



# THE VEGETATION COMPLIANCE STATEMENT FOR THE PROPOSED CO- DISPOSAL FACILITY

**Delmas, Mpumalanga**

September 2020

CLIENT



Prepared by:

**The Biodiversity Company**

Cell: +27 81 319 1225

Fax: +27 86 527 1965

[info@thebiodiversitycompany.com](mailto:info@thebiodiversitycompany.com)

[www.thebiodiversitycompany.com](http://www.thebiodiversitycompany.com)



## Table of Contents

1	Introduction.....	3
2	Specialist Details .....	5
3	Terms of Reference .....	6
4	Project Description .....	6
5	Methodologies .....	9
5.1	Botanical Assessment .....	9
5.2	Floristic Analysis.....	9
6	Limitations .....	10
7	Results .....	10
7.1	Sensitivity and habitat summary .....	12
8	Conclusion.....	13
9	References.....	16
10	Appendices .....	17

## Tables

Table 8-1 Impact Management Outcomes..... 14

## Figures

Figure 1-1 Proposed site plan and layout (provided by EIMS) ..... 3  
Figure 1-2 Environmental Screening tool relative plant species theme. .... 4  
Figure 4-1 Locality of the project area..... 7  
Figure 4-2 Locality of the project area in relation to the MBSP Terrestrial..... 8  
Figure 7-1 Current land use of the project area ..... 11  
Figure 7-2 Google satellite images from 2012 (pre-mining) and 2014 (mining) showing the impact to the area. .... 12

# 1 Introduction

The Biodiversity Company was appointed by Environmental Impact Management Systems (Pty) Ltd (EIMS) to conduct a vegetation verification for the proposed 50ha Co-disposal facility within the existing Kangala Mining Right Area (MRA), Delmas, Mpumalanga and here forth be referred to as “project area”. (Figure 1-1).

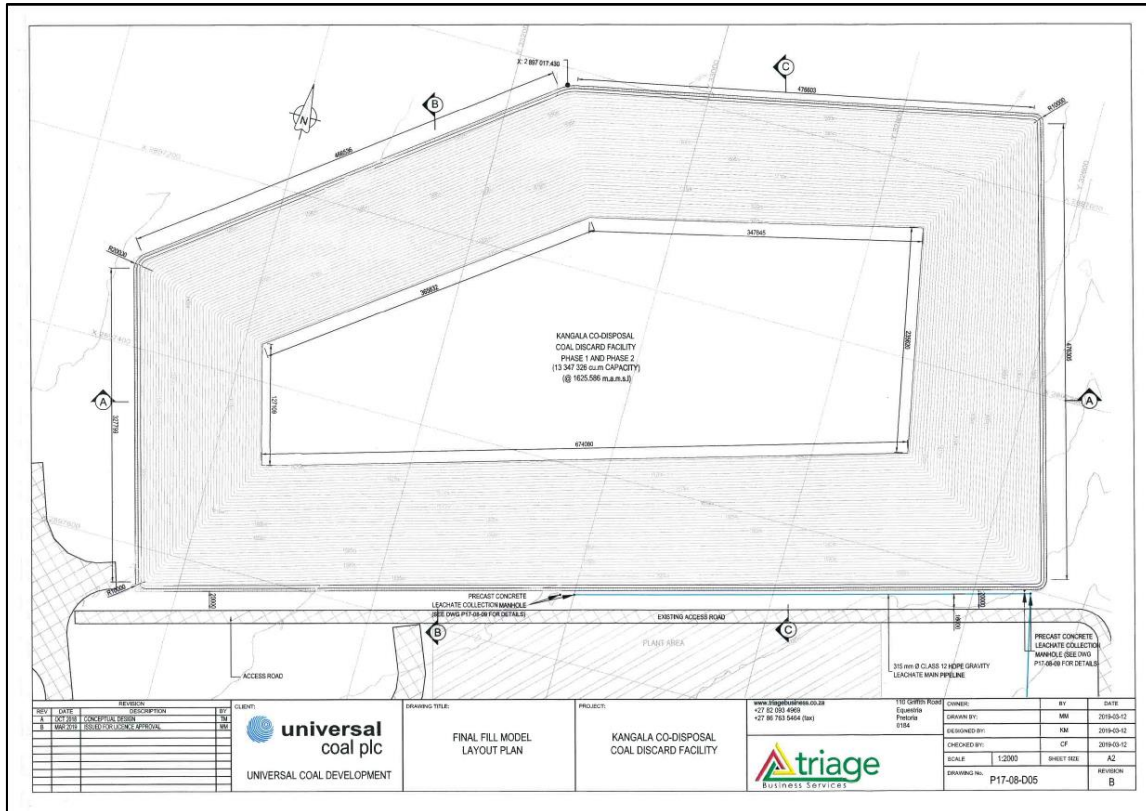


Figure 1-1 Proposed site plan and layout (provided by EIMS)

The approach adopted for the assessments has taken cognisance of the recently published Government Notice 320 in terms of NEMA dated 20 March 2020: “Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation”. The National Web based Environmental Screening Tool has characterised the plant species is assigned a “medium sensitivity”(Figure 1-2). It can be downloaded at (<https://screening.environment.gov.za/screeningtool/#/pages/welcome>).

