

# BIODIVERSITY UNIT



ENVIRONMENTAL AND SOCIAL ADVISORY SERVICES



CES was established in 1990 when we were the lead consultants for the St Lucia Environmental Impact Assessment for Richards Bay Minerals, one of the first large-scale EIAs conducted in South Africa. Since then, we have expanded our capabilities and now provide a wide variety of environmental and social advisory services to public and private-sector clients both within South Africa and internationally.

## CES SPECIALISES IN ENVIRONMENTAL AND SOCIAL ADVISORY SERVICES

### OVERVIEW

CES Environmental and Social Advisory Services has formed a dedicated Biodiversity Unit by combining specialists from various disciplines into an integrated team. This unit provides clients with guidance and advice on biodiversity-related matters pertaining to development projects, ecosystem management, and for planning for the wise and sustainable use of resources and affords CES the opportunity to offer these specialist skills as independent specialists to other companies within the environmental assessment field.

*We believe that a balance between development and biodiversity safeguarding can be achieved by skilful, considerate, and careful planning.*

### SERVICES

Our services focus on biodiversity-related aspects of integrated environmental management processes and on ecological planning, management, and support. We also undertake ecological research and monitoring. Some of our competencies are listed below.

#### **Biodiversity Assessments**

Assessing sites to determine the baseline biodiversity values present through rigorous field surveys to identify and document ecosystems, species, ecological processes, and ecosystem system goods and services. We have in-house capacity to survey vegetation and several faunal groups.

We provide advice on the potential impacts of development on biodiversity, including impacts due to habitat loss, fragmentation, and degradation. Our specialist studies are conducted in accordance with the standards and requirements of host countries, the international community, and international finance organisations (e.g., the South African National Environmental Management Act and its Environmental Impact Assessment Regulations, Equator Principles, IFC Performance Standard 6, World Bank Social and Environmental Safeguard 6, and African Development Bank Integrated Safeguard System).

These studies include, but are not limited to:

- Botanical Specialist Studies
- Bird Specialist Studies
- Terrestrial Mammal Specialist Studies
- Reptile and Amphibian Specialist studies
- Arthropod Specialist Studies

### **Biodiversity Offset Plans**

Developing plans to offset the residual impacts of development to ensure no net loss of biodiversity, or a net gain of biodiversity, according to best practice and the requirements of government and finance institutions.

### **Habitat Management Plans**

Developing management plans for specific sites or systems to ensure persistence of biodiversity values through minimizing negative impacts on biodiversity and maximizing positive outcomes.

In South Africa, this includes developing Biodiversity Management Plans according to the requirements of the NEMA: Biodiversity Act. Internationally these are completed in accordance with various guidelines and the requirements of IFC Performance Standard 6.

### **Critical Habitat Assessments**

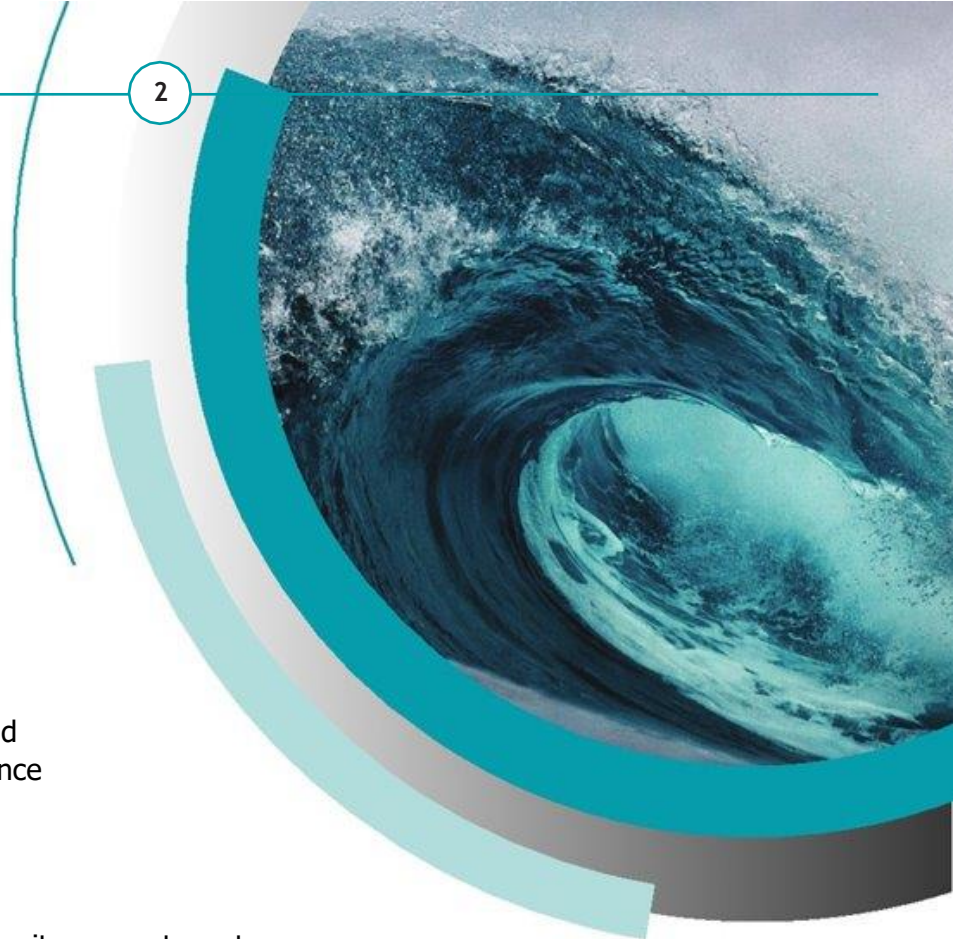
Conducting critical habitat assessments, as per the IFC's Performance Standard 6 on Biodiversity Conservation and Sustainable Natural Resource Management. This involves systematic evaluation of the potential impacts of projects on areas considered vital for the survival of endangered species and the health of ecosystems. It involves identifying critical habitats, assessing potential impacts, recommending mitigation measures, engaging stakeholders, and monitoring compliance with Performance Standard 6 to ensure sustainable and responsible development.

### **Estuarine Assessments**

Evaluating ecological conditions within estuarine ecosystems. These assessments typically include the examination of water quality, sediment characteristics, biodiversity, and the overall functioning of estuaries, with the aim of understanding the environmental impact of human activities, identifying potential stressors, and developing strategies for their conservation and sustainable management.

### **Riparian and Wetland Specialist Studies**

Assessing riparian zones and wetlands, including evaluating plant and animal species, hydrological patterns, water quality, and overall ecological health in these environments. Our work provides insight on how these areas function, their significance for biodiversity, and how they are impacted by human activities. The findings inform conservation and restoration efforts, as well as land-use planning and development practices, to protect and sustain these valuable ecosystems.



## Habitat Suitability Assessments

Assessing the suitability of habitat for the restoration and reintroduction of species. These assessments consider various environmental factors (such as climate, topography, vegetation, and resource availability) to determine whether habitats can meet the requirements of particular species or ecological communities.

The goal is to identify suitable areas for conservation, restoration, or targeted land-use planning to protect and enhance habitats for specific wildlife, aiding in biodiversity conservation and sustainable natural resource management.

## Ecological Restoration, Rehabilitation, and Invasive Alien Plant Control Plans

Providing expert advice on the restoration of degraded ecosystems and the enhancement of biodiversity values, as well as the development of rehabilitation plans for systems that have been degraded due to mining or other land uses. Our services also cover the monitoring of rehabilitation success, and the development of restoration plans to improve biodiversity and assist in achieving a no net loss or net gain in biodiversity.

## Biodiversity Monitoring

Designing and implementing scientifically rigorous monitoring programs to track changes in biodiversity values over time, from baseline surveys ahead of construction, through monitoring during construction and operation, to closure and post-closure monitoring.

## Biodiversity Planning

Planning, at various scales, to ensure that the requirements of biodiversity are incorporated into land use decision making so that development is facilitated in the most suitable areas. This includes developing systematic biodiversity plans, Strategic Environmental Assessments, and Conservation Development Frameworks.

## Management Effectiveness Assessments

Assessing the effectiveness of management agencies, including using the Management Effectiveness Tracking Tool (METT) for protected areas.

## Ecological and Environmental Management Research

Conducting research to improve the understanding of ecological systems and to further knowledge on anthropogenic impacts to systems, and the effectiveness of management and mitigation strategies. We also have the capability to provide independent peer review and quality control of research programs and projects.

## APPROACH

The Biodiversity Unit takes a science-based approach to biodiversity conservation and management, using the best available scientific evidence to inform our advice and recommendations. We work closely with our clients to develop solutions that are tailored to their specific needs and circumstances, and we prioritize engagement with stakeholders to ensure that our work is socially and culturally appropriate.

## CLIENTS AND EXPERIENCE

Our clients include national, provincial, and local government entities, renewable energy developers, mining and resource companies, infrastructure developers, local private clients, and conservation agencies. Our staff has experience in working in a diverse range of ecosystems across Africa, ranging from tropical rainforests to arid landscapes. A list of selected projects that the unit has been involved in is provided in the table below.


### *Selected CES Biodiversity Unit Experience*



Mozambique	<ul style="list-style-type: none"> <li>• Kenmare Rehabilitation Plans, Pilivili and Nataka Deposits, Nampula Province.</li> <li>• Kenmare Terrestrial Botanical Assessment for the Pilivili Deposit, Nampula Province.</li> <li>• Kenmare Ecological Screening Assessment, Nataka Deposit, Nampula Province.</li> <li>• Kenmare Terrestrial Biodiversity Monitoring, Namalope and Pilivili Deposits, Nampula Province.</li> <li>• Biodiversity Assessment, Chikweti Forest, Niassa.</li> <li>• Ecological Assessment, Ancuabe, Cabo Delgado Province.</li> <li>• Kenmare Estuarine Assessment, Pilivili Deposit, Nampula Province.</li> </ul>
Cameroon	<ul style="list-style-type: none"> <li>• JCM Solar Plant Biodiversity Assessment, Younde.</li> </ul>
Sierra Leone	<ul style="list-style-type: none"> <li>• Biodiversity Management Plan for the Baomahun Gold Project, Bo and Tonkolili Districts.</li> <li>• Biodiversity Monitoring for the Baomahun Gold Project, Bo and Tonkolili Districts.</li> </ul>
South Africa	<ul style="list-style-type: none"> <li>• Biodiversity Offset Plan for the Port St Johns Forest, Eastern Cape.</li> <li>• Biodiversity Offset Plan for the Waaihoek Wind Energy Facility (WEF) in KwaZulu Natal.</li> <li>• Terrestrial Biodiversity Assessments for multiple WEFs.</li> <li>• Operational Bird and Bat Monitoring Programme for multiple WEFs, Eastern Cape.</li> <li>• Biodiversity Assessment and Management Plan of Biodiversity Offset Receiving Areas, Wild Coast.</li> <li>• Parsonsvei Biodiversity Management Plan for an Ecosystem, Gqeberha, Eastern Cape.</li> <li>• Conservation Management Plan for the Nelson Mandela Metropolitan University, Eastern Cape.</li> <li>• East London Harbour Biodiversity Management Plan, Eastern Cape.</li> <li>• Integrated Coastal Management Plan for the Amathole District Municipality, Eastern Cape.</li> <li>• Terrestrial Biodiversity Assessment for Gas Infrastructure, Western Cape.</li> <li>• Wetland Offset Plan, Western Cape.</li> </ul>



## EXPERTISE


The Biodiversity Unit is staffed by experienced ecologists, botanists, and zoologists who have experience in the identification, assessment, and management of biodiversity values. The unit also has specialists in estuarine and wetland functioning, ecological restoration, GIS mapping and analysis. Profiles of current staff members are appended.

