned accordingly.

The objective of the Botanical Specialist Report is to:

1. Determine the vegetation type descriptions on site, and identified sensitivities
2. Identify all Land Use Planning guidelines for the site, according to current conservation assessments
3. Create a comprehensive plant species list of the site
4. Determine the threat status and sensitivity of the vegetation on site
5. Describe the level of degradation of the vegetation on site
6. Measure the environmental impact of the activity on the vegetation and ecology of the site
7. Recommend mitigation recommendations to limit environmental impact on vegetation

The Botanical Specialist Report will include a comprehensive species list, inclusive of Threatened or Protected Species, Species of Conservation Concern, and Alien Invasive Plants, but may not be a complete list, due to time constraints.

1.1 Details of Specialist and Declaration of Interest

Name of specialist: Clayton Richard Weatherall-Thomas

Qualifications and Expertise: Please see cv attached as Appendix 1

Declaration of Interest: Please see Appendix 2

1.2 Project Description

The project description is based on information received from the EAP.

The project involves the Subdivision and Rezoning of Farm Hogsback Plateau no. 21, situated in the village of Hogsback, Victoria East Division, Raymond Mhlaba Municipality for residential purposes and a private cemetery.

The development of the property will entail:

- Subdivision of the property in seven (7) portions
- Six low density residential small-holdings, varying in size between 2,3ha and 4,8ha
- A private cemetery, fenced off as a separate functional unit ($\pm 1975\text{m}^2$)
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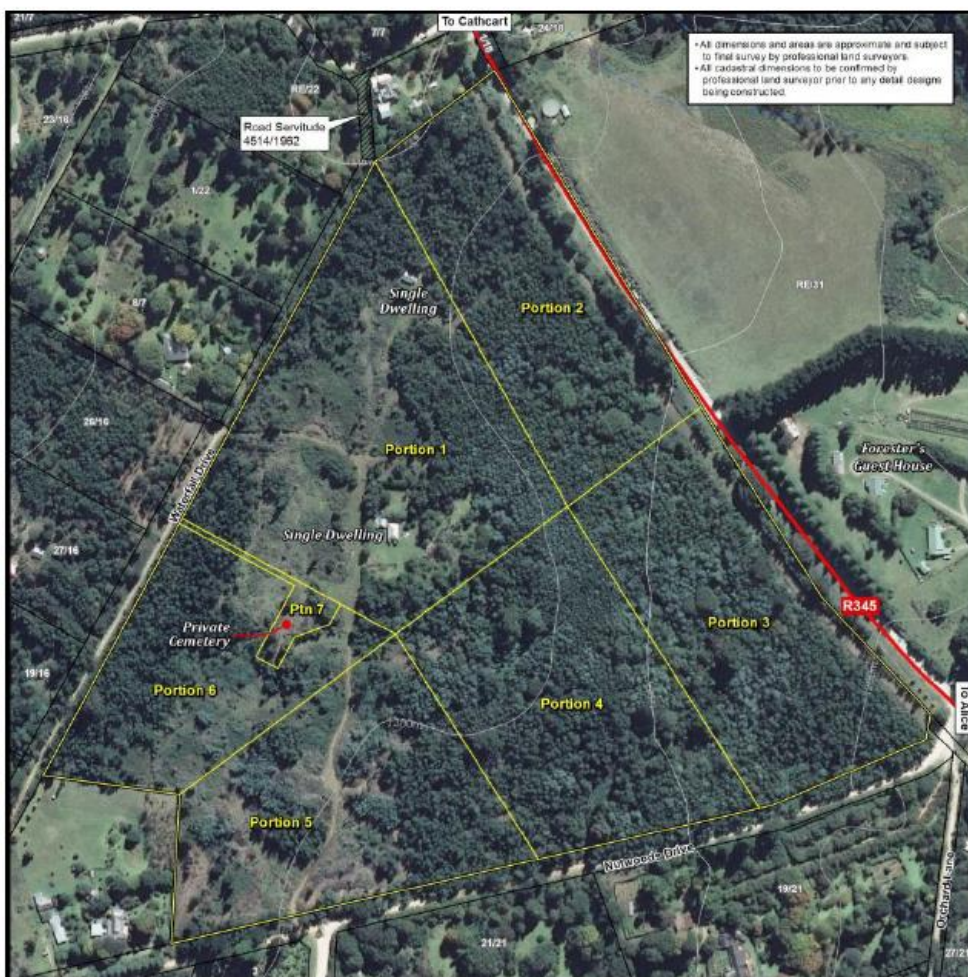


Figure 2 Remainder of Farm Hogsback Plateau, to be subdivided into 7 portions.

1.3 Terms of Reference

The Scope of this Botanical Screening is to:

1. Identify the vegetation type using available online information, including VEGMAP
2. Identify the threat status and sensitivities of the vegetation type
3. Consult all relevant Bioregional Plans and other Conservation Assessments and Plans for the municipality, including the ECBCP and the Threatened Ecosystem
4. Complete a site visit to determine the status of the vegetation on site, including the presence of dominant and threatened plant species and the presence of Alien Invasive Plants (AIPs)
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9. Prepare a report indicating the current environmental sensitivities and mitigation measures for the site

1.4 Assumptions and Limitations

A number of assumptions and limitations exist for this study. The sensitivity of the site is based on existing available data. The species list is based on a single site visit, and thus species composition and diversity will be underrepresented. Information about the nature and size of the impacts of the development is based on information received from the EAP.

A large number of horticultural or garden plant species were recorded on the site. The correct identification, down to sub-taxon level, is incredibly difficult, as many are horticultural varieties. A number of these garden taxa were not in flower either, greatly increasing the difficulty as well. However, this is not considered too limiting to the accuracy of this report, as there is no doubt that they are not indigenous, and therefore contributes nothing to the conservation value or sensitivity of the site.

2 Methods

The botanical assessment involved a desktop literature survey, as well as a site assessment that took place on the 26 October, 2019. A site visit was done by Clayton Weatherall-Thomas. A comprehensive plant species list was produced and annotated according to the relevant

legislation. All Threatened or Protected Species were identified, as well as any Invasive Alien Plants (AIPs).

The approach used in this vegetation assessment is as follows:

- A desktop assessment of the potential plant species, vegetation types and sensitivities of the site based on data extracted from
 - Mucina and Rutherford's (2009) vegetation map and 2018 updated vegetation map and vegetation descriptions
 - National Environmental Management: Biodiversity Act (Act No. 10 of 2004): National List of Threatened Ecosystems (2011)
 - Eastern Cape Biodiversity Conservation Plan (ECBCP)
 - Nelson Mandela Bay Municipality Bioregional Plan (2015)

- A species list and site description based on photographs taken by the EAP:
 - Describing habitats and species present. All plants were identified down to their lowest possible taxonomic level using Plants of Southern Africa (POSA), accessed during August 2019, and the Red List of South African plants (SANBI 2017), accessed during May 2019
 - Document and describing present land use, as well as evidence of past land use activities.
 - A species list was created and annotated to indicate Species of Conservation Concern (SCCs) according to the SANBI Red List (2017.1); Threatened or Protected Species (ToPS) according to the National Environmental Management: Biodiversity Act (Act 10 of 2004); Protected tree species according to National Forests Act 84 of 1998 (NFA), the Nature and Environmental Conservation Ordinance of 1974, the Eastern Cape Environmental Conservation Bill of 2003 (ECECB); and declared Alien Invasive Plant (AIPs) species according the National Environmental Management: Biodiversity Act: Alien and Invasive Species List of 2017.

- A vegetation map was produced illustrating the various vegetation communities identified

- A sensitivity map was produced to classify and illustrate the sensitivity of the various identified vegetation types

- Recommend possible measures to reverse, avoid, manage or mitigate possible environmental impacts.

Potential impacts of the proposed development were assessed according to the methodology received from Habitat Link Consulting.