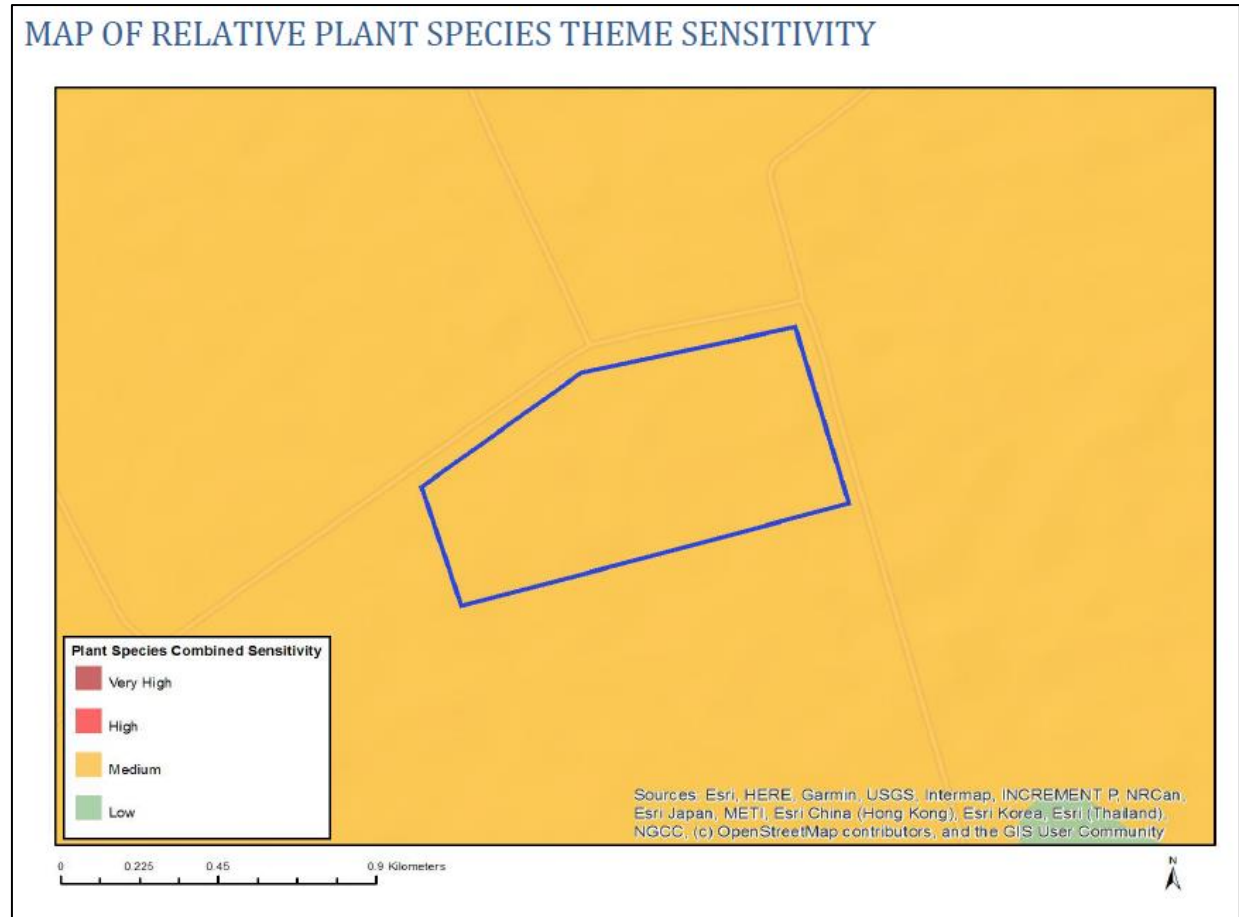





Figure 1-2 Environmental Screening tool relative plant species theme.

## 2 Specialist Details

<b>Report Name</b>	<b>THE VEGETATION COMPLIANCE STATEMENT FOR THE PROPOSED CO-DISPOSAL FACILITY</b>	
<b>Submitted to</b>		
<b>Report Writer</b>	<b>Martinus Erasmus</b> 	<p>Martinus Erasmus obtained his B-Tech degree in Nature Conservation in 2016 at the Tshwane University of Technology. Martinus has been conducting EIAs, basic assessments and assisting specialists in field during his studies since 2015.</p>
<b>Report reviewer</b>	<b>Andrew Husted</b> 	<p>Andrew Husted is Pr Sci Nat registered (400213/11) in the following fields of practice: Ecological Science, Environmental Science and Aquatic Science. Andrew is an Aquatic, Wetland and Biodiversity Specialist with more than 12 years' experience in the environmental consulting field. Andrew has completed numerous wetland training courses, and is an accredited wetland practitioner, recognised by the DWS, and also the Mondi Wetlands programme as a competent wetland consultant.</p>
<b>Declaration</b>	<p>The Biodiversity Company and its associates operate as independent consultants under the auspice of the South African Council for Natural Scientific Professions. We declare that we have no affiliation with or vested financial interests in the proponent, other than for work performed under the Environmental Impact Assessment Regulations, 2017. We have no conflicting interests in the undertaking of this activity and have no interests in secondary developments resulting from the authorisation of this project. We have no vested interest in the project, other than to provide a professional service within the constraints of the project (timing, time and budget) based on the principals of science.</p>	

### 3 Terms of Reference

The Terms of Reference (ToR) included the following:

- Description of the baseline receiving environment specific to the field of expertise (general surrounding area as well as site specific environment);
- Identification and description of any sensitive receptors in terms of relevant specialist disciplines (flora) that occur in the project area, and the manner in which these sensitive receptors may be affected by the activity;
- Identify 'significant' ecological, botanical features within the proposed project areas;
- Identification of conservation significant habitats around the project area which might be impacted;
- Screening to identify any critical issues (potential fatal flaws) that may result in project delays or rejection of the application; and
- Provide outcomes to be included in the Management plan.

### 4 Project Description

The project location (Figure 4-1), at a regional level, is situated near Delmas within the Mpumalanga Province. The land uses surrounding the project area predominantly includes agriculture and mining. The Mpumalanga Biodiversity Sector Plan (MBSP) CBA database designates the area as a Moderately Modified or Heavily Modified Areas (MMA's or HMA's)(Figure 4-2). These areas (sometimes called 'transformed' areas) are areas that have been heavily modified by human activity so that they are by-and-large no longer natural, and do not contribute to biodiversity targets (MTPA, 2014). Some of these areas may still provide limited biodiversity and ecological infrastructural functions but their biodiversity value has been significantly, and in many cases irreversibly, compromised.

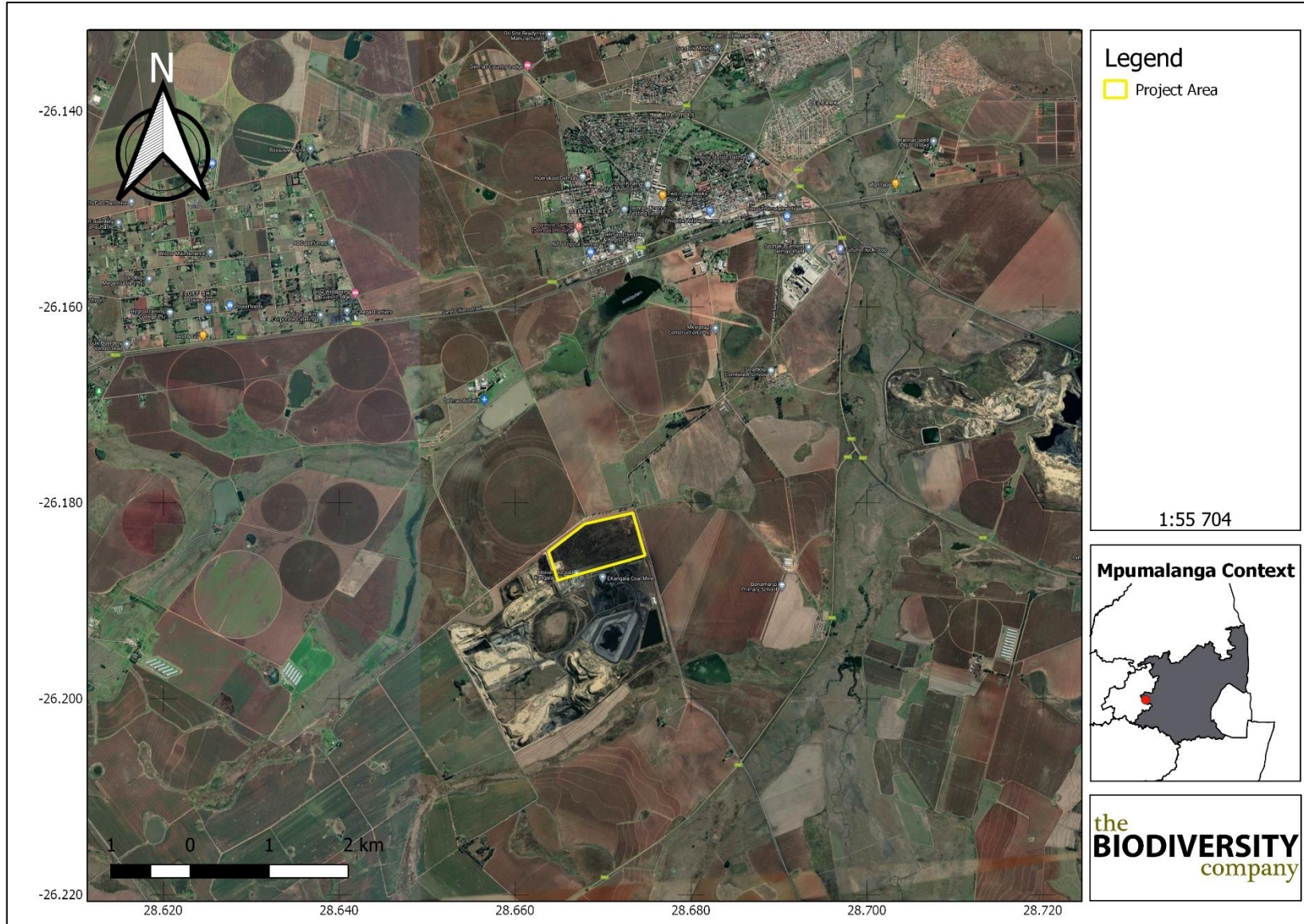


Figure 4-1 Locality of the project area



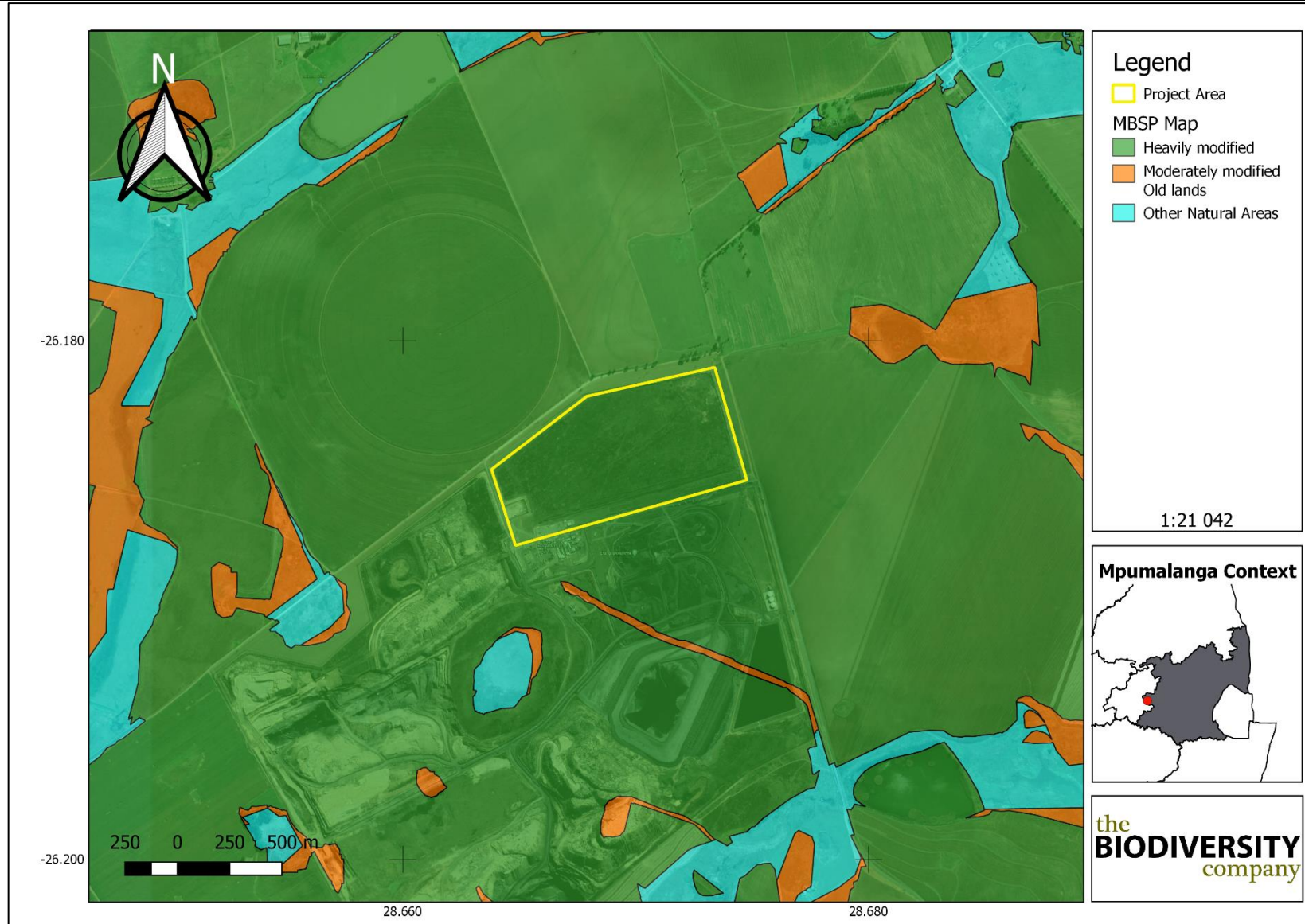


Figure 4-2 Locality of the project area in relation to the MBSP Terrestrial

## 5 Methodologies

### 5.1 Botanical Assessment

The botanical assessment encompassed an assessment of all the vegetation units and habitat types within the project area. The focus was on an ecological assessment of habitat types as well as identification of any Red Data species within the known distribution of the project area. The South African National Biodiversity Institute (SANBI) provides an electronic database system, namely the Botanical Database of Southern Africa (BODATSA), to access distribution records on southern African plants. This is a new database which replaces the old Plants of Southern Africa (POSA) database. The POSA database provided distribution data of flora at the quarter degree square (QDS) resolution. The Red List of South African Plants website (SANBI, 2017) was utilized to provide the most current account of the national status of flora. Relevant field guides and texts consulted for identification purposes in the field during the surveys included the following:

- Field Guide to the Wild Flowers of the Highveld (Van Wyk & Malan, 1997);
- A field guide to Wild flowers (Pooley, 1998);
- Guide to Grasses of Southern Africa (Van Oudtshoorn, 1999);
- Orchids of South Africa (Johnson & Bytebier, 2015);
- Guide to the Aloes of South Africa (Van Wyk & Smith, 2014);
- Mesembs of the World (Smith *et al.*, 1998);
- Medicinal Plants of South Africa (Van Wyk *et al.*, 2013);and
- Identification guide to southern African grasses. An identification manual with keys, descriptions and distributions (Fish *et al.*, 2015).

Additional information regarding ecosystems, vegetation types, and Species of Conservation Concern (SCC) included the following sources:

- The Vegetation of South Africa, Lesotho and Swaziland (Mucina & Rutherford, 2012); and
- Red List of South African Plants (Raimondo *et al.*, 2009; SANBI, 2016).

The field work methodology included the following survey techniques:

- Timed meanders;
- Sensitivity analysis based on structural and species diversity; and
- Identification of floral red-data species.

### 5.2 Floristic Analysis

The fieldwork was undertaken for the extent of footprint area proposed for the co-disposal facility. The focus of the fieldwork was therefore to maximise coverage to perform a vegetation and ecological assessment.

Homogenous vegetation units were subjectively identified using satellite imagery and existing land cover maps. The floristic diversity and search for flora SCC were conducted through timed meanders for the extent of the proposed footprint area.

The timed random meander method is a highly efficient method for conducting floristic analysis, specifically in detecting flora SCC and maximising floristic coverage. In addition, the method is time and cost effective and highly suited for compiling flora species lists and therefore gives a rapid indication of flora diversity. The timed meander search was performed based on the original technique described by Goff *et al.* (1982). Suitable habitat for SCC were identified according to Raimondo *et al.* (2009) and targeted as part of the timed meanders.

At each sample site notes were made regarding current impacts (e.g. livestock grazing, erosion etc.), subjective recording of dominant vegetation species and any sensitive features (e.g. wetlands, outcrops etc.). In addition, opportunistic observations were made while navigating through the project area.

## 6 Limitations

The following limitations should be noted for the assessment:

- Only a single season survey was conducted for the assessment, this would constitute an early wet season survey; and
- This assessment has not assessed any temporal trends for the project.

## 7 Results

The project area was found to be historically transformed from its original state by agriculture, with a dense stand of weeds covering the majority of project area (Figure 7-1). The dominant weeds present consisted of *Tagetes minuta*, *Bidens pilosa*, *Cosmos bipinnatus* and *Conyza bonariensis*. It is the opinion of the specialists that the project area does not support species of conservation concern and due the nature of the historic modification to area, it is at such a point where it wouldn't be able to return to a more natural state without anthropogenic rehabilitation. The historical agricultural impact had taken place prior to the mining of the area (Figure 7-2)



Figure 7-1 Current land use of the project area



Figure 7-2 Google satellite images from 2012 (pre-mining) and 2014 (mining) showing the impact to the area.

## 7.1 Sensitivity and habitat summary

The project area was historically transformed by agriculture as has been assigned a low sensitivity. This area has a high number of alien species present. A change to the land use is not envisioned to have any notable negative effect on the proposed footprint area due to the current transformed state of the area, and due to the project area being isolated from any natural surrounding areas. The project area does not represent the medium plant sensitivity as per the screening report (Figure 1-2), as it has been determined to be low.

## 8 Conclusion

The project area has been transformed from its original state by agriculture. The area does not represent the sensitivity as identified in the screening tool. The project area has an overall low sensitivity. Although no sensitive species were found in the project area it is still likely that such species could occur nearby or access / forage in the project area. It is thus important that the management outcomes be adhered to in order to mitigate an impact that might stem from the development. The following generic management outcomes were suggested and should be included into the Environmental Management Programme (EMPr) of the MRA (Table 8 1).