## STAFF PROFILES



PERSON	BACKGROUND	SKILLS
<p><b>Ted Avis, Ph.D., Pr.Sci.Nat., EAPSA</b> Managing Executive</p> 	<p>Ted Avis is a leading expert in the field of Environmental and Social Impact Assessments, having project-managed numerous large scale ESIA's to international standards, especially the International Finance Corporation's (IFC) Performance Standards. He has acted as project lead on numerous large-scale ESIA's for projects with capital expenditures ranging from USD150k to USD1,2billion. Some of these projects entailed multiple ESIA's and associated ESMP's. Ted also has considerable experience in the management and review of Resettlement Action Plans (RAPs). He has managed large-scale ESIA studies and similar environmental and social assessments in Kenya, Madagascar, Mozambique, Egypt, Malawi, Zambia and South Africa. Ted also has experience in large-scale Strategic Environmental Assessments in southern Africa and has been engaged by the IFC on several projects. Whilst still a senior lecturer at Rhodes University, Ted's Alma Mater, he was instrumental in establishing the Environmental Science Department at Rhodes University, which he developed by building on his experiences in consulting and running honours modules in EIA practice and environmental management, and the applied research he undertook in these disciplines. He was an Honorary Visiting Fellow in the Department of Environmental Sciences at Rhodes between 1998 and 2003. He was one of the first certified Environmental Assessment Practitioner in South Africa, gaining certification in April 2002. He has delivered papers and published in the field of EIA, Strategic Environmental Assessment, and Integrated Coastal Zone Management. He has led CES since its inception in 1990. Ted holds a PhD in Botany and was awarded a bronze medal by the South African Association of Botanists for the best PhD in 1994, entitled "Coastal Dune Ecology and Management in the Eastern Cape". Ted is also a professional member of the South African Council for Natural Scientific Professionals (since 1993), and a member of numerous professional bodies.</p>	<ul style="list-style-type: none"> <li>Environmental and Social Impact Assessment</li> <li>Environmental and Social Management Plan preparation</li> <li>Terrestrial vegetation and flora specialist studies</li> <li>Coastal dune ecology specialist studies</li> <li>Integrated coastal zone management</li> <li>Strategic Environmental and Social Assessment</li> <li>Resettlement Action Plans</li> </ul>


PERSON	BACKGROUND	SKILLS
<p><b>Aidan Gouws</b> M.Sc., Cand.Sci.Nat. Principal Environmental Consultant</p> 	<p>Aidan obtained his MSc in Environmental Science (<i>Cum laude</i>) from Rhodes University, having conducted research on the spatio-temporal dynamics of <i>Acacia dealbata</i> invasions and broader land-use and cover changes in the northern Eastern Cape, funded through a study bursary awarded by the Agricultural Research Council (ARC). Prior to this, he obtained his BSc Honours in Geographical and Environmental Sciences (<i>Cum laude</i>) from the University of Pretoria, studying plant ecology and EIA methodology amongst others. Since joining CES in 2018, Aidan has been involved in several projects, including Basic Assessments, Full Scoping and Environmental Impact Assessments, Environmental Amendment Applications, Environmental Audits, Terrestrial Biodiversity Assessments, and River and Wetland Assessments. He is registered with the South African Council for Natural Scientific Professions as a Candidate Natural Scientist and with the International Association for Impact Assessments.</p>	<p>Terrestrial Biodiversity Assessments River and Wetland Assessments Geographical Information Systems Database Management</p>
<p><b>Brian Reeves</b> M.Sc., Pri.Sci.Nat. Principal Specialist</p> 	<p>Brian has more than 20 years of experience in ecology, environmental management, conservation management planning, and decision-support. He was an ecologist at the Eastern Cape Parks &amp; Tourism Agency (ECPTA) for twelve years before joining CES in 2023. During this time, he gained experience in developing and managing ecological research and monitoring programmes, including for threatened species (such as black rhino, leopard, Cape mountain zebra, Hewitt's ghost frog and kloof frog) and for critical ecological processes (such as fire). He also has experience in Integrated Environmental Management, gained in both the public and private sectors, and is familiar with environmental management and assessment tools, environmental legislation, and policy. His experience includes adhering to international environmental and social sustainability safeguards. Brian also has experience in developing and implementing biodiversity stewardship programmes.</p>	<p>Ecological monitoring and research Terrestrial Biodiversity Impact Assessments Mammal studies Herpetofauna studies Biodiversity management planning Fire management Conservation planning and decision support systems Geographical Information Systems and spatial analyses</p>

PERSON	BACKGROUND	SKILLS
<p><b>Bruce D’Hotman</b> B.Sc. (Hons), Pri.Sci.Nat. Senior Environmental Consultant</p> 	<p>Bruce is a Senior Environmental Scientist and holds an Honours graduate from Rhodes University. He has worked in the field of Environmental Management since 2009. Prior to that he worked on a range of aquaculture ventures, designing and operating fishery and mariculture facilities. He is a Professionally Registered Natural Scientist and has experience working on large scale mining and commercial projects throughout Southern and West Africa. He has worked on all phases of these projects from initial feasibility through to completion and monitoring. This includes managing Basic Assessments, Environmental Impact Assessments, Environmental Compliance Monitoring, Environmental Management Plans and Water Use Licencing. Apart from General Environmental Management, Bruce also has experience in game counts, flora surveys, wetland management and rehabilitation. His interests in the environmental field include sensitive area management as well as rehabilitation of degraded areas.</p>	<p>Aquaculture and mariculture Mammal surveys Botanical surveys Wetland management and rehabilitation</p>
<p><b>Chantel Johnson</b> Ph.D., Pr.Sci.Nat. Principal Environmental Consultant</p> 	<p>Chantel holds MSc and PhD degrees in Botany (estuarine ecology) and a BSc degree in Botany and Geography from Nelson Mandela Metropolitan University (South Africa). Chantel has been an Environmental Consultant for over 15 years, with a focus on environmental management and impact assessment. She is well versed in environmental legislation and has managed several environmental, social and health impact assessments and management plans for heavy mineral mining in South Africa and Madagascar. These projects have been completed to international standards (IFC and World Bank). In addition, Chantel has also completed ESHIA’s for a number of open cast mines in Zambia and Mozambique. These projects were also completed to IFC Standards and have been granted environmental authorizations from their host countries. All the ESIAs that have been managed by Chantel included community consultations and she has been involved in various forms of community engagements in the rural African settings. Chantel has also been extensively involved in the data collection and report wring for land and natural resource use assessments in both Madagascar and Mozambique. The data gathering component involves extensive community meetings as well as focus group meetings to establish land use (including agriculture) and natural resources use within the communities and wider regions. Chantel has completed an extensive land survey as part of a RAP process for a heavy</p>	<p>Estuarine Assessments Monitoring Programmes Rehabilitation Assessments Environmental Impact Assessments Environmental Management Programmes High level GHG Emissions Assessments Land and Natural Resource Use Assessment Resettlement Action Plans Mine Closure Reports</p>

PERSON	BACKGROUND	SKILLS
	<p>minerals mine in Mozambique and an in-kind land survey for a large infrastructure project in Tanzania, and as such is well-versed with the relevant process.</p>	
<p><b>Elena Reljic</b> M.Sc., Pri.Sci.Nat. Senior Specialist</p> 	<p>Elena is a Senior Ecologist at CES with an MSc in Zoology (Cum Laude). The focus of her postgraduate research was on coastal dune forest restoration in Richards Bay, KwaZulu-Natal, where she studied tree, bird, and millipede communities. She has conducted bird monitoring in remote regions of South Africa, including the Kalahari Desert, Indian Ocean Belt Coastal Dune Forest, and Miombo Woodland Ecoregion. Moreover, Elena was part of a 14-month research expedition team to the sub-Antarctic Marion Island where her focus was on seabird research. This is complemented by her strong knowledge of managing and analysing large ecological databases, the programming language R, and GIS software.</p> <p>Since her employment at CES in 2021, Elena has been involved in several Terrestrial Biodiversity Impact Assessments, with specific focus on the faunal component, and other Faunal Specialist Surveys, including Avifaunal Surveys. At present, she is managing the Operational Bird and Bat Monitoring Programme for several wind farms in the Eastern Cape</p>	<p>Biodiversity and faunal surveys Wildlife identification, monitoring, trapping, and handling techniques. GIS Software Remote monitoring techniques Programming language R for statistical analysis Ecological Impact Assessments, Biodiversity Impact Assessments, Avifaunal Assessments, Biodiversity Monitoring</p>