The Impact Assessment Methodology is shown below:

CRITERIA	CATEGORIES	EXPLANATION
Overall nature	Negative	Negative impact on affected biophysical or human environment.
	Positive	Benefit to the affected biophysical or human environment.
Type	Direct	Are caused by the action and occur at the same time and place.
	Indirect Secondary or	Are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. May include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.
	Cumulative	Is the impact on the environment, which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.
Extent: Spatial Extent over which impact may be experienced (E)	Site (1)	Immediate area of activity incorporating a 50m zone which extends from the edge of the affected area.
	Local (2)	Area up to and/or within 10km of the 'Site' as defined above.
	Regional (3)	Entire community, drainage basin, landscape etc.
	National (4)	South Africa.
Duration of impact (D)	Very Short-term (1)	Impact would last for the duration of activities such as land clearing, land preparation, fertilising, weeding, pruning and thinning. Quickly reversible. (0–1 years).
	Short-term (2)	The lifetime of the impact will be of a short duration (2-5 years).
	Medium-term (3)	Impact would last for the duration of project activity, such as harvesting. Reversible over time (>5 - <15 years).
	Long-term (4)	Impact would continue beyond harvesting/ extraction of the trees (> 15 years).
	Permanent (5)	Impact would continue beyond decommissioning.
Severity (S)	Negative	Based on separately described categories examining whether the impact is destructive or benign, whether it destroys the impacted environment, alters its functioning or slightly alters the environment itself. <ul style="list-style-type: none"> • 0 is small and will have no meaningful effect on the environment; • 2 is minor and will not result in an impact on processes;
	Positive	

		<ul style="list-style-type: none"> • 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); • 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
Reversibility (R)	Completely Reversible (0)	The impact can be completely reversed with the implementation of correct mitigation and rehabilitation measures.
	Partly Reversible (0.5)	The impact can be partly reversed providing mitigation measures are implemented and rehabilitation measures are undertaken
	Irreversible (1)	The impact cannot be reversed, regardless of the mitigation or rehabilitation measures.
Irreplaceable Loss (I)	Resource will not be lost (0)	The resource will not be lost or destroyed provided mitigation and rehabilitation measures are implemented.
	Resource may be partly destroyed (0.5)	Partial loss or destruction of the resource will occur even though all management and mitigation measures are implemented.
	Resource cannot be replaced (1)	The resource cannot be replaced no matter which management or mitigation measures are implemented.
Probability of occurrence (P)	Unlikely (1)	<40% probability. Very improbable (probably will not happen).
	Possible (2)	40% probability. Improbable (some possibility, but low likelihood).
	Probable (3)	>70% probability. Probable (distinct possibility).
	Highly Probable (4)	>80 %. Highly probable (most likely).
	Definite (5)	>90% probability. Definite (impact will occur regardless of any prevention measures).
Mitigation Potential [i.e. the ability to manage or mitigate an impact given the necessary resources and feasibility of application.]	High Completely Mitigatable or	<p>Relatively easy and cheap to manage. Specialist expertise or equipment is generally not required.</p> <p>The nature of the impact is understood and may be mitigated through the implementation of a management plan or through 'good housekeeping'. Regular monitoring needs to be undertaken to ensure that any negative consequences remain within acceptable limits.</p> <p>The significance of the impact after mitigation is likely to be low or negligible.</p>
	Moderate Partially Mitigatable or	<p>Management of this impact requires a higher level of expertise and resources to maintain impacts within acceptable levels. Such mitigation can be tied up in the design of the Project.</p> <p>The significance of the impacts after mitigation is likely to be low to moderate.</p> <p>May not be possible to mitigate the impact entirely, with a residual impact(s) resulting.</p>
	Low Unmitigatable or	<p>Will not be possible to mitigate this impact entirely regardless of the expertise and resources applied.</p> <p>The potential to manage the impact may be beyond the scope of the Project.</p> <p>Management of this impact is not likely to result in a measurable change in the level of significance.</p>
Impact Significance	Negligible (0-22)	Risk/impact may result in very minor alternations of the environment and can easily be avoided by implementing

[Dur+Ext+R++ Sev] X Probability		appropriate mitigation measures and will not have an influence on decision-making
THIS MUST BE UNDERTAKEN FOR PRE AND POST MITIGATION FOR EACH IMPACT	Low (>22 ≤ 45)	Risk/impact may result in very minor alternations of the environment and can easily be avoided by implementing appropriate mitigation measures and will not have an influence on decision-making
	Moderate (>45 ≤ 68.5)	Risk/impact will result in moderate alternation of the environment and can be reduced or avoided by implementing appropriate mitigation measures and will only have an influence on decision-making if not properly mitigated
	High (>68.5 ≤ 90)	Risk/impact will result in high alternation of the environment even with the implementation of appropriate mitigation measures and will have an influence on decision-making
	Very High (>90 - 105)	Risk/impact will result in major alternation of the environment even with the implementation of appropriate mitigation measures and will have an influence on decision-making

3 Study Site Description

3.1 National Context

3.1.1 National Vegetation Assessment

The Vegetation Map for South Africa, Lesotho and Swaziland (VegMap) by Mucina & Rutherford (2009) is most widely accepted classification of South Africa's vegetation. It includes information on the conservation status and indicator species for each recognised vegetation type in the country. This biodiversity planning product also forms the basis for the NEM Biodiversity Act list of Threatened Ecosystems. The 2018 version of the VegMap has recently been released. The historical vegetation type on site in Amathole Montane Grassland (Figure 1).

Amathole Montane Grassland is found on low mountain ranges and moderately undulating landscapes between Somerset East (Bosberg), Amathole, Winterberg and Kologha Mountains and on broken veld between Stutterheim and Komga at altitudes 650–1 500 m. It occurs on sedimentary rocks of the Beaufort Group (Karoo Supergroup) overlaid by deep, freely drained, highly weathered soils (Hartmann 1988). Weakly developed lithosols are also found in places. Bimodal rainfall pattern with spring and late summer peaks. Mean Annual Precipitation (MAP) is around 670 mm (range 500–740 mm, up to 1 000 mm in isolated places).

The vegetation type is characterised by short grassland with high species richness of forbs, especially those of the family Asteraceae (especially *Helichrysum* and *Senecio*). The grasslands are dominated by a variety of grasses, including *Themeda triandra*, *Elionurus muticus*, *Sporobolus africanus*, *Eragrostis chloromelas*, *E. curvula*, *Heteropogon contortus*, *Alloteropsis semialata* and *Tristachya leucothrix*.

The threatened status of the vegetation type is Least threatened. The conservation target is 27%, and only about 5% is conserved in 11 statutory conservation areas. More than 10% already transformed for plantations and cultivation. Heavily grazed by cattle and horses (in places), resulting in a uniform, short grassland structure and several prominent indigenous weedy forbs (e.g. *Senecio retrorsus*). The alien invaders include *Acacia mearnsii* and *A. dealbata*. Erosion very low, low or moderate.

Table 1 Important taxa of the habitat types of Southern Karoo Riviere, according to VEGMAP 2018, including dominant (d) species.

GROWTH FORM	SPECIES
Graminoid:	<i>Cynodon dactylon</i> (d), <i>Eragrostis chloromelas</i> (d), <i>E. curvula</i> (d), <i>Microchloa caffra</i> (d), <i>Themeda triandra</i> (d), <i>Tristachya leucothrix</i> (d), <i>Agrostis lachnantha</i> , <i>Alloteropsis semialata</i> subsp. <i>eckloniana</i> , <i>Andropogon appendiculatus</i> , <i>Brachiaria serrata</i> , <i>Cymbopogon pospischilii</i> , <i>Cyperus usitatus</i> , <i>Elionurus muticus</i> , <i>Eragrostis capensis</i> , <i>E. plana</i> , <i>E. planiculmis</i> , <i>E. racemosa</i> , <i>Eulalia villosa</i> , <i>Harporchloa falx</i> , <i>Heteropogon contortus</i> , <i>Koeleria capensis</i> , <i>Kyllinga alata</i> , <i>Melica decumbens</i> , <i>Pennisetum sphacelatum</i> , <i>Pentaschistis cirrhulosa</i> , <i>P. tysonii</i> , <i>Schoenoxiphium sparteum</i> , <i>Sporobolus africanus</i> , <i>Trachypogon spicatus</i> .
Herbs:	<i>Ajuga ophrydis</i> , <i>Commelina africana</i> , <i>Gerbera piloselloides</i> , <i>Haplocarpha scaposa</i> , <i>Helichrysum nudifolium</i> var. <i>pilosellum</i> , <i>H. rugulosum</i> , <i>H. simillimum</i> , <i>H. umbraculigerum</i> , <i>Lepidium africanum</i> subsp. <i>africanum</i> , <i>Lobelia erinus</i> , <i>Rumex lanceolatus</i> , <i>Selago densiflora</i> , <i>Senecio erubescens</i> var. <i>crepidifolius</i> , <i>S. retrorsus</i> , <i>Tephrosia capensis</i> var. <i>acutifolia</i> , <i>Tolpis capensis</i> , <i>Trifolium burchellianum</i> subsp. <i>burchellianum</i> , <i>Wahlenbergia stellarioides</i> . Geophytic Herbs: <i>Disa tysonii</i> , <i>D. versicolor</i> , <i>Disperis oxyglossa</i> , <i>Eucomis autumnalis</i> subsp. <i>autumnalis</i> , <i>Geum capense</i> , <i>Gladiolus longicollis</i> subsp. <i>longicollis</i> , <i>Habenaria lithophila</i> , <i>Hypoxis argentea</i> var. <i>argentea</i> , <i>Oxalis smithiana</i> , <i>Satyrium cristatum</i>
Succulent Shrub:	<i>Delosperma crassuloides</i> .
Herbaceous Climber:	<i>Rhynchosia totta</i> .
Low Shrubs:	<i>Anthospermum rigidum</i> subsp. <i>pumilum</i> , <i>Chrysocoma ciliata</i> , <i>Felicia filifolia</i> subsp. <i>filifolia</i> , <i>F. muricata</i> , <i>Helichrysum asperum</i> var. <i>albidulum</i> , <i>H. odoratissimum</i> , <i>H. trilineatum</i> , <i>Otholobium caffrum</i> , <i>Senecio burchellii</i> , <i>S. pterophorus</i> .
Biogeographically Important Taxa	(^D Drakensberg endemic, ^{D₉} Drakensberg endemic extending to Griqualand East) Graminoids: <i>Bromus speciosus</i> ^D , <i>Helictotrichon galpinii</i> ^D , <i>Pentaschistis airoides</i> subsp. <i>jugorum</i> ^D . Herbs: <i>Helichrysum aureum</i> var. <i>serotinum</i> ^D , <i>Psammotropha mucronata</i> var. <i>marginata</i> ^D . Geophytic Herb: <i>Disa stricta</i> ^{D₉} .
Endemic Taxa	Herbs: <i>Alchemilla bolusii</i> , <i>Alepidea macowani</i> , <i>Cineraria vagans</i> , <i>Diascia ramosa</i> , <i>Helichrysum isolepis</i> , <i>Heliophila katbergensis</i> , <i>Hermannia violacea</i> , <i>Wahlenbergia laxiflora</i> . Geophytic Herbs: <i>Aspidoglossum uncinatum</i> , <i>Nerine filamentosa</i> , <i>Pachycarpus linearis</i> , <i>Watsonia amatolae</i> . Succulent Shrub: <i>Delosperma katbergense</i> . Semiparasitic Herb: <i>Thesium orientale</i> . Low Shrubs: <i>Abutilon flanaganii</i> , <i>Arrowsmithia</i>

stypelioides, *Erica amatolensis*, *Euryops ciliatus*, *Garuleum tanacetifolium*, *Indigofera cuneifolia* var. *angustifolia*, *Lotononis trichodes*, *Macowania revoluta*, *Muraltia rara*, *Phylica galpinii*, *P. simii*, *Tephrosia polystachya* var. *longidens*.

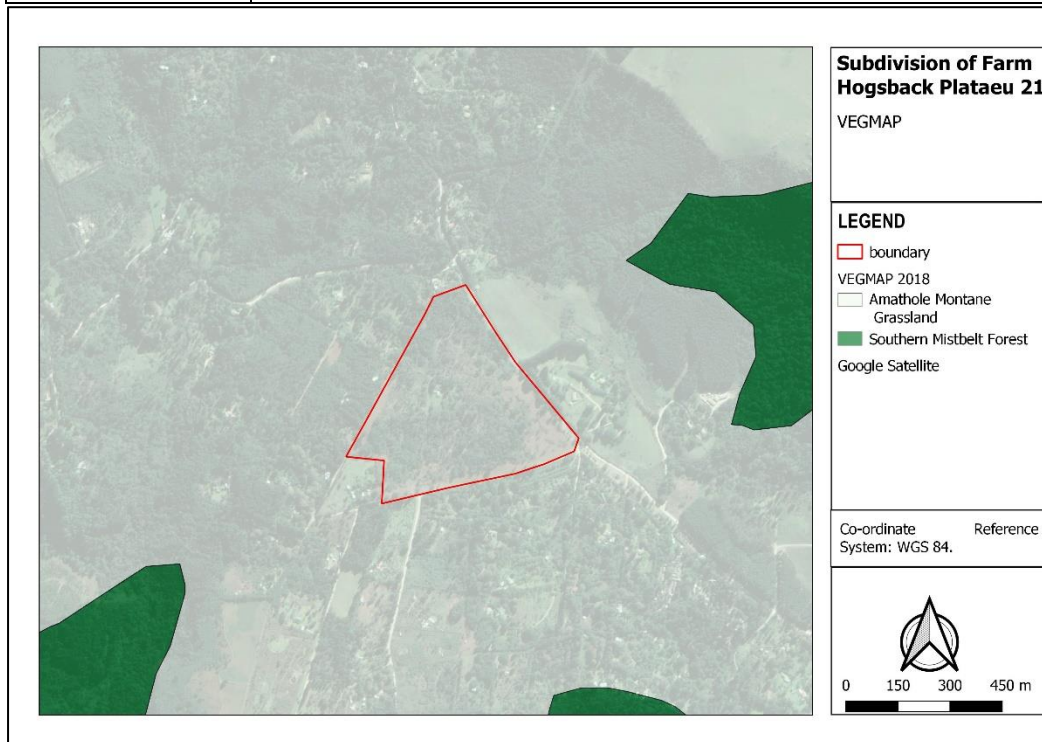


Figure 3 Dominant vegetation types of Farm Hogsback Plateau No. 21, according to Mucina & Rutherford (2012).

3.1.2 Threatened Ecosystems

The National Environmental Management: Biodiversity Act (Act No. 10 of 2004): National List of Threatened Ecosystems (2011) identifies national threatened terrestrial ecosystems that are threatened by extinction, includes preventing further degradation and loss of structure function and composition of threatened ecosystems. The NEMBA (Act 10 of 2004) provides for listing of threatened or protected ecosystems, in one of four categories: Critically Endangered, Endangered, Vulnerable or Protected. Threatened ecosystems are listed in order to reduce the rate of ecosystem and species extinction by preventing further degradation and loss of structure, function and composition of threatened ecosystems. The purpose of listing protected ecosystems is primarily to conserve sites of exceptionally high conservation value (SANBI, Biodiversity Geographic information Systems (BGIS)). Importantly, any land-use change application occurring within an ecosystem listed as Critically Endangered or Endangered in terms of the Biodiversity Act will automatically require environmental authorisation in terms of the NEMA EIA regulations. The vegetation type on site, Amathole Montane Grassland, is listed as **Least Threatened**.

3.1.3 National Freshwater Ecosystem Priority Areas Project

The National Freshwater Ecosystem Priority Areas (NFEPA) project is a collaborative effort aimed at identifying Freshwater Ecosystem Priority Areas (FEPAs) to meet national biodiversity goals for freshwater ecosystems, and to develop a basis for enabling effective implementation of measures to protect FEPAs, including freeflowing rivers (Nel *et al.* 2011).

NFEPA project identified River FEPAs and associated sub-quaternary catchments, wetland and estuary FEPAs, wetland clusters, as well as Phase 2 FEPA and associated sub-quaternary catchment areas. Fish Sanctuaries (FishSA), together with Fish Migration Areas and Upstream Management Areas, were defined to conserve populations of threatened freshwater fish species in South Africa.

Fish sanctuaries were identified at the scale of sub-quaternary catchments. Five types of conservation areas were identified for each species: Fish Sanctuaries (areas required to meet fish population targets); Fish Migration Corridors (areas required for migration between required habitats, usually between mainstem and tributary habitat); Rehabilitation and Translocation Areas (areas crucial to the survival of the highly threatened fish species they support); and Upstream Management Areas (areas that need to be managed to prevent degradation of downstream Fish Sanctuaries and Fish Migration Corridors). The site occurs within a Phase 2 FEPA, as well as a Fish Sanctuary for 2 species (Figure 2). Three threatened fish species, namely *Barbus anoplus*, *B. trevelyani* and *Sandelia bainsii* occur in the subquaternary catchment. Phase 2 FEPAs were identified in moderately modified (C) rivers. The condition of these Phase 2 FEPAs should not be degraded further, as they may in future be considered for rehabilitation once good condition FEPAs (in an A or B ecological category) are considered fully rehabilitated.

3.2 Regional Context

3.2.1 Eastern Cape Biodiversity Conservation Plan (ECBCP) (2007)

The Eastern Cape Biodiversity Conservation Plan (2007) is a regional systematic biodiversity conservation plan for the Eastern Cape (Figure 2). The plan set certain development guidelines based on calculated biodiversity score for different landscapes. Basically the terrestrial areas covered by the plan are designated as Critical Biodiversity 1, 2, or 3 areas, each with specific development recommendations.

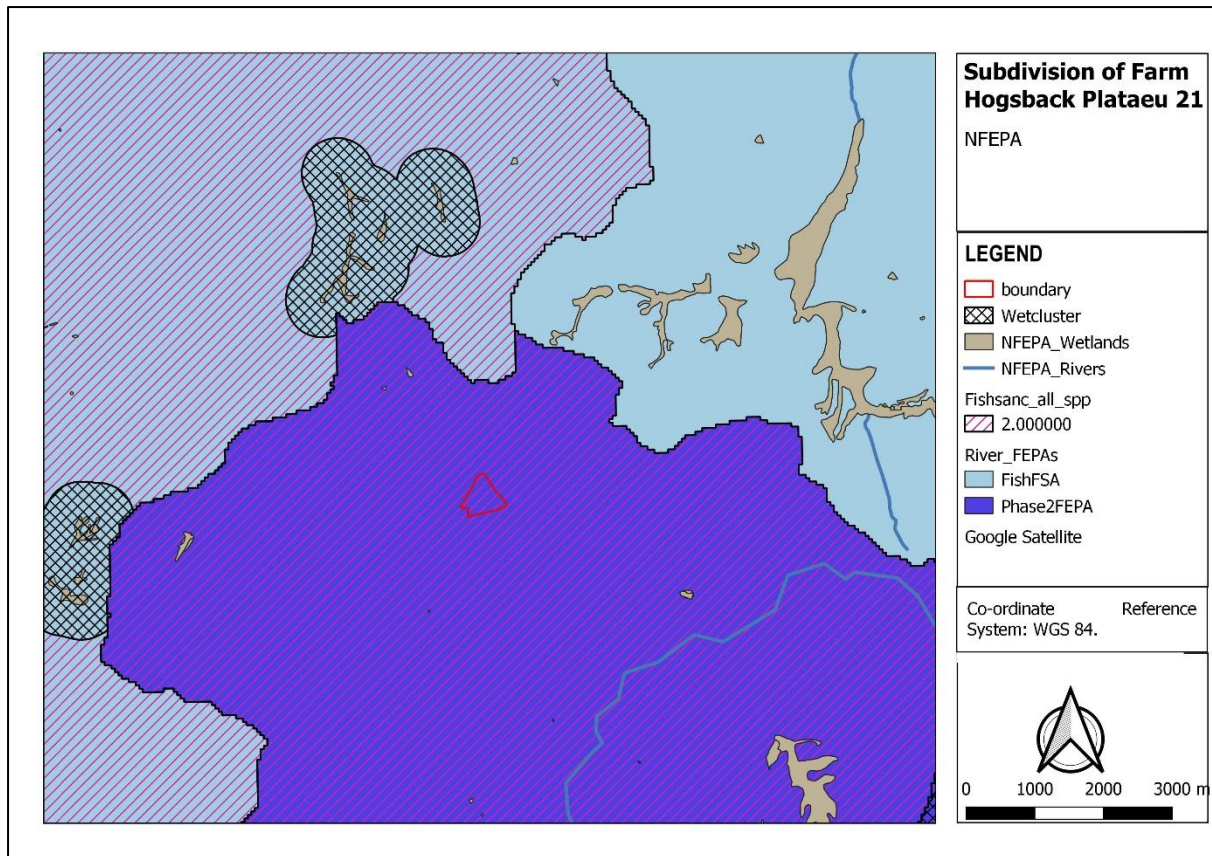


Figure 4 Farm Hogsback Plateau No. 21 in relation to NFEPA (Nel et al. 2007).

The ECBCP systematic conservation assessment has identified critically endangered vegetation types (ecosystems); areas essential for meeting biodiversity targets for biodiversity features (SA vegetation types, expert mapped priority areas); and there could be critically endangered forest patches in terms of the National Forest Agreement, as well as forest clusters that have been identified as critical in the forestry planning process (Berliner et al., 2007). The proposed mining area falls within the Terrestrial Critical Biodiversity (CBA) 1, indicated by the Eastern Cape Biodiversity Conservation Plan (2007) (Figure 2).

For each Terrestrial CBA category, there are Biodiversity Land Management Class (BLMC) that are included. Mainly, BLMC 1 for natural landscapes and BLMC 2 which are for near-natural landscapes. Each BLMC has specific land use objectives. It is recommended that land in BLMC 1 is maintained in a natural state with minimal loss of the ecosystem integrity. In addition, no transformation of the natural habitat should be permitted.

The ECBCP identified aquatic CBAs as well, consisting of critically important and important river sub-catchments, free-flowing rivers, wetlands and estuaries. The site does not occur in an Aquatic CBA, and no BLMCs apply (Figure 3).

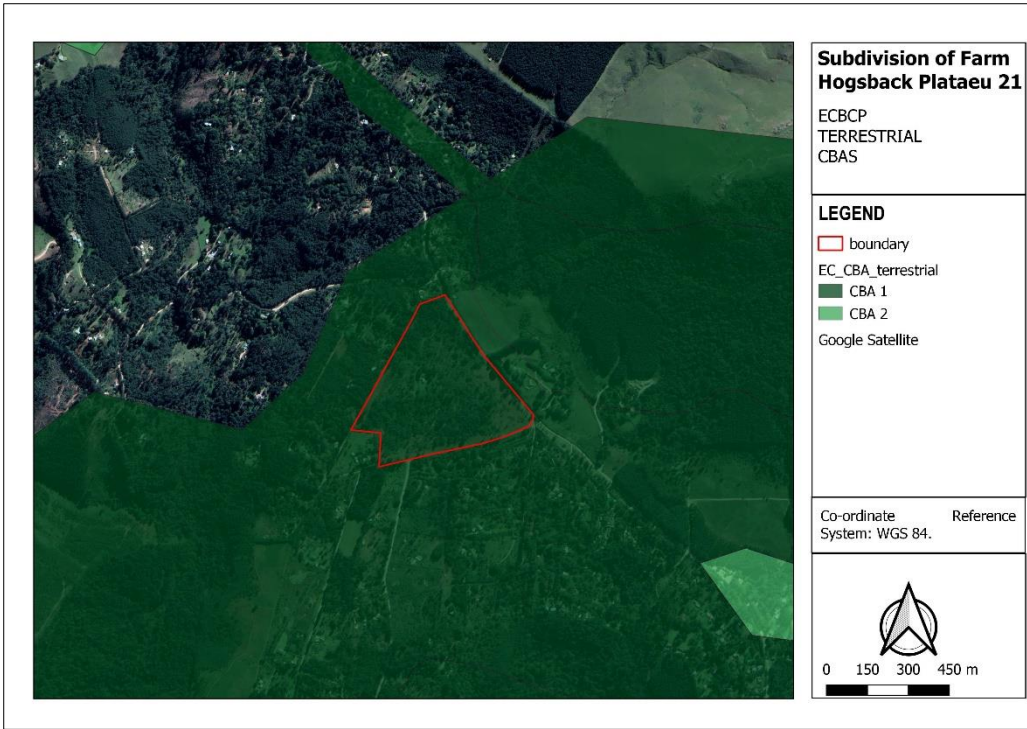


Figure 5 Farm Hogsback Plateau No. 21 in relation to Terrestrial Critical Biodiversity Areas identified by ECBCP (2007).

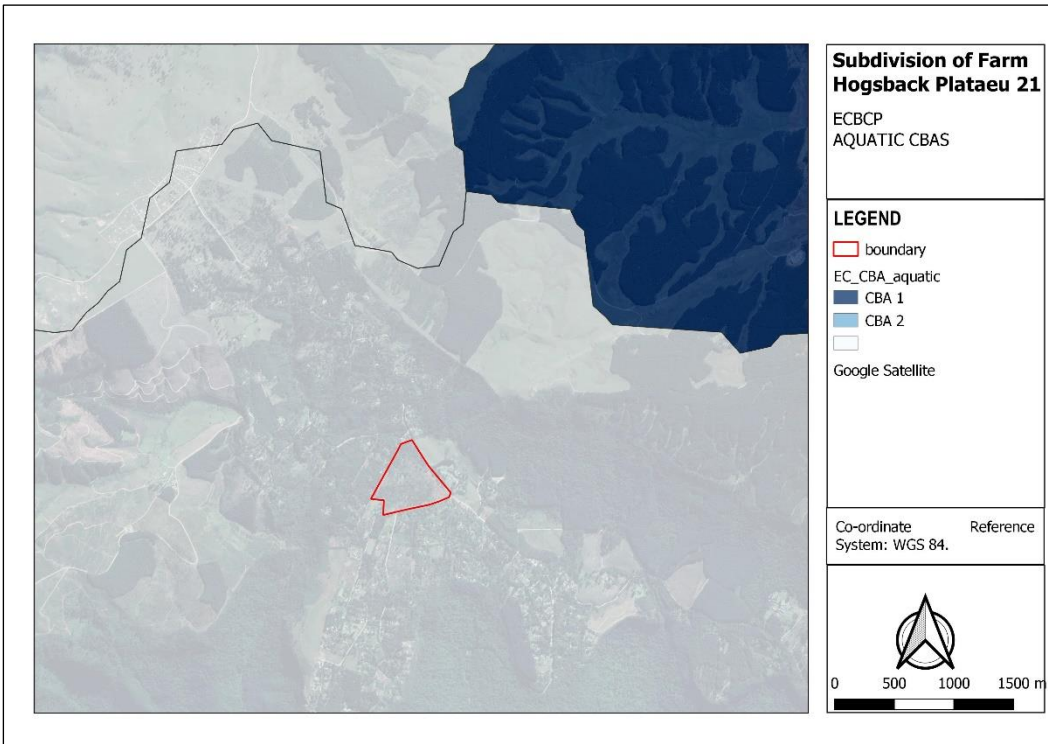


Figure 6 Proposed project site in relation to Aquatic Critical Biodiversity Areas identified by ECBCP (2007).

4 Ecological Assessment

4.1 Vegetation Community Composition

The site can be described as highly degraded to transformed, and until recently would have been completely dominated by a variety of Alien Invasive Plants, in particular forestry tree species and garden escapes. Large areas of the site have recently been cleared for firewood, using a bulldozer. This has resulted in large areas of bare soil, that is being colonised by a variety of alien and indigenous pioneer species. It can be assumed that the high alien species cover, in particular the *Acacia mearnsii*, has considerably altered the soil properties of the site, causing the site to be considered transformed and very little chance the original natural grassland will re-establish.

The dominant tree on site is the AIP *Acacia mearnsii*, as well as *Pinus patula.*, *P. radiata*, *Populus tremula* and *Prunus serotina*. A number of horticultural shrubs are common, both under the canopy and in the open, including *Cystisus scoparius*, *Phytolacca octandra*, *Digitalis purpurea*, *Rhododendron indicum*, and *Rubus fruticosus*. Plant cover under the dense stands of invader trees is low, and dominated by the previously mentioned shrubs, although *Dietes grandiflora* was found there. Areas that have been recently cleared are dominated by AIPs namely *Carduus macrocephalus*, *Gamochaeta pensylvanica*, *Taraxacum officinale*, *Trifolium repens* and the grass *Poa annua*, as well as the indigenous *Cynodon dactylon*, *Cotula coronopifolia*, *Delairea odorata*, *Helichrysum argyrophyllum*, *Helichrysum dasyanthum*, *Pseudognaphalium luteo-album*, *Senecio pterophorus*, *Stoebe plumosa*, *Panicum maximum*. The Protected species *Hypoxis hemerocallidea* occurred in an open area as well.

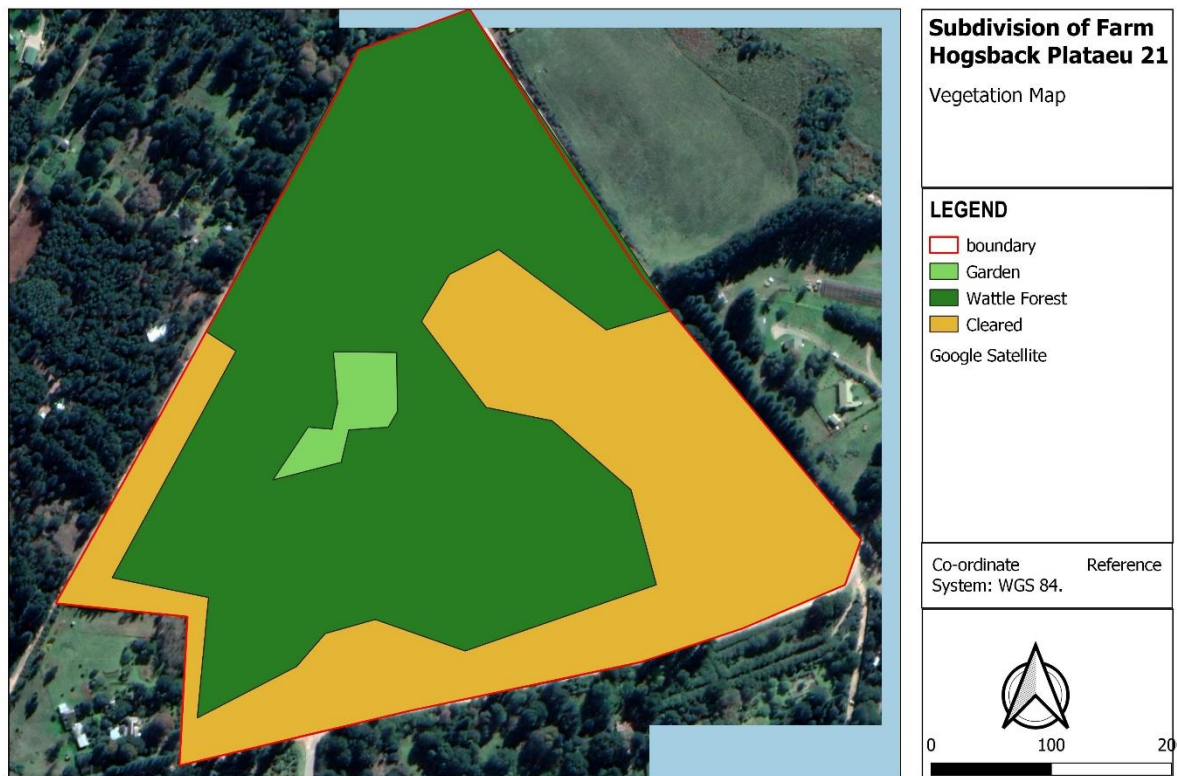


Figure 7 Vegetation types of Farm Hogsback Plateau No. 21.

4.2 Threatened and Protected Species

The following legislation was consulted to determine the conservation value of the vegetation:

- Red List of South African Plants (version 2017.1);
- National Environmental Management: Biodiversity Act No. 10 of 2004 – Alien and Invasive Species Lists (published 29 July 2016);
- National Environmental Management: Biodiversity Act 10 of 2004 – Amendment of Critically Endangered, Endangered, Vulnerable and Protected Species List (14 December 2007);
- Nature and Environmental Conservation Ordinance of 1974
- Eastern Cape Environment Conservation Bill 9 of 2003
- National Forests Act No. 84 of 1998 – List of Protected Trees (published 8 September 2017);

There were 49 plant species recorded from the site (Appendix 3), of which 25 were not indigenous, and 15 declared invaders under the National Environmental Management: Biodiversity Act No. 10 of 2004 – Alien and Invasive Species Lists (published 29 July 2016). The dominant invasive species are trees such as *Acacia mearnsii*, *Pinus patula.*, *P. radiata*, *Populus tremula* and *Prunus serotina*, and large shrubs, including *Cystisus scoparius*,

Phytolacca octandra, *Digitalis purpurea*, *Rhododendron indicum*, *Rubus fruticosus*. A number of invasive species occur in recently disturbed areas as well, namely *Carduus macrocephalus*, *Gamochaeta pensylvanica*, *Taraxacum officinale*, *Trifolium repens* and the grass *Poa annua*. These species must form part of the alien management plan. All Category 1b species should be eradicated immediately.

No Species of Conservation Concern (SCCs) was recorded on site (Appendix 3). No tree species are listed under the National Forests Act No. 84 of 1998.

Three species are protected under Schedule 4 of the Nature and Environmental Conservation Ordinance of 1974. These are the pioneer species *Gomphocarpus fruticosus*, as well as the less common *Dietes grandiflora* (may be a garden escape as it is a common horticultural species) and *Halleria lucida*. Even though these are all relatively common species, permits are required from DEDEAT for their clearance. *G. fruticosus*, *D. grandiflora* and *Hypoxis hemerocallidea* are Protected under ECECB as well.

Please note that the Eastern Cape Environment Conservation Bill of 2003 has not been gazetted to date and therefore cannot be enforced.

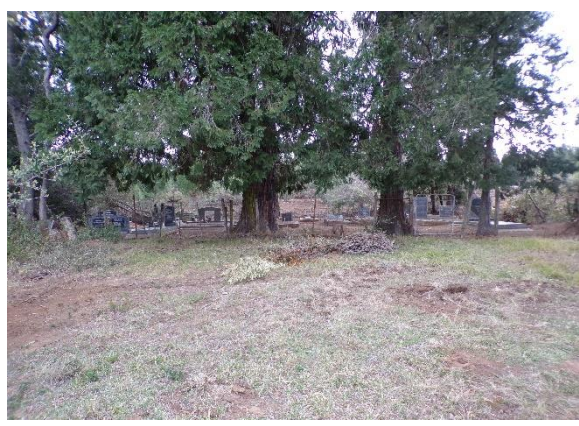


Photo 1 Top Left: Area of the property recently cleared by a bulldozer, where a number of weeds, pioneers and grasses are emerging . Top Right: Stand of mostly *Acacia mearnsii*, with very little plant cover under the canopy. Bottom Left: The house on the property, with a cultivated garden around it. Bottom Right: The graveyard on site..

4.3 Sensitivity Assessment

The majority of the site is classified as having a **LOW** sensitivity, even though the area has been identified as a Terrestrial CBA (See Figure 6). The identification of the area as a Terrestrial CBA by ECBCP can be considered incorrect, as it has been transformed for an extended period of time due to peri-urban development, with the associated gardens, as well as commercial forestry. Very little natural grassland remains in the vicinity of the site, and the nearby Mistbelt Forest would never have occurred on site, due to ecological reasons. The site is largely dominated by AIPs, as well as garden escapes, and large areas of the property has been cleared by a bulldozer. Clearing has occurred repeatedly in the past, as evidenced by Google Earth Images, resulting in soil disturbance as well. Very few species grow under the dense canopy of the AIPs. The gardens of the main house, as well as the cemetery, is classified as having a **VERY LOW** sensitivity.

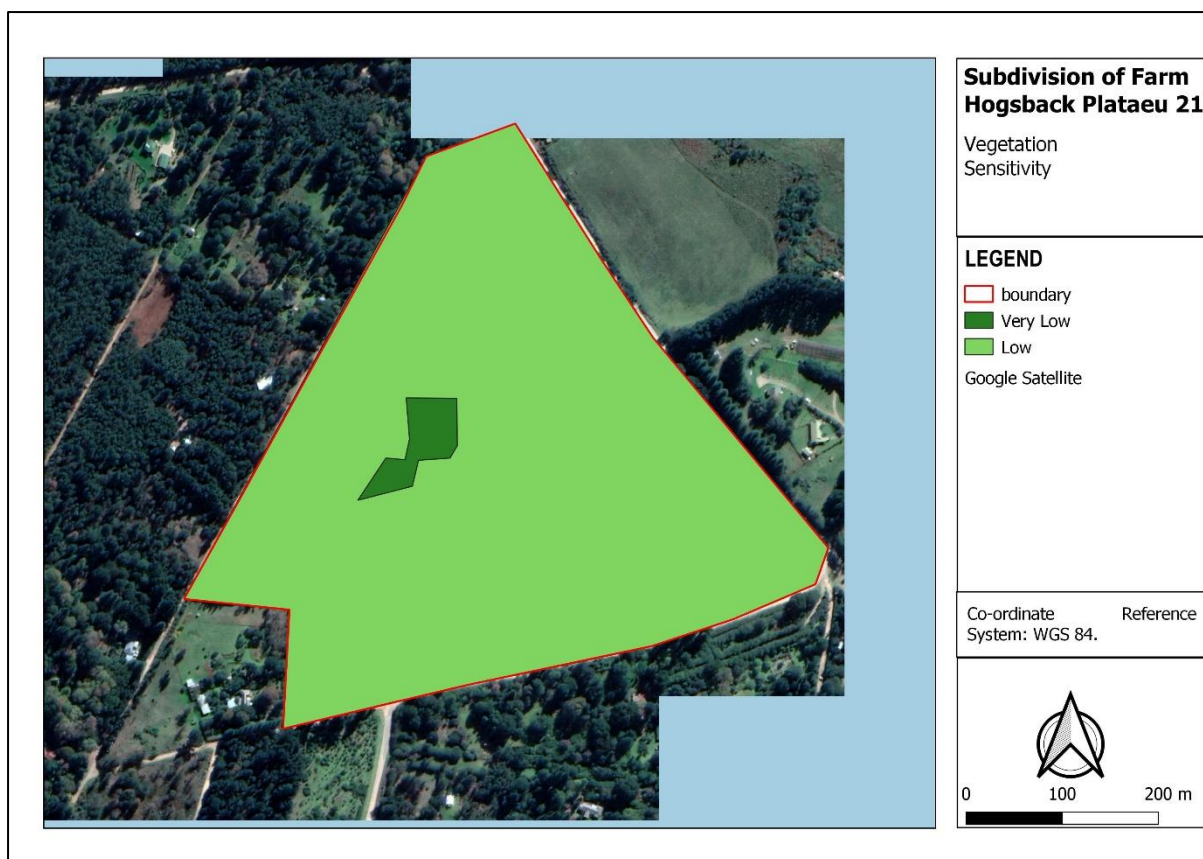


Figure 8 Sensitivity Map of Farm Hogsback Plateau No. 21.

5 Impact Assessment

The possible impacts of this development on the proposed site were rated according to Habitat Link's Impact Rating Methodology.

5.1 Direct loss of natural vegetation due to clearing

The subdivision of Farm Hogsback Plateau No. 21 will result in a very limited loss of natural vegetation, in particular Amathole Montane Grassland, due to the site already being largely transformed by a dense invasion of AIPs. There is a strong possibility that the site was landscaped to a certain degree before invasion by the mostly forestry and garden tree species as well.

IMPACT	Vegetation Loss				
NATURE	NEGATIVE		TYPE	DIRECT, CUMULATIVE	
PHASE	SIGNIFICANCE		WITH MITIGATION		
	EXTENT	1	Negligible (20)	1	Negligible (12)

Site Preparation Operation	DURATION	1		1	
	SEVERITY	2		1	
	REVERSIBILITY	0.5		0.5	
	Irreplaceable Loss (I)	0.5		0.5	
	Probability of occurrence (P)	4		3	
	Mitigation Potential	Moderate			
	MITIGATION:	<ol style="list-style-type: none"> 1. Minimise natural vegetation clearance and the footprint for the disturbed area as far as possible 2. No blanket clearing of vegetation with a bulldozer, only areas that will be developed in the near future should be cleared 3. Where required, rehabilitate and revegetate areas as soon as possible using indigenous plant species 4. Relevant permits must be applied for to remove all protected species 5. Clear Alien Invasive Species from the property 			

5.2 Direct loss of Threatened or Protected Species

No Species of Conservation Concern (SCCs) were identified, but a number of Protected species are present. These species must preferably be avoided and not removed. If necessary, permits must be applied for from DEDEAT for their removal. As most remaining indigenous species are pioneers, it is largely unnecessary to preserve them in a rehabilitation nursery. Rehabilitation is expected to occur naturally by colonisation of indigenous shrub and grass species, where landscaping by owners allows.

IMPACT	Loss of Threatened and Protected Species				
NATURE	NEGATIVE		TYPE	DIRECT, CUMULATIVE	
PHASE		SIGNIFICANCE		WITH MITIGATION	
Site Preparation Operation	EXTENT	1	Negligible (20)	1	Negligible (12)
	DURATION	1		1	
	SEVERITY	2		1	
	REVERSIBILITY	0.5		0.5	
	Irreplaceable Loss (I)	0.5		0.5	
	Probability of occurrence (P)	4		3	

	Mitigation Potential	Moderate
	MITIGATION:	<ol style="list-style-type: none"> 1. Minimise natural vegetation clearance and the footprint for the disturbed area as far as possible 2. No blanket clearing of vegetation with a bulldozer, only areas that will be developed in the near future should be cleared 3. Where required, rehabilitate and revegetate areas as soon as possible using indigenous plant species 4. Relevant permits must be applied for to remove all protected species 5. Clear Alien Invasive Species from the entire mining permit area, including those areas not mined

5.3 Loss of Ecological Connectivity

The site occurs within the village of Hogsback, mainly consisting of smallholdings. Most of the area in the village consists of forestry plantations, landscaped garden and invaded open lands, and can be considered highly fragmented. The loss of vegetation on site will not result in the loss of ecological connectivity. As the site is moderately to highly degraded and transformed, further loss of ecological connectivity can be considered to be marginal.

IMPACT	Loss of Ecological Connectivity				
NATURE	NEGATIVE		TYPE	DIRECT, CUMULATIVE	
PHASE			SIGNIFICANCE	WITH MITIGATION	
Site Preparation Operation	EXTENT	2	Negligible (21)	2	Negligible (10)
	DURATION	2		1	
	SEVERITY	2		1	
	REVERSIBILITY	0.5		0.5	
	Irreplaceable Loss (I)	0.5		0.5	
	Probability of occurrence (P)	3		2	
	Mitigation Potential	Moderate			
	MITIGATION:	<ol style="list-style-type: none"> 1. Minimise natural vegetation clearance and the footprint for the disturbed area as far as possible 2. No blanket clearing of vegetation with a bulldozer, only areas that will be developed in the near future should be cleared 3. Where required, rehabilitate and revegetate areas as soon as possible using indigenous plant species 4. Relevant permits must be applied for to remove all protected species 			

		5. Clear Alien Invasive Species from the entire mining permit area, including those areas not mined
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5.4 Disturbance of the surface resulting in increased risk of AIPs

Continued clearing will result in soil disturbance, greatly increasing the chance of the establishment of alien invasive plants.

IMPACT	AIPs				
NATURE	NEGATIVE		TYPE	DIRECT	
PHASE		SIGNIFICANCE		WITH MITIGATION	
Site Preparation Operation	EXTENT	1	Moderate (47.5)	1	Negligible (13.5)
	DURATION	2		1	
	SEVERITY	6		2	
	REVERSIBILITY	0.5		0.5	
	Irreplaceable Loss (I)	0		0	
	Probability of occurrence (P)	5		3	
	Mitigation Potential	Moderate			
MITIGATION:	<ol style="list-style-type: none"> 1. Minimise natural vegetation clearance and the footprint for the disturbed area as far as possible 2. No blanket clearing of vegetation with a bulldozer, only areas that will be developed in the near future should be cleared 3. Where required, rehabilitate and revegetate areas as soon as possible using indigenous plant species 4. Relevant permits must be applied for to remove all protected species 5. Clear Alien Invasive Species from the entire mining permit area, including those areas not mined 				

5.5 Rehabilitation of the area and clearance of Alien Invasive Plants

It is not certain of whether the natural grassland will be restored, as part of the rehabilitation of the site, after construction phase. It is expected that the property, subdivided into smaller properties, will become more landscaped. Rehabilitation after construction should result in the restoration of vegetation cover, thus limiting erosion.

IMPACT	Rehabilitation
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NATURE	POSITIVE		TYPE	DIRECT, CUMULATIVE	
PHASE		SIGNIFICANCE		WITH MITIGATION	
Site Preparation Operation	EXTENT	1	Negligible (20)	1	Low (30)
	DURATION	3		3	
	SEVERITY	6		6	
	REVERSIBILITY	0.5		0.5	
	Irreplaceable Loss (I)	0.5		0.5	
	Probability of occurrence (P)	2		3	
	Mitigation Potential	Moderate			
MITIGATION:	<ol style="list-style-type: none"> 1. Minimise natural vegetation clearance and the footprint for the disturbed area as far as possible 2. No blanket clearing of vegetation with a bulldozer, only areas that will be developed in the near future should be cleared 3. Where required, rehabilitate and revegetate areas as soon as possible using indigenous plant species 4. Clear Alien Invasive Species from the entire mining permit area, including those areas not mined 				

5.6 No-Go Option

The No-Go Option will result in site remaining in its current, considerably degraded and transformed state. This may result in increased invasions by IAPs on site into neighbouring intact areas, although very little natural vegetation remains in the immediate vicinity.

6 Recommendations

The following recommendations are made to avoid, manage or mitigate any possible environmental impacts on the biological environment:

1. Minimise natural vegetation clearance and the footprint for the disturbed area as far as possible
2. No blanket clearing of vegetation with a bulldozer, only areas that will be developed in the near future should be cleared
3. Where required, rehabilitate and revegetate areas as soon as possible using indigenous plant species

4. Relevant permits must be applied for to remove all protected species
5. Clear Alien Invasive Species from the property

3. References

Grobler, A., Vlok, J., Cowling, R, van der Merwe, S., Skowno, A.L., Dayaram, A. 2018. Technical Report: Integration of the Subtropical Thicket Ecosystem Project (STEP) vegetation types into the VEGMAP national vegetation map 2018.

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

Nel, J.L., Murray, K.M., Maherry, A.M., Peterson, C.P., Roux, D.J., Driver, A., Hill, L., van SANBI. 2015. Statistics: Red List of South African Plants version 2017.1. Downloaded from Redlist.sanbi.org on 2018/12/05.

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Appendix 1 CV of Specialist

**Clayton
Richard
Weatherall-
Thomas**

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Port Elizabeth
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environment@algoacme
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7 Employment History

7.1 Environmental Assessment Practitioner

March 2017-ongoing Algoa Consulting Mining Engineers, Port Elizabeth

- Conducting of Environmental Impact Assessments (EIAs); Compiling Environmental Management Programme Reports (EMPr); Environmental Audits, Conduct Public Participation and correlating reports

7.2 Conservation Officer

October 2011-December 2012 Wildlife and Environmental Society of South Africa (WESSA), Port Elizabeth

- Co-ordinate the Nelson Mandela Bay Metropolitan's Biodiversity Stewardship Programme (NMBMBSP), including site assessments, communication with landowners and other stakeholders, management plans; The capacitation of Custodians of Rare and Endangered Wildflowers (CREW) volunteers and NMBM staff

January 2012-June 2013 Nelson Mandela Metropolitan Municipality (NMBM), Port Elizabeth (Acting NMBMOSS Co-ordinator)

- Facilitate the gazetting of the NMBM Environmental Management Framework (EMF); Support the NMBM Land Use Co-ordinator in terms of conflict resolution regarding the NMB MOSS; implement the rezoning process in terms of Land Use Planning Ordinance of 1985 to ensure that the correct legal zoning is enacted; Provide ecological comments on EIAs

7.3 Student Demonstrator (Part-time, ad hoc basis)

2004-2015 Nelson Mandela Metropolitan Municipality (NMBM), Port Elizabeth

- Demonstrating and Assisting various Botany modules; marking practicals

7.4 Herbarium Assistant

March 2008-December 2008 Nelson Mandela Metropolitan Municipality (NMBM), Port Elizabeth

- Identification of plant species

7.5 Botanical Specialist (ad hoc basis)

2006-ongoing Self-employed, Port Elizabeth

- Botanical and Ecological Specialist reports for Environmental Impact Assessments; Species identification and assistance with the writing of Water Research Commission (WRC) reports

- Education

2002-2004 Nelson Mandela Metropolitan University, Port Elizabeth

- BSc Biological Sciences
- Graduated cum laude

2005 Nelson Mandela Metropolitan University, Port Elizabeth

- BSc Hons Botany
- Graduated cum laude
- Terrestrial Ecology focus

2006-2008 Nelson Mandela Metropolitan University, Port Elizabeth

- MSc Botany
- "Seed germination and seedling survival in the mesic thickets of the Eastern Cape"
- Graduated cum laude

2009-incomplete Nelson Mandela Metropolitan University, Port Elizabeth

- PhD Botany
- "Determination of the Utilization Threshold for the maintenance of Thicket floral diversity"

Other Courses:

- 2018 IWRM, the NWA and Water Use Authorisations, focusing on WULAs and IWWMPs

Experience relating to Environmental Impact Assessments

BASIC ASSESSMENT REPORTS

- 2019 Basic Assessment report for Sogea Satom pre cast concrete wind tower factory, Prieska: Ongoing
- 2019 Basic Assessment Report for Ngqura Sand, NMBM: Ongoing

- 2018 Basic Assessment and EMPr for Schoenmakers Mining, NMBM
- 2017 BA and EMPr for the proposed Loerie Lime limestone mine near Loerie in the Eastern Cape
- 2017 BA and EMPr for Sandman Quarries cc, NMBM

ENVIRONMENTAL IMPACT REPORTS

- 2019 EIA and EMPr for King William's Town Quarry - Ongoing
- 2019 EIA Report and EMPr for Driftsands Mining, NMBM – Ongoing
- 2018: EIA Report and EMPr for Kleinfontein Mine, Loerie
- 2017 EIA Report and EMPr for the proposed Lloyds Clay Mine near Motherwell in the Eastern Cape
- 2017 EIA Report and EMPr for the proposed Prieska Gypsum Mine near Prieska in the Northern Cape

ENVIRONMENTAL AUDITS

- Environmental Audit for Glendore Rover Sandpit, NMBM
- Environmental Audit for Glendore Rover Limestone, NMBM
- 2017 Environmental Management Programme Performance Assessment for Sandman Quarries cc

Botanical Specialist Report

2019: C.R. Weatherall-Thomas. Botanical Impact Assessment for Ibhino Sand, NMBM

2019: C.R. Weatherall-Thomas. Botanical Assessment for Florida Heights, NMBM, Eastern Cape.

2019: Screening Report for Portion 3 of Farm Zwartebosch 347, Kouga Municipality.

2019: Botanical Screening Report for Kleinfontein Kalkmyn, Kouga Municipality.

2018: Botanical Specialist Report for Sogea Satom Pre Cast Concrete Wind Tower Factory, Siyathemba municipality, Northern Cape.

2018: Botanical Specialist Report for Driftsands Mining, NMBM, EC.

2018: Botanical Screening Report for Addo Drift East, Sundays River Valley Municipality.

- 2017: M. Fernandes, J. Adams and C. R. Weatherall-Thomas. Macrophyte health and updated estuary habitat and plant species data for Western Cape estuaries.
- 2017: E. Milne & C.R. Weatherall-Thomas. Botanical Impact of KimCrusher, Northern Cape.
- 2017: E. Milne & C.R. Weatherall-Thomas. Ecological Impact Report for Luke Mason Alluvial Diamond Mine, Northern Cape.
- 2015: A. Grobler & C.R. Weatherall-Thomas. Botanical Assessment of the proposed FreshGro Citrus Development, Sundays River Valley Municipality.
- 2012: C.R. Weatherall-Thomas & M. Louw. Proposed Redhouse-Chelsea arterial and walker drive extension: Evaluation of the type and state of vegetation, species of conservation concern, and rocky outcrops between the various arterial alignment alternatives.

Other Experience

Chairperson of the Algoa branch of the Botanical Society of South Africa

Custodians of Rare and Endangered Wildflowers Champion

Member of the organizing committee of the Thicket Forum

Competent in MS Word, Excel and Power Point, ArcGIS.

References

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Appendix 2 Declaration of Interest

1. DECLARATION BY THE SPECIALIST

I, Clayton Richard Weatherall-Thomas, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the Specialist

Name of Company:

Date

Appendix 3 List of Plant Species found at the proposed Ibhino Sand Mining Permit Area, NMBM and their conservation significance

FamilyName	TaxonName	Red List*	NCO**	ECECB***	NFA#	Alien†
APIACEAE	<i>Centella asiatica</i> (L.) Urb.	LC				
APOCYNACEAE	<i>Gomphocarpus fruticosus</i> (L.) Aiton f. subsp. <i>fruticosus</i>	LC	P	P		
APOCYNACEAE	<i>Vinca major</i> L.	NE				1b
ARALIACEAE	<i>Hedera helix</i> L.	NE				3
ASTERACEAE	<i>Carduus macrocephalus</i> Desf.	NE				1b
ASTERACEAE	<i>Cotula coronopifolia</i> L.	LC				
ASTERACEAE	<i>Delairea odorata</i> Lem.	LC				
ASTERACEAE	<i>Gamochaeta pennsylvanica</i> (Willd.) Cabrera	NE				*
ASTERACEAE	<i>Helichrysum argyrophyllum</i> DC.	LC				
ASTERACEAE	<i>Helichrysum dasyanthum</i> (Willd.) Sweet	LC				
ASTERACEAE	<i>Pseudognaphalium luteo-album</i> (L.) Hilliard & B.L.Burt	LC				
ASTERACEAE	<i>Senecio pterophorus</i> DC.	LC				
ASTERACEAE	<i>Stoebe plumosa</i> (L.) Thunb.	LC				
ASTERACEAE	<i>Taraxacum officinale</i> (L.) Weber ex F.H. Wigg	NE				*
ASTERACEAE	<i>Tolpis capensis</i> (L.) Sch.Bip.	LC				
BLECHNACEAE	<i>Blechnum capense</i> Burm.f.	LC				
CUPRESSACEAE	<i>Cupressus sempervirens</i> L.	NE				*
CYPERACEAE	<i>Carex mossii</i> Nelmes	LC				
CYPERACEAE	<i>Cyperus albostrigatus</i> Schrad.	LC				
CYPERACEAE	<i>Isolepis</i> sp.					
ERICACEAE	<i>Rhododendron indicum</i> (L.) Sweet	NE				*

FamilyName	TaxonName	Red List*	NCO**	ECECB***	NFA#	Alien†
FABACEAE	<i>Acacia mearnsii</i> De Wild.	NE				2
FABACEAE	<i>Cytisus scoparius</i> L.	NE				1a
FABACEAE	<i>Trifolium repens</i> L.	NE				*
HYPOXIDACEAE	<i>Hypoxis hemerocallidea</i> Fisch., C.A.Mey. & Avé-Lall.	LC		P		
IRIDACEAE	<i>Dietes grandiflora</i> N.E.Br.	LC	P	P		
MYRTACEAE						
NEPHROLEPIDACEAE	<i>Nephrolepis cordifolia</i> (L.) K. Presl	NE				1b
PHYTOLACCACEAE	<i>Phytolacca ocandra</i> L.	NE				1b
PINACEAE	<i>Pinus patula</i> Schlttdl. & Cham.	NE				2
PINACEAE	<i>Pinus radiata</i> D. Don	NE				2
PLANTAGINACEAE	<i>Digitalis purpurea</i> L.	NE				*
POACEAE	<i>Cynodon dactylon</i> (L.) Pers.	LC				
POACEAE	<i>Panicum maximum</i> Jacq.	LC				
POACEAE	<i>Poa annua</i> L.	NE				*
PTERIDACEAE	<i>Pteridium aquilinum</i> (L.) Kuhn	LC				
ROSACEAE	<i>Cotoneaster</i> sp.	NE				1b
ROSACEAE	<i>Crataegus monogyna</i> Jacq.	NE				*
ROSACEAE	<i>Duchesnea indica</i> (Andrews) Th.Wolf	NE				1b
ROSACEAE	<i>Prunus serotina</i> Ehrh.	NE				1b
ROSACEAE	<i>Rubus fruticosus</i> L.	NE				2
RUBIACEAE	<i>Anthospermum rigidum</i> Eckl. & Zeyh. subsp. <i>pumilum</i> (Sond.) Puff	LC				
SALICACEAE	<i>Populus tremula</i> L.	NE				*
SCROPHULARIACEAE	<i>Buddleja</i> sp.	NE				*
SOLANACEAE	<i>Solanum linnaeanum</i> Hepper & Jaeger	LC				
SOLANACEAE	<i>Solanum mauritianum</i> Scop.	NE				1b
SOLANACEAE	<i>Solanum pseudocapsicum</i> L.	NE				1b
STILBACEAE	<i>Halleria lucida</i> L.	LC	P			

* Species of Conservation Concern IUCN and Red List Categories

SANBI. 2017. Statistics: Red List of South African Plants version 2017.1.

LC = Least Concern

NT = Near Threatened

V = Vulnerable

EN = Endangered

CR = Critically Endangered

NE = Not Evaluated

** Nature and Environmental Conservation Ordinance of 1974

E = Schedule 3 Endangered Flora

P = Schedule 4 Protected Flora

*** Eastern Cape Environment Conservation Bill 9 of 2003

E = Schedule 3 Endangered Flora

P = Schedule 4 Protected Flora

National Forests Act No. 84 of 1998 – List of Protected Trees (published 8 September 2017)

P = Protected Tree Species

† National Environmental Management: Biodiversity Act No. 10 of 2004 – Alien and Invasive Species Lists (published 29 July 2016)

Category 1a Invasive species requiring compulsory control and which are identified as Category 1a listed

invasive species

Category 1b

Category 2

Category 3

* Alien species, but not a listed Invader

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