Table 8-1 Impact Management Outcomes

Management outcome: Vegetation and Habitats				
Impact Management Actions	Implementation		Monitoring	
	Phase	Responsible Party	Aspect	Frequency
<p>All construction/operational and access must make use of the existing roads;                      A spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use. No servicing of equipment on site during construction unless necessary. All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers                      Leaking equipment and vehicles must be repaired immediately or be removed from project area to facilitate repair                      Storm Water run-off &amp; Discharge Water Quality causing erosion                      A fire management plan needs to be complied and implemented to restrict the impact fire might have on the surrounding areas.</p>	Construction/Operational Phase	Environmental Officer & Design Engineer	Roads and paths used	Ongoing
	Life of operation	Environmental Officer & Contractor	Spill events, Vehicles dripping.	Ongoing
	Life of operation	Environmental Officer & Contractor	Leaks and spills	Ongoing
	Life of operation	Environmental Officer & Design Engineer	Water Quality	Monthly
	Closure Phase/Rehabilitation phase	Environmental Officer & Contractor	Fire Management	During Phase
Management outcome: Fauna				
Impact Management Actions	Implementation		Monitoring	
	Phase	Responsible Party	Aspect	Frequency
<p>A qualified environmental control officer must be on site when construction begins. The area must be walked though prior to construction to ensure no faunal species remain in the habitat and get killed. Should animals not move out of the area on their own relevant specialists must be contacted to advise on how the species can be relocated.</p> <p>Clearing of the area must be done in a systematic manner, moving from one end to the other to allowing resident fauna to move off. Clearing should only take place during daytime hours.</p>	Life of operation	Environmental Officer, Contractor	Presence of any faunal SCC.	Ongoing

**Management outcome: Alien Vegetation**

Impact Management Actions	Implementation		Monitoring	
	Phase	Responsible Party	Aspect	Frequency
<b>Compilation of and implementation of an alien vegetation management plan.</b>	Life of operation	Project manager, Environmental Officer & Contractor	Assess presence and encroachment of alien vegetation	Quarterly monitoring

**Management outcome: Dust**

Impact Management Actions	Implementation		Monitoring	
	Phase	Responsible Party	Aspect	Frequency
<b>Dust-reducing mitigation measures must be put in place and must be strictly adhered to, during the construction phase. This includes wetting of exposed soft soil surfaces and not conducting activities on windy days which will increase the likelihood of dust being generated.</b>	Construction phase	Contractor	Dustfall	As per the air quality guidelines



## 9 References

- Bates, M.F., Branch, W.R., Bauer, A.M., Burger, M., Marais, J., Alexander, G.J & de Villiers, M.S. (Eds). (2014). Atlas and Red List of Reptiles of South Africa, Lesotho and Swaziland. Suricata 1. South African Biodiversity Institute, Pretoria.
- BODATSA-POSA. (2019). Plants of South Africa - an online checklist. POSA ver. 3.0. <http://newposa.sanbi.org/>. (Accessed: July 2020).
- Fish, L., Mashau, A.C., Moeaha, M.J. & Nembudani, M.T. (2015). Identification Guide to Southern African Grasses: An Identification Manual with Keys, Descriptions, and Distributions. SANBI, Pretoria.
- Goff, F., Dawson, G., & Rochow, J. (1982). Site examination for threatened and endangered plant species. *Environmental Management*, 6(4), 307-316.
- Johnson, S. & Bytebier, B. (2015). Orchids of South Africa: A Field Guide. Struik publishers, Cape Town.
- MTPA. (2014). Mpumalanga Biodiversity Sector Plan Handbook. Lötter, M.C., Cadman, M.J. & Lechmere-Oertel, R.G. (Eds.). Mpumalanga Tourism and Parks Agency, Mbombela (Nelspruit).
- Mucina, L. & Rutherford, M.C. (Eds.). (2006). The vegetation of South Africa, Lesotho and Swaziland. Strelizia 19. South African National Biodiversity Institute, Pretoria South African.
- National Environmental Screening Tool 2017. Available from Department of Environmental Affairs [website](https://screening.environment.gov.za/screeningtool/index.html#/pages/welcome) (<https://screening.environment.gov.za/screeningtool/index.html#/pages/welcome>), downloaded.
- Pooley, E. (1998). A Field Guide to Wild Flowers: KwaZulu-Natal and Eastern Region. The Flora Publications Trust; ABC Bookshop, Durban.
- Raimonde, D. (2009). Red list of South African Plants. SANBI, Pretoria.
- SANBI. (2016). Red List of South African Plants version 2017.1. [Redlist.sanbi.org](http://redlist.sanbi.org) (Accessed: July 2020).
- Smith, G.F., Chesselet, P., van Jaarsveld, E.J., Hartmann, H., Hammer, S., van Wyk, B., Burgoyne, P., Klak, C. & Kurzweil, H. (1998). Mesembs of the world. Briza Publishers, Pretoria.
- Van Oudtshoorn, F. (2004). Guide to the Grasses of South Africa. Second Edition. Briza Publikasies, Pretoria.
- Van Wyk, B. & Van Wyk, P. (1997). Field guide to trees of Southern Africa. Struik Publishers, Cape Town.
- Van Wyk, B. & Malan, S. (1997). Field Guide to the Wild Flowers of the Highveld: Also Useful in Adjacent Grassland and Bushveld, Struik Publishers, Cape Town.
- Van Wyk, B-E., Van Oudtshoorn, B. & Gericke, N. (2013). Medicinal Plants of South Africa. Briza Publications, Pretoria.

## 10 Appendices

### *Appendix A Specialist declarations*

#### **DECLARATION**

I, Martinus Erasmus, 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 71 and is punishable in terms of Section 24F of the Act.



Martinus Erasmus

Terrestrial Ecologist

The Biodiversity Company

September 2020

## DECLARATION

I, Andrew Husted, 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 71 and is punishable in terms of Section 24F of the Act.



Andrew Husted

Terrestrial Ecologist

The Biodiversity Company

September 2020

## Appendix B Specialists CVs

# Martinus Erasmus

## B-Tech Nature Conservation (*Cand Sci Nat*)

Cell: +27 82 448 1667

Email: [martinus@thebiodiversitycompany.com](mailto:martinus@thebiodiversitycompany.com)

Identity Number: 9209035136082

Date of birth: 03 September 1992



### Profile Summary

Working experience throughout South Africa and Africa.

Specialist experience with mining, hydropower, renewable energy, development and veld management.

Specialist guidance, support and facilitation for the compliance with legislative processes, for in-country requirements.

Specialist expertise includes Botany and Terrestrial Ecology.

### Areas of Interest

Mining, Oil & Gas, Renewable Energy & Bulk Services Infrastructure Development, Sustainability and Conservation.

