



Patrick Killick

Senior Environmental Consultant

Summary

Patrick is a senior environmental practitioner and project executive at Zutari, with extensive experience in managing construction-related environmental impacts and occupational health and safety across various projects. He possesses expertise in site management systems, processes, and practical environmental management, having worked on projects including dams, roads, pipelines and residential villages.

Patrick's experience spans municipal water and wastewater infrastructure, waste management facilities, bