

7.8. Appendix H: Details of EAP and Expertise

The following details are for the EAP who compiled the BAR as well as his expertise to perform the Basic Assessment process.

Joseph Alexander Mülders

Work Experience Report

Profession:	Systems Ecology
Highest qualification:	M.Sc. Environmental Management
Professional Registration:	Pr.Sci.Nat 118063/17
Current firm:	Prime Africa Consultants (Since 2014)



Summary

A systems ecologist with 3 years of professional experience in the environmental management industry, including socio-economic investigations and classifications towards sustainable use and development of the natural environment.

Joseph completed his undergraduate studies in zoology (2006-2008) before deciding to pursue a career within the more holistic scope of the socio-environmental sector. I completed my honours (2009) in environmental management and analysis and my masters (2012-2015) in environmental management. During my honours year I focused on environmental impact assessment and auditing, environmental change, systems ecology, South African environmental law (EMI training) and completed a research study investigating the trends in use of mammalian criteria in environmental impact assessments. My masters concentrated more on applied environmental management including subjects such as environmental paradigms and development, environmental law, systematic conservation planning and monitoring, integrated environmental management systems (ISO 14001), strategic environmental management, and Geographic Information Systems (GIS). My research study explored freshwater resource management and the effects that land use intensity have on the health of ecosystems. I was closely supervised by Dr Matthys Dippenaar (SACNASP member).

I started at Prime Africa in 2014 owing to my experience with ecological systems monitoring and geographic information systems (GIS) of which I received during my masters. Prime Africa is an environmental and resource economics consulting firm offering clients services in a range of natural resource management fields. I was permanently employed by the company in the beginning of 2016 as a systems ecologist. Since then, I have worked on multiple projects including biodiversity assessments and water monitoring, research studies, compliance with South African legislation, ecosystem valuations, workshop facilitation and spatial operations.

Key professional experience and skills include:

- Environmental assessment, compliance and monitoring;
- Wetland impact mitigation, rehabilitation and offset;
- Environmental risk assessments and due diligence;
- Strategy development and implementation;
- Resource accounting and modelling (Environmental, social and economic);

- Socio-economic evaluation;
- Socio-ecological classification; and
- Ecosystem service valuation;
- Natural resources management;
- Management and policy development towards improving socio-economic wellbeing through sustainable environmental use.
- Biological assessment development;
- Workshop development and facilitation
- Stakeholder engagement and interaction;
- Research and analysis;
- Operational time management; and
- Geographic Information Systems (QGIS, ArcGIS) which include:
 - Spatial data analysis;
 - Geoprocessing (Layer creation manipulation and analysis);
 - Data Management (Entry, conversion and maintenance); and
 - Cartography and graphic design.

Work Experience

Name of company: Prime Africa Consultants

Position occupied: Systems Ecologist and Spatial Technician

Period of employment: November 2014-Present (2 years and 8 months)

My job responsibilities as a systems ecologist at Prime Africa have been to perform duties required in the inception, operation and finalisation of a range of multidisciplinary projects. The extent of my responsibilities on various projects has increased positively with my level of experience. Through close supervision by Dr Jackie Crafford (SACNASP member 400143/05) and Mr Kyle Harris I have developed the skills and approaches necessary to be responsible for the entire lifespan of various projects. To clarify, this lifespan includes the procurement, budgeting, client engagement, team management, compilation, implementation and finalisation of projects.

Key work experience gained during this time are listed chronologically per project below:

Project	The Kusile Wetland Offset Implementation Plan
Period	2017-Current
Client	Eskom
Subject	Environmental Authorisation and Implementation
Background	<p>Zitholele Consulting appointed Prime Africa on behalf of Eskom Holdings cc to develop an implementation plan for the Kusile Wetland Offset Strategy.</p> <p>The project focusses on converting the findings of the Kusile Offset Strategy into an implementation plan that would successfully implement the offset as required by conditions of DWS.</p> <p>An additional key purpose of the project is for the development of a Basic Assessment Report (BAR) required for the application for Basic Assessment (BA) for Wetland Rehabilitation Activities to occur during the implementation of the Kusile Wetland Offset Plan (KWOP).</p> <p>The process towards developing the BAR involves the stepwise compilation of various reports / assessments. The first, the Phase 1 Planning Report required a broad scale assessment of wetlands in the study area, or area of influence. This exercise was essentially a scoping study whereby characteristics of the landscape were identified, wetlands were contextualised and prioritised, and landowners were consulted. The second, the Phase 2 Rehabilitation Design Report, was a detailed assessment of wetland</p>

My role

condition and identification of rehabilitation interventions where necessary. The final report, the BAR (This document), represents a compilation of all findings, specialist results, proposals, stakeholder engagements and final sign offs. Finally the KWOP will consolidate all findings and be submitted to form the primary technical document for implementation

My role on the project team is as the Environmental Assessment Practitioner (EAP) of which roles include systems ecologist and spatial technician. Other team members include a wetland specialist, civil engineer and a legal expert.

Responsibilities include the following:

- Attending meetings with reference groups and stakeholders to ensure the approaches, methods and results are in line with scientific best practice;
- Communicating with the client to ensure the project is outcomes focussed and adequately addressed the original Terms of Reference (ToR);
- Ensuring a transparent process through management of client expectations and achievement of predetermined deadlines;
- Planning, preparation and conducting of field work, logistically and administratively;
- Management of team members in the field, ensuring all requirements are met in a timely manner;
- Communicating and effectively working together with a multidisciplinary team towards completing a single integrated product.
- Communication with relevant holders of data and appropriate acquisition thereof;
- Assessment of the suitability of data acquired for the appropriate needs of the project;
- Management of time and team members and making appropriate allocations of workloads;
- Drive projects forward utilising scientific best practice approaches and methodologies;
- Appropriate use of the scientific method when data is being collected and results are being discussed;
- Research, analysis and write-up of report content in a scientifically appropriate manner;
- Management and manipulation of both input and output databases;
- Development, compilation and presentation of spatially required outputs;
- The application of appropriate techniques required for spatial extrapolation i.e. through the use of tools such as:
 - Spatial data analysis;
 - Geoprocessing (Layer creation manipulation and analysis);
 - Data Management (Entry, conversion and maintenance); and
 - Cartography and graphic design.
- Review and editing of writeups done by team members;
- Presentation of progress and outputs to relevant steering committees and stakeholders;
- Presentation and explanation of results and outcomes to the client;
- Workshop development and facilitation towards capacity building and data collection;
- Conducting and implementing environmental assessments and monitoring strategies and plans;
- Environmental assessments include alien species assessment; Present Ecological State (PES) determination (WET-Health);and wetland delineation;
- Conducting and implementing wetland impact mitigation, rehabilitation and offset strategies and plans;
- Conducting environmental risk assessments and due diligence assessments;
- Environmental management strategy development and implementation;
- Spatial land management strategies and planning;
- Conducting socio-economic evaluations;
- The development of regional socio-ecological classification; and
- Natural resources management planning;
- Management and policy development towards improving socio-economic wellbeing through sustainable environmental use.

- Assisting the team in providing meaning to the results towards quantifying the relationships between the health of the environment and the socio-economic wellbeing of associated communities;

Project	Impact of Ecological Degradation on Water Resources, Ecosystems and Socio-Economic Development
Period	2014-2017
Client	Water Research Commission (WRC)
Subject	Research: Environmental management
Background	<p>The WRC appointed Prime Africa to conduct a 4 year study which included 8 deliverables. The project developed approaches for assessing the casual effects of degraded water resources, resulting from catchment land uses, on socio-economic development.</p> <p>This was done by reviewing the real challenges related to water resource and environmental management; developing and refining approaches and tools needed to analyse the impacts of environmental degradation on socio-economic development; investigating the impacts of ecological degradation on the livelihoods and well-being of communities (specifically rural and peri-urban communities); and applying the relationships between the degraded water resources and socio-economic development to a case study and critically analysing the results with specific attention to the implications for policies, the opportunities presented for environmental and water resource management and the threats posed to dependent communities and the South Africa as a whole.</p>
My role	<p>My role on the project team was a dual one, as the ecologist and spatial technician. Other team members included the project manager, a water chemist, a resource economist, a geneticist and an economist.</p> <p>Responsibilities included the following:</p> <ul style="list-style-type: none"> • Attending meetings with reference groups and stakeholders to ensure the approaches, methods and results are in line with scientific best practice; • Planning, preparation and conducting of field work, logistically and administratively; • Management of team members in the field, ensuring all requirements are met in a timely manner; • Communicating and effectively working together with a multidisciplinary team towards completing a single integrated product. • Communication with relevant holders of data and appropriate acquisition thereof; • Assessment of the suitability of data acquired for the appropriate needs of the project; • Appropriate use of the scientific method when data is being collected and results are being discussed; • Research, analysis and write-up of report content in a scientifically appropriate manner; • Conducting environmental assessments of which include: <ul style="list-style-type: none"> ○ Alien species assessment; ○ Present Ecological State (PES) determination (WET-Health); ○ The development of the Rapid Habitat Assessment Method (RHAM); ○ Wetland delineation; • Development, compilation and presentation of spatially required outputs; • Presentation of progress and outputs to relevant steering committees and stakeholders; • Review and editing of writeups done by team members; • Presentation and explanation of results and outcomes to the client; • Environmental management strategy development and implementation; • Management and policy development towards improving socio-economic wellbeing through sustainable environmental use.

Project	Ecosystem Service Valuation of the Groenkloof Nature Reserve
Period	2015
Client	City of Tshwane (CoT)
Subject	Environmental Management

Background	<p>The CoT appointed Prime Africa to conduct a year study towards the valuation of ecosystem services provided by green nodes within City of Tshwane municipality.</p> <p>The study estimated the economic value (Rand value) of a range of pre-identified ecosystem services provided by the Groenkloof Nature Reserve, Pretoria. This provided an ecosystem services evaluation where the conservation costs and benefits of the Reserve were compared to other potential uses through assessing all green nodes throughout the CoT.</p>
My Role	<p>My role as spatial analyst was to collate distributional data towards quantifying benefits provided by green nodes. The project team consisted of a project manager, resource economist and myself. Responsibilities included the following:</p> <ul style="list-style-type: none"> • Attending meetings with reference groups and stakeholders to ensure the approaches, methods and results are in line with scientific best practice; • Communication with relevant holders of data and appropriate acquisition thereof; • Assessment of the suitability of data acquired for the appropriate needs of the project; • Appropriate use of the scientific method when data is being collected and results are being discussed; • Research, analysis and write-up of report content in a scientifically appropriate manner; • Management and manipulation of both input and output databases; • Presentation of progress and outputs to relevant steering committees and stakeholders; • The application of appropriate techniques required for spatial extrapolation i.e. through the use of tools such as: <ul style="list-style-type: none"> ○ Spatial data analysis; ○ Geoprocessing (Layer creation manipulation and analysis); ○ Data Management (Entry, conversion and maintenance); and • Presentation and explanation of results and outcomes to the client; and • Ecosystem service valuations.

Project	Turbidity Management Strategy for Kusile Power Station
Period	2015
Client	Eskom
Subject	Compliance
Background	<p>Prime Africa was appointed by Eskom Kusile in November 2014 to develop a turbidity management action plan to reduce turbidity levels in the Wilge River and adjoining tributaries due in part to the construction activities at Kusile Power Station. The monitoring was implemented to determine if there was a decrease in turbidity/TSS across the Kusile site as a result of the interventions implemented.</p>
My role	<p>My role on the project team as systems ecologist and spatial analyst was to assist with project design and implementation of monitoring. Furthermore, my spatial background allowed an approach that considered the project footprint in its entirety. Other team members included the project manager and water chemist. Responsibilities included the following:</p> <ul style="list-style-type: none"> • Attending meetings with reference groups and stakeholders to ensure the approaches, methods and results are in line with scientific best practice; • Communicating with the client to ensure the project is outcomes focussed and adequately addressed the original Terms of Reference (ToR); • Ensuring a transparent process through management of client expectations and achievement of predetermined deadlines; • Planning, preparation and conducting of field work, logistically and administratively; • Communication with relevant holders of data and appropriate acquisition thereof; • Assessment of the suitability of data acquired for the appropriate needs of the project; • Research, analysis and write-up of report content in a scientifically appropriate manner; • Compilation of mitigation and rehabilitation plans and strategies; • Development, compilation and presentation of spatially required outputs; • Management and manipulation of both input and output databases; • Presentation of progress and outputs to relevant steering committees and stakeholders;

- The application of appropriate techniques required for spatial extrapolation i.e. through the use of tools such as:
 - Spatial data analysis;
 - Geoprocessing (Layer creation manipulation and analysis);
 - Data Management (Entry, conversion and maintenance); and
 - Cartography and graphic design.
- Review and editing of writeups done by team members;
- Presentation and explanation of results and outcomes to the client;
- Environmental management strategy development and implementation;
- Spatial land management strategies and planning; and
- Natural resources management planning.

Project:	The National Wetland Monitoring Program
Period:	2015-2016
Client:	Water Research Commission (WRC)
Subject	Research: Environmental Management
Background	<p>The WRC appointed Prime Africa to conduct a 2 year study. The study consisted of 4 members of which I was the spatial technician and advisor on ecological issues.</p> <p>The ket outcome of this project was the Implementation Manual for the NWMP, provided the processes, procedures and methods required to report indicators, to prioritize wetlands for various levels of assessment, and to carry out assessment and monitoring at each level. Another output was the consolidated technical report, which included the consolidation of all deliverables of the assignment, providing the starting framework, indicators, methods, tools and procedures for implementing the NWMP in South Africa.</p>
My role	<p>My role as spatial analyst and ecologist was to development of methods necessary for preparation and operational phases of the program. This included a wetland prioritization tool at broad and fine scales. Responsibilities included the following:</p> <ul style="list-style-type: none"> • Attending meetings with reference groups and stakeholders to ensure the approaches, methods and results are in line with scientific best practice; • Communication with relevant holders of data and appropriate acquisition thereof; • Assessment of the suitability of data acquired for the appropriate needs of the project; • Appropriate use of the scientific method when data is being collected and results are being discussed; • Research, analysis and write-up of report content in a scientifically appropriate manner; • Development, compilation and presentation of spatially required outputs; • Management and manipulation of both input and output databases; • The application of appropriate techniques required for spatial extrapolation i.e. through the use of tools such as: <ul style="list-style-type: none"> ○ Spatial data analysis; ○ Geoprocessing (Layer creation manipulation and analysis); ○ Data Management (Entry, conversion and maintenance); and ○ Cartography and graphic design. • Review and editing of writeups done by team members; • Presentation and explanation of results and outcomes to the client; • Environmental management strategy development and implementation;

Project:	Wetland offset strategy for Kusile Power Station
Period:	2015-2016
Client:	Eskom

Subject	Compliance
Background	<p>Eskom appointed Prime Africa as per water use license compliance regulations to develop a strategy to offset damages caused by the proposed ash dump. The team members included an engineer, a wetland expert and two ecologists (myself included).</p> <p>This study explored and developed a wetland offset strategy in response to residual impacts caused by proposed activities. Activities included: the quantification of the required offset targets; the identification of possible offset receiving sites for implementation of the strategy; a detailed description of potential offset activities at target sites and evaluation of resultant change to wetland and buffer zone condition/integrity; the quantification of potential gains of offset activities at receiving areas; and the exploration of scenarios in order to optimize potential gains in to meet target requirements.</p>
My role	<p>My role as ecologist and spatial analyst included field investigations and assessment, stakeholder engagement and report compilation. Responsibilities included the following:</p> <ul style="list-style-type: none"> • Attending meetings with reference groups and stakeholders to ensure the approaches, methods and results are in line with scientific best practice; • Communicating with the client to ensure the project is outcomes focussed and adequately addressed the original Terms of Reference (ToR); • Ensuring a transparent process through management of client expectations and achievement of predetermined deadlines; • Planning, preparation and conducting of field work, logistically and administratively; • Management of team members in the field, ensuring all requirements are met in a timely manner; • Communicating and effectively working together with a multidisciplinary team towards completing a single integrated product. • Communication with relevant holders of data and appropriate acquisition thereof; • Assessment of the suitability of data acquired for the appropriate needs of the project; • Management of time and team members and making appropriate allocations of workloads; • Drive projects forward utilising scientific best practice approaches and methodologies; • Appropriate use of the scientific method when data is being collected and results are being discussed; • Research, analysis and write-up of report content in a scientifically appropriate manner; • Development, compilation and presentation of spatially required outputs; • Management and manipulation of both input and output databases; • The application of appropriate techniques required for spatial extrapolation i.e. through the use of tools such as: <ul style="list-style-type: none"> ○ Spatial data analysis; ○ Geoprocessing (Layer creation manipulation and analysis); ○ Data Management (Entry, conversion and maintenance); and ○ Cartography and graphic design. • Review and editing of writeups done by team members; • Presentation of progress and outputs to relevant steering committees and stakeholders; • Presentation and explanation of results and outcomes to the client; • Conducting and implementing environmental assessments and monitoring strategies and plans; • Conducting and implementing wetland impact mitigation, rehabilitation and offset strategies and plans; • Conducting environmental risk assessments and due diligence assessments; • Environmental management strategy development and implementation; and • Natural resource management planning.

Project:	National Biodiversity Economy Strategy: Biodiversity Delivery Lab
Period	2016
Client	Department of Environmental Affairs (DEA)
Subject	Socio-economic development

Background	<p>DEA appointed Prime Africa to assist them with a 12 week workshop process towards the implementation of the NBES. We were the ideal candidate as Prime Africa was highly involved in the compilation of the NBES. The process involved 6 members (including myself) assisted with the facilitation of data collection and stakeholder interaction.</p> <p>This project worked towards the implementation of the National Biodiversity Economy Strategy. It involved both the preparation of baseline data and facilitation of a 6 week workshop towards the development of an implementation plan. This was done through the facilitation of industry leaders in the wildlife, bioprospecting and tourism industries in South Africa.</p>
My role	<p>My role was as a co-facilitator to the workshops process and as lead spatial analyst, I was also responsible for all spatial outputs and analysis prior, during and post workshop. Responsibilities included the following:</p> <ul style="list-style-type: none"> • Attending meetings with reference groups and stakeholders to ensure the approaches, methods and results are in line with scientific best practice; • Communicating with the client to ensure the project is outcomes focussed and adequately addressed the original Terms of Reference (ToR); • Management of team members in the field, ensuring all requirements are met in a timely manner; • Communication with relevant holders of data and appropriate acquisition thereof; • Assessment of the suitability of data acquired for the appropriate needs of the project; • Management of time and team members and making appropriate allocations of workloads • Research, analysis and write-up of report content in a scientifically appropriate manner; • Management and manipulation of both input and output databases; • Development, compilation and presentation of spatially required outputs; • The application of appropriate techniques required for spatial extrapolation i.e. through the use of tools such as: <ul style="list-style-type: none"> ○ Spatial data analysis; ○ Geoprocessing (Layer creation manipulation and analysis); ○ Data Management (Entry, conversion and maintenance); and ○ Cartography and graphic design. • Review and editing of writeups done by team members; • Presentation of progress and outputs to relevant steering committees and stakeholders; • Presentation and explanation of results and outcomes to the client; • Workshop development and facilitation towards capacity building and data collection;

Project	Valuation of South African Peatlands
Period	2015-2016
Client	Water Research Commission (WRC)
Subject	Research: Environmental Management
Background	<p>The WRC appointed Prime Africa to conduct a 2 year study. The study consisted of 2 members of which I was the lead project planner and systems ecologist working with a resource economist.</p> <p>The aim of this study was to demonstrate the socio-economic value of peatlands in South Africa, based on the concepts of ecological infrastructure and ecosystem services delivered (including carbon sequestration, other regulating services, provisioning services and cultural services). This was done through the quantification and economic valuation of ecosystem services provided by South African peatlands. Responsibilities included the following:</p>
My role	<p>My role as project manager and systems ecologist was the investigation and compilation of the report through understanding and describing the relationship between the socio-economic climate and the contribution by ecosystem services by route of market value linkages. Responsibilities included the following:</p> <ul style="list-style-type: none"> • Attending meetings with reference groups and stakeholders to ensure the approaches, methods and results are in line with scientific best practice;

- Communicating with the client to ensure the project is outcomes focussed and adequately addressed the original Terms of Reference (ToR);
- Ensuring a transparent process through management of client expectations and achievement of predetermined deadlines;
- Planning, preparation and conducting of field work, logistically and administratively;
- Communication with relevant holders of data and appropriate acquisition thereof;
- Assessment of the suitability of data acquired for the appropriate needs of the project;
- Drive projects forward utilising scientific best practice approaches and methodologies;
- Appropriate use of the scientific method when data is being collected and results are being discussed;
- Research, analysis and write-up of report content in a scientifically appropriate manner;
- Development, compilation and presentation of spatially required outputs;
- Management and manipulation of both input and output databases;
- The application of appropriate techniques required for spatial extrapolation i.e. through the use of tools such as:
 - Spatial data analysis;
 - Geoprocessing (Layer creation manipulation and analysis);
 - Data Management (Entry, conversion and maintenance); and
 - Cartography and graphic design.
- Presentation of progress and outputs to relevant steering committees and stakeholders;
- Presentation and explanation of results and outcomes to the client;
- Workshop development and facilitation towards capacity building and data collection;
- Environmental management strategy development and implementation;
- Spatial land management strategies and planning;
- Ecosystem service valuation; and
- Natural resources management planning.

Project	Kusile Wetland Rehabilitation Intervention Plan
Period	2015-2016
Client	Eskom
Subject	Compliance
Background	<p>Eskom appointed Prime Africa to develop rehabilitation, mitigation and monitoring plans for impacted wetlands in the Kusile Power Station footprint. I was the project manager working together with another ecologist and a water chemist.</p> <p>The project included the development of wetland rehabilitation interventions for wetlands at the Kusile Power Station, Mpumalanga. The purpose of the rehabilitation interventions were to prevent the further deterioration of affected wetland systems and restore and rehabilitate the functioning of the wetlands to an improved ecological state.</p>
My role	<p>My role as project manager and lead systems ecologist was to assess the present ecological state (PES) of the wetlands, propose rehabilitation interventions that addressed cumulative historic and future impact on associated wetlands and develop an estimated cost and implementation timeline for the proposed interventions. Responsibilities included the following:</p> <ul style="list-style-type: none"> • Attending meetings with reference groups and stakeholders to ensure the approaches, methods and results are in line with scientific best practice; • Ensuring a transparent process through management of client expectations and achievement of predetermined deadlines; • Planning, preparation and conducting of field work, logistically and administratively; • Management of team members in the field, ensuring all requirements are met in a timely manner;

<ul style="list-style-type: none"> • Communicating and effectively working together with a multidisciplinary team towards completing a single integrated product. • Communication with relevant holders of data and appropriate acquisition thereof; • Assessment of the suitability of data acquired for the appropriate needs of the project • Management of time and team members and making appropriate allocations of workloads; • Appropriate use of the scientific method when data is being collected and results are being discussed; • Research, analysis and write-up of report content in a scientifically appropriate manner; • Development, compilation and presentation of spatially required outputs; • Management and manipulation of both input and output databases; • The application of appropriate techniques required for spatial extrapolation i.e. through the use of tools such as: <ul style="list-style-type: none"> ○ Spatial data analysis; ○ Geoprocessing (Layer creation manipulation and analysis); ○ Data Management (Entry, conversion and maintenance); and ○ Cartography and graphic design. • Review and editing of writeups done by team members; • Presentation of progress and outputs to relevant steering committees and stakeholders; • Presentation and explanation of results and outcomes to the client; • Conducting and implementing environmental assessments and monitoring strategies and plans; • Environmental assessments include alien species assessment; Present Ecological State (PES) determination (WET-Health);and wetland delineation; • Conducting and implementing wetland impact mitigation, rehabilitation and offset strategies and plans; • Conducting environmental risk assessments and due diligence assessments; • Environmental management strategy development and implementation; and • Spatial land management strategies and planning.
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Project:	Forestry and Macroeconomic Accounts of Nigeria: The Importance of Linking Ecosystem Services to Macroeconomics
Period:	2016-2017
Client:	United Nations Environmental Programme (UNEP)
Subject	Environmental Management
Background	<p>UNEP appointed Prime Africa to conduct a forest accounting study. The study consisted of 4 members of which I was the lead ecologist and spatial technician. Other team members included a resource economist, an economist and a risk analyst.</p> <p>The project required linking drivers of economic behaviour, as it relates to deforestation, to the benefits of forest ecosystem services. Our approach was to develop a user –friendly decision support model that was able to integrate natural accounts (forest and water resources) with their provision of ecosystem services that had a final impact of the macro-economy and sustainable development goals.</p>
My role	<p>My role was to quantify the productivity of forests and their carbon sequestration ability. This information was used to demonstrate the value to the economy of different policy options. Responsibilities included the following:</p> <ul style="list-style-type: none"> • Attending meetings with reference groups and stakeholders to ensure the approaches, methods and results are in line with scientific best practice; • Ensuring a transparent process through management of client expectations and achievement of predetermined deadlines; • Communicating and effectively working together with a multidisciplinary team towards completing a single integrated product. • Communication with relevant holders of data and appropriate acquisition thereof; • Assessment of the suitability of data acquired for the appropriate needs of the project; • Management of time and team members and making appropriate allocations of workloads;

- Drive projects forward utilising scientific best practice approaches and methodologies;
- Appropriate use of the scientific method when data is being collected and results are being discussed;
- Research, analysis and write-up of report content in a scientifically appropriate manner;
- Development, compilation and presentation of spatially required outputs;
- Management and manipulation of both input and output databases;
- The application of appropriate techniques required for spatial extrapolation i.e. through the use of tools such as:
 - Spatial data analysis;
 - Geoprocessing (Layer creation manipulation and analysis);
 - Data Management (Entry, conversion and maintenance); and
 - Cartography and graphic design.
- Presentation of progress and outputs to relevant steering committees and stakeholders;
- Presentation and explanation of results and outcomes to the client;
- Conducting environmental risk assessments and due diligence assessments;
- Resource accounting and modelling (Environmental, social and economic);
- Conducting socio-economic evaluations;
- Ecosystem services Valuation; and
- Management and policy development towards improving socio-economic wellbeing through sustainable environmental use.

Project:	An Ecosystem Services Assessment of the Molopo-Nossob Basin
Period:	2017
Client:	International Union for Conservation of Nature (IUCN)
Subject	Environmental Management
Background	<p>The IUCN appointed Prime Africa to conduct a study that assessed the value of ecosystems to communities in the Molopo-Nossob Basin. The study consisted of 3 team members of which I was the project manager joined by another ecologist and a water chemist.</p> <p>The aim of this study was to analyse the economic value of the ecosystems present in the Molopo-Nossob Basin, and recommend policy instruments that would alleviate pressure on the natural systems. The methodology followed included a macro level mapping and categorisation of ecosystems, including an overview of the states and trends of ecosystems; an inventory of ecosystem services per ecosystem and prioritisation of valuation; categorisation of rangelands in the Molopo-Nossob Landscape; preliminary Valuation of prioritised ecosystem services; and policy recommendations to inform management of key ecosystems.</p>
My role	<p>My role team leader and lead ecologist was to, drive the process and ensure outcomes were developed in line with requirements in a timeous manner. My expertise in socio-economic modelling and spatial analysis were utilised throughout the process. Responsibilities included the following:</p> <ul style="list-style-type: none"> • Attending meetings with reference groups and stakeholders to ensure the approaches, methods and results are in line with scientific best practice; • Communicating with the client to ensure the project is outcomes focussed and adequately addressed the original Terms of Reference (ToR); • Ensuring a transparent process through management of client expectations and achievement of predetermined deadlines; • Planning, preparation and conducting of field work, logistically and administratively; • Management of team members in the field, ensuring all requirements are met in a timely manner; • Communicating and effectively working together with a multidisciplinary team towards completing a single integrated product. • Communication with relevant holders of data and appropriate acquisition thereof; • Assessment of the suitability of data acquired for the appropriate needs of the project; • Management of time and team members and making appropriate allocations of workloads; • Drive projects forward utilising scientific best practice approaches and methodologies;

- Appropriate use of the scientific method when data is being collected and results are being discussed;
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 - Data Management (Entry, conversion and maintenance); and
 - Cartography and graphic design.
- Review and editing of writeups done by team members;
- Presentation of progress and outputs to relevant steering committees and stakeholders;
- Presentation and explanation of results and outcomes to the client;
- Assisting the team in providing meaning to the results towards quantifying the relationships between the health of the environment and the socio-economic wellbeing of associated communities;
- Conducting environmental risk assessments and due diligence assessments;
- Environmental management strategy development and implementation;
- Spatial land management strategies and planning;
- Resource accounting and modelling (Environmental, social and economic);
- Conducting socio-economic evaluations;
- The development of regional socio-ecological classification; and
- Ecosystem service valuation;
- Natural resources management planning; and
- Management and policy development towards improving socio-economic wellbeing through sustainable environmental use.

Courses and Conferences

2009: Short Course in Environmental Law Presented by the Department of Public Law, University of Pretoria. Topics covered include:

- Environmental law principles and norms;
 - Environmental governance;
 - Environmental assessment;
 - Administrative justice;
 - Mining and energy law;
 - Biodiversity law;
 - Air quality;
 - Waste management;
 - Water law; and
 - Compliance and enforcement of environmental law.

2012: Short Course in ISO 14001:2004. Environmental Management Systems: Auditor/Lead Auditor Training to develop the skills to audit environmental management systems. Presented by SGS

2013: Short Course in SPSS. Introduction to SPSS. University of Pretoria.

Short Courses in Geographic Information Systems (GIS) including:

- Getting Started with GIS, Esri-Web course;
- Getting Started with the Geodatabase, Esri-Web course;

- Learning ArcGIS Desktop, Esri-Web course;
- Basics of Raster, Esri-Web course; and
- Using Raster Data for Site Selection, Esri-Web course.

2016: National Wetland Indaba (NWI), 2016, Blythe River Canyon, Forever Resorts Conference Centre Mpumalanga, South Africa. Presented results of the study that demonstrated the socio-economic value of South African peatlands (see key projects for more details).

Publications

Dippenaar, M. A., Van Rooy, J. L., Breedts, N., Huisamen, A., Muravha, S. E., Mahlangu, N. S. and Mulders, J. A. (2014). Vadose Zone Hydrology: Concepts and Techniques. Water Research Commission report TT 584/13, project K5/2052. Pretoria.

SACNASP Registration


SACNASP
South African Council for Natural Scientific Professions

herewith certifies that

Joseph Alexander Mulders
Registration number: 118063

is registered as a

Professional Natural Scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)
Environmental Science

Effective **15 November 2017** Expires **31 March 2018**





President



Executive Director