### Key Experience

- Environmental, Social and Health Impact Assessments (ESHIA)
- Terrestrial Ecological Assessments
- Rehabilitation Plans and Monitoring
- Botany, especially in the Limpopo, Mpumalanga, Gauteng and North-West provinces in South-Africa.
- Veld management and Veld Condition

### Countries worked in

Guinea  
Lesotho  
Liberia  
Mozambique  
Nigeria  
South Africa  
Swaziland

### Nationality

South African

### Languages

English – Proficient  
Afrikaans – Proficient

### Qualifications

- B-Tech in Nature Conservation, Tshwane University of Technology, Pretoria, South Africa.
- National Diploma in Nature Conservation, Tshwane University of Technology, Pretoria, South Africa.
- Cand Sci Nat (118630)
- SASS Accredited

## SELECTED PROJECT EXPERIENCE

**Project Name: A biodiversity baseline and impact assessment for the proposed Umsimbithi Emakhazeni Coal Mining Project, in Mpumalanga Province, South Africa.**

Personal position / role on project: Terrestrial Ecologist.

Location: Mpumalanga Province, South Africa (2017).

Main project features: To conduct a dual season terrestrial ecology baseline and impact assessment for the expected impact footprint area.

**Project Name: Biodiversity Assessment associated with eThembeni Integrated Mixed-use Housing Development, KwaZulu-Natal province.**

Personal position / role on project: Terrestrial Ecologist

Location: South Africa (2017).

Main project features: Conduct a detailed terrestrial ecology basic assessment for the expected impact footprint area.

**Project Name: A biodiversity baseline and impact assessment for the proposed Pavua Hydropower Project, in Sofala Province, Central Mozambique.**

Personal position / role on project: Assistant Botanist

Location: Sofala Province, Mozambique (2017).

Main project features: To conduct a dual season terrestrial and aquatic ecological baseline and impact assessment for the expected impact footprint area, including Gorongosa National. The study was required to meet national and IFC requirements, including a Critical Habitat assessment.

**Project Name: A biodiversity baseline and impact assessment for the proposed Gold Mine Project, in Grand Cape Mt Province, Liberia.**

Personal position / role on project: Assistant to specialist/ field technician

Location: Grand Cape Mt Province, Liberia (2015).

Main project features: To conduct a dual season ecological baseline assessment for the expected impact footprint area. The study was required to meet national and IFC (International Finance Corporation) requirements, including a Critical Habitat assessment.

**Project Name: A biodiversity baseline and impact assessment for the proposed Siguirri Gold Mine Project, in Kankan Province, Guinea.**

Personal position / role on project: Terrestrial Ecologist

Location: Siguirri, Guinea, West-Africa (2018)

Main project features: To conduct a dual season terrestrial ecological baseline and impact assessment for the expected impact footprint area. The study was required to meet national and IFC (International Finance Corporation) requirements, including a Critical Habitat assessment.

**Project Name: A biodiversity baseline and impact assessment for the proposed Nondvo Dam Project in Eswatini, Southern Africa**

Personal position / role on project: Terrestrial Ecologist (Botany)

Location: Swaziland (2019)

Main project features: To conduct a dual season terrestrial ecological baseline and impact assessment for the expected impact footprint area. The study was required to meet national and IFC (International Finance Corporation) requirements, including a Critical Habitat assessment.

**Project Name: Biodiversity Baseline & Impact Assessment for the proposed Cuamba 15MW Solar PV Plant, Cuamba, Mozambique**

Personal position / role on project: Terrestrial Ecologist (Botany)

Location: Mozambique (2019)

Main project features: To conduct a dual season terrestrial and aquatic ecological baseline and impact assessment for the proposed development.

**OVERVIEW**

An overview of the specialist technical expertise includes the following:

- Terrestrial Ecological Assessments.
- Faunal surveys which includes mammals, birds, amphibians and reptiles.
- Floral surveys
- Rehabilitation Plans and Monitoring for the terrestrial component.
- Botany, especially in the Limpopo, Mpumalanga, Gauteng and North-West provinces in South-Africa.
- Veld management
- Environmental Control Officer (ECO) experience

**EMPLOYMENT EXPERIENCE**

**CURRENT EMPLOYMENT: The Biodiversity Company (August 2017 – Present)**

I started working at The Biodiversity Company in mid-2017.

The team at The Biodiversity Company have conducted stand-alone specialist studies and provided overall guidance of studies with a pragmatic approach for the management of biodiversity that takes into account all the relevant stakeholders, most importantly the environment that is potentially affected. We manage risks to the environment to reduce impacts with practical, relevant and measurable methods.

My roles include:

- Faunal and Floral surveys for baseline, basic or impact assessments;
- Floral surveys for vegetation verifications, management plans and alien invasive species control;
- Report writing;
- Equipment management;
- Technical assistant for fieldwork for the aquatics and wetland departments; and
- Specialist inputs to the above mention services.

**EMPLOYMENT: Enviro-Insight (January 2015 – July 2017)**

Enviro-Insight assigned me to the role of general and field assistant. I assisted most specialists in field but also had administrative duties:

- The processing and uploading of several organisms to the ADU (Animal Demography Unit) virtual museum, which assists in obtaining spatial data concerning those species.
- Assisted with the generation of the companies' DNA database which distributes the DNA samples to the South African National Biodiversity Institute (SANBI).
- Assisted with field work involving all the different specialist work which includes mammalogy, herpetology and botany.

#### **ADDITIONAL EXPERIENCE**

<b><i>Compliance audits</i></b>	Conducting site investigations in order to determine the level of compliance attained, ensuring that the client maintains an appropriate measure of compliance with environmental regulations by means of a legislative approach
<b><i>Control officer</i></b>	Acting as an independent Environmental Control Officer (ECO), acting as a quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts
<b><i>Public consultation</i></b>	The provision of specialist input in order to communicate project findings as well as assist with providing feedback if and when required.
<b><i>Closure</i></b>	Primarily the review of closure projects, with emphasis on the closure cost calculations. Support was also provided by assisting with the measurements of structures during fieldwork.

#### **ACADEMIC QUALIFICATIONS**

**B-Tech in Nature Conservation, Tshwane University of Technology, Pretoria, South Africa:**

**Title:** The expansion of the distribution of *Xenopus muelleri*.

**National Diploma in Nature Conservation , Tshwane University of Technology, Pretoria, South Africa**

# Andrew Husted

## M.Sc Aquatic Health (*Pr Sci Nat*)

Cell: +27 81 319 1225

Email: [andrew@thebiodiversitycompany.com](mailto:andrew@thebiodiversitycompany.com)

Identity Number: 7904195054081

Date of birth: 19 April 1979



### Profile Summary

Working experience throughout South Africa, West and Central Africa and also Armenia.