PERSON	BACKGROUND	SKILLS
 <p><b>Jo Balmer</b> M.Sc. Senior Specialist</p>	<p>Jo has recently completed a Master’s degree in ornithology and phylogenetics through Rhodes University in Grahamstown, which he obtained with distinction. His M.Sc followed straight on from his B.Sc(Hons) in Zoology, and B.Sc in Entomology and Ichthyology from the same institution. Jo is an old-school naturalist with a passion for birding, herping and list-keeping, and he has over 10 years of guiding experience around Southern Africa. His other work experience includes contractual EIA surveys (3 years), birding app development (5 years), and junior school sports coaching (3 years). Although his professional focus has usually been ornithological in nature, he is comfortable working with most other animal classes as well, and has published research works and photographic material of mammals, fishes, reptiles, amphibians, and arthropods. Jo joined CES shortly after completing his Master’s degree in early 2023, and is based in the Grahamstown office.</p>	<p>Terrestrial biodiversity impact studies</p> <p>Avifaunal studies</p> <p>Entomological studies</p> <p>Botanical studies</p>
<p><b>Luc Strydon</b> B.Sc. Environmental Management (Botany), Cert.Sci.Nat. Principal Specialist</p> 	<p>Luc has over 13 years of experience. He has been involved in a wide spectrum of projects including freshwater impact assessments (wetlands and riparian assessments), terrestrial biodiversity assessments, botanical surveys, and related management plans (invasive alien species management plans, biodiversity management plans and rehabilitation plans. Additionally, he has also fulfilled general EAP duties such as EIAs &amp; ESIAs, environmental permitting and environmental auditing. Luc has a particular interest in wetland ecology and botany and is a member of the South African Wetland Society (SAWS), Botanical Society of South Africa (BotSoc), IAIAsa and is an active member of the SANBI project Custodians of Rare and Endangered Wildflowers (CREW).</p>	<p>Freshwater Impact Assessments</p> <p>Terrestrial Biodiversity Impact Assessments</p> <p>Botanical studies</p> <p>Biodiversity Management Plans</p> <p>Environmental Management Plans</p> <p>Invasive alien species monitoring control and eradication plans</p> <p>Rehabilitation plans</p> <p>GIS systems</p> <p>Water and soil quality monitoring</p>

PERSON	BACKGROUND	SKILLS
<p><b>Wendy Maiwashe M.Sc.</b> Senior Specialist</p> 	<p>Wendy Maiwashe is an experienced ecologist. Her contributions as an ecologist and GIS technician have been significant in four major conservation areas in South Africa, namely Vhembe Biosphere Reserve, Drakensberg Nature Valley, Maloti-Drakensberg Transfrontier Biosphere Reserve and Sub-Antarctic Prince Edward Islands. She has also worked on projects across the SADC region and made contributions in various Transfrontier Conservation areas namely Great Limpopo TFCA (GLTFCA), Lubombo TFCA (LuTFCA), Kavango Zambezi TFCA (KAZA), Malawi-Zambia TFCA (MAZA) and now more recently Lower Zambezi – Mana Pools (LZMP). Moreover, she was part of a 14-month research expedition team to the sub-Antarctic Marion Island where she was a botanist. This is complemented by her expertise in plant identification, conducting large scale botanical surveys, managing, and analysing large ecological databases, the programming language R, and GIS software.</p> <p>Her M.Sc. (Plant Sciences) focus was on plant distributions and abundances in the sub-Antarctic Islands. With a focus on identifying the drivers of plant distribution and abundance patterns in the sub-Antarctic region and documenting the abundance structure of <i>Polypogon magellanicus</i> on Marion Island.</p>	<p>Botanical studies (including vegetation mapping and classification).</p> <p>Terrestrial Biodiversity Impact Assessments</p> <p>Spatial analyses and remote sensing</p> <p>Environmental economics</p> <p>Wetland delineation and assessments</p> <p>Data engineering and database management</p>



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