Specialist experience with on-shore drilling, mining, engineering, hydropower and renewable energy.

Experience with project management of national and international multi-disciplinary projects. Including managing and compiling ESHIAs and EMPs

Specialist guidance, support and facilitation for the compliance with legislative processes, for in-country requirements, and international lenders.

Specialist expertise include Instream Flow and Ecological Water Requirements, aquatic ecology and wetlands resources.

### Areas of Interest

Mining, Oil & Gas, Renewable Energy & Bulk Services  
 Infrastructure Development,  
 Sustainability and Conservation.

### Key Experience

- Familiar with World Bank, Equator Principles and the International Finance Corporation requirements
- Environmental, Social and Health Impact Assessments (ESHIA)
- Environmental Management Programmes (EMP)
- Ecological Water Requirement determination experience
- Wetland delineations and ecological assessments
- Terrestrial Ecological Assessments
- Aquatic Ecological Assessments
- Rehabilitation Plans and Monitoring
- Aquaculture

### Country Experience

Botswana, Cameroon  
 Democratic Republic of Congo  
 Ghana, Ivory Coast, Lesotho  
 Liberia, Mali, Mozambique  
 Nigeria, Republic of Armenia, Senegal  
 Sierra Leone, South Africa  
 Swaziland, Tanzania

### Nationality

South African

### Languages

English – Proficient

Afrikaans – Conversational

German - Basic

### Qualifications

- MSc (University of Johannesburg) – Aquatic Health.
- BSc Honours (Rand Afrikaans University) – Aquatic Health
- BSc Natural Science
- Pr Sci Nat (400213/11)
- Certificate of Competence: Mondri Wetland Assessments
- Certificate of Competence: Wetland WET-Management
- SASS 5 (Expired) – Department of Water Affairs and Forestry for the River Health Programme
- EcoStatus application for rivers and streams



Publication of scientific journals  
and articles.

#### **SELECTED PROJECT EXPERIENCE**

##### **Project Name: The Environmental and Social Impact Assessment (ESIA) the proposed Nondvo Dam**

Client: WSP

Personal position / role on project: Project Manager.

Location: Swaziland

Main project features: To conduct a dual season terrestrial and aquatic ecological baseline and impact assessment for the proposed dam. The study was required to meet national and IFC requirements, including a Critical Habitat assessment.

##### **Project Name: The environmental flow assessment for the Mara River system**

Client: IHE Delft Institute for Water Education

Personal position / role on project: Project Manager / Freshwater Ecologist

Location: Tanzania

Main project features: To conduct a dual season campaign to the Lower Mara River Basin in Tanzania to collect hydrological and ecological information as part of an environmental flow assessment on the Tanzanian side of the Mara River in collaboration with GIZ and NBI-NELSAP.

##### **Project Name: The Environmental and Social Impact Assessment (ESIA) the proposed solar photovoltaic facility and transmission in Cuamba**

Client: WSP

Personal position / role on project: Project Manager.

Location: Mozambique

Main project features: To conduct a single season terrestrial and aquatic ecological baseline and impact assessment for the proposed dam. The study was required to meet national and IFC requirements, including a Critical Habitat assessment.

##### **Project Name: A biodiversity baseline assessment for the proposed Siguiri Gold Mine Project, in Kankan Province, Guinea.**

Client: SRK Consulting.

Personal position / role on project: Project Manager.

Location: Siguiri, Guinea, West-Africa (2018).

Main project features: To conduct a dual season ecological baseline assessment for the expected impact footprint area. The study was required to meet national and IFC requirements, including a Critical Habitat assessment.

**Project Name: A biodiversity baseline and impact assessment for the proposed Lesotho Bulk Water Supply Scheme, Lesotho.**

Client: WSP.

Personal position / role on project: Wetland & Aquatic Ecologist, PROBFLO and Project Manager.

Location: Mohale's Hoek, Lesotho (2018).

Main project features: To conduct a dual season terrestrial and aquatic ecological baseline and impact assessment for the pipeline route and proposed weir. The study was required to meet national and IFC requirements, including a Critical Habitat assessment. The study also contributed to prescribing Instream Flow Requirements using PROBFLO for the system.

**Project Name: A biodiversity baseline and impact assessment for the proposed Pavua Hydropower Project, in Sofala Province, Central Mozambique.**

Client: Mott MacDonald.

Personal position / role on project: Project Manager.

Location: Sofala Province, Mozambique (2017).

Main project features: To conduct a dual season terrestrial and aquatic ecological baseline and impact assessment for the expected impact footprint area, including Gorongosa National. The study was required to meet national and IFC requirements, including a Critical Habitat assessment. The study also contributed to prescribing Instream Flow Requirements for the system.

**EMPLOYMENT EXPERIENCE**

**CURRENT EMPLOYMENT: The Biodiversity Company (January 2015 – Present)**

I founded The Biodiversity Company in 2015, now consisting of experienced ecologists who provide technical expertise and policy advice to numerous sectors, such as mining, agriculture, construction and natural resources. The team at The Biodiversity Company have conducted stand-alone specialist studies, and provided overall guidance of studies with a pragmatic approach for the management of biodiversity that takes into account all the relevant stakeholders, most importantly the environment that is potentially affected. We manage risks to the environment to reduce impacts with practical, relevant and measurable methods.

**EMPLOYMENT: Digby Wells Environmental (October 2013 – December 2014)**

Digby Wells assigned me to the role of Country Manager for the United Kingdom. This was a new endeavour for the company as the company's global footprint continues to increase. The primary responsibilities for the role included the following:

- **Client liaison** to be able to interact more efficiently and personally with current mining clients, mining industry service providers, legal firms and banking institutions in order to introduce Digby Wells as a services provider with the aim of securing work.
- **Project management** for international projects which may require a presence in the United Kingdom, this was dependent on the location and needs of the client. These projects would mostly be based on the Equator Principles (EP) and International Finance Corporation (IFC) Performance Standards.
- **Technical input** to provide specialist technical expertise for projects, this included fauna, aquatic ecology, wetlands and rehabilitation. Continued with the design and implementation of Biodiversity and Land Management Plans to assist clients with managing the natural

resources. Responsibilities also included the mentorship and management (including reviewing and guiding) other expertise such as flora, fauna and pedology.

#### **EMPLOYMENT: Digby Wells Environmental (March 2012 – September 2013)**

Manager of a multi-disciplinary department of scientists providing specialist services in support of national and international requirements as well as best practice guidelines, primarily focussing on the mining sector. In addition to managing the department, I was also expected to contribute specialist services, most notably focusing on water resources. Further responsibilities also included the management of numerous projects on a national or international scale. A general overview of the required responsibilities are as follows:

- **Project management** for single as well as multi-disciplinary studies on a national and international scale. This included legislation and commitments for the respective country being operated in, as well as included the World Bank (WB), EP and IFC requirements.
- **Individual and/or team management** in order to provide mentoring and supportive structures for development and growth in support of the company's strategic objectives.
- **Scientific report writing** to ensure that the relevant standards and requirements have been attained, namely local country legislation, as well as WB, EP and IFC requirements.
- **Report reviewing** in order to ensure compliance and consideration of relevant legislation and guidelines and also quality control.
- **Specialist management** to facilitate the collaboration and integration of specialist skills for the respective projects. This also included the development of Biodiversity and Land Management Plan for clients.
- **Client Resource Manager** for numerous clients in order to establish as well as maintain working relationships.

An overview of the tenure working with the company is provided below:

- **October 2013 – December 2014: London Operations Manager** – Deployed to establish a presence for the company (remote office) in the United Kingdom by means of generating project work to support the employment of staff and operation of a business structure.
- **March 2012 – September 2013: Biophysical Department Manager** – Responsible for the development and growth of the department to consist of four specialist units. This included the development of a new specialist unit, namely Rehabilitation.
- **January 2011 - February 2012: Ecological Unit Manager** – In addition to implementing aquatic and wetland specialist services, the role required the overall management of additional specialist services which included fauna & flora.
- **June 2010 - December 2010: Aquatic Services Manager** – This required the marketing and implementation of specialist programmes for the client base such as biomonitoring and wetland off-set strategies. In addition to this, this also included expanding on the existing skill set to include services such as toxicity, bioaccumulation and ecological flow assessments.
- **August 2008: Aquatic ecologist** – Employed as a specialist to establish the aquatic services within the company. In addition to this, wetland specialist services were added to the existing portfolio.

#### **PREVIOUS EMPLOYMENT: Econ@UJ (University of Johannesburg)**

- June 2007 – July 2008: Junior aquatic ecologist
  - Researcher
  - Technical assistant for fieldwork
  - Reporting writing
  - Project management

## ADDITIONAL EXPERIENCE

<b><i>Compliance audits</i></b>	Conducting site investigations in order to determine the level of compliance attained, ensuring that the client maintains an appropriate measure of compliance with environmental regulations by means of a legislative approach
<b><i>Control officer</i></b>	Acting as an independent Environmental Control Officer (ECO), acting as a quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts
<b><i>Screening studies</i></b>	Project investigations in order to determine the level of complexity for the environmental and social studies required for a project. This is a form of risk assessment to guide the advancement of the project.
<b><i>Public consultation</i></b>	The provision of specialist input in order to communicate project findings as well as assist with providing feedback if and when required.
<b><i>Water use licenses</i></b>	Consultation with the relevant authorities in order to establish the project requirements, as well as provide specialist (aquatics/wetland) input for the application in order to achieve authorisation.
<b><i>Closure</i></b>	Primarily the review of closure projects, with emphasis on the closure cost calculations. Support was also provided by assisting with the measurements of structures during fieldwork.
<b><i>Visual</i></b>	The review of visual studies as well as the collation of field data to be considered for the visual interpretation for the project.

## ACADEMIC QUALIFICATIONS

**University of Johannesburg, Johannesburg, South Africa (2009):** MAGISTER SCIENTIAE (MSc)  
- Aquatic Health:

**Title:** *Aspects of the biology of the Bushveld Smallscale Yellowfish (Labeobarbus polylepis): Feeding biology and metal bioaccumulation in five populations.*

**Rand Afrikaans University (RAU), Johannesburg, South Africa (2004):** BACCALAUREUS SCIENTIAE CUM HONORIBUS (Hons) – Zoology

**Rand Afrikaans University (RAU), Johannesburg, South Africa (2001 - 2004):** BACCALAUREUS SCIENTIAE IN NATURAL AND ENVIRONMENTAL SCIENCES. Majors: Zoology and Botany.

## PUBLICATIONS

Mahomed D, Husted A, Fry C, Downsa CT and O'Brien GC. 2019. Spatial shifts and habitat partitioning of ichthyofauna within the middle-lower region of the Pungwe Basin, Mozambique, *Journal of Freshwater Ecology*, 34:1, 685-702, DOI: 10.1080/02705060.2019.1673221

Tate RB and Husted, A. 2015. Aquatic Biomonitoring in the upper reaches of the Boesmanspruit, Carolina, Mpumalanga, South Africa. *African Journal of Aquatic Science*.

Tate RB and Husted A. 2013. Bioaccumulation of metals in *Tilapia zillii* (Gervai, 1848) from an impoundment on the Badeni River, Cote D'Ivoire. African Journal of Aquatic Science.

O'Brien GC, Bulfin JB, Husted A. and Smit NJ. 2012. Comparative behavioural assessment of an established and new Tigerfish (*Hydrocynus vittatus*) population in two manmade lakes in the Limpopo catchment, Southern Africa. African Journal of Aquatic Science.

Tomschi, H, Husted, A, O'Brien, GC, Cloete, Y, Van Dyk C, Pieterse GM, Wepener V, Nel A and Reisinger U. 2009. Environmental study to establish the baseline biological and physical conditions of the Letsibogo Dam near Selebi Phikwe, Botswana. EC Multiple Framework Contract Beneficiaries.8 ACP BT 13 – Mining Sector (EDMS). Specific Contract N° 2008/166788. Beneficiary Country: Botswana. By: HPC HARRESS PICKEL CONSULT AG

Husted A. 2009. Aspects of the biology of the Bushveld Smallscale Yellowfish (*Labeobarbus polylepis*): Feeding biology and metal bioaccumulation in five populations. The University of Johannesburg (Thesis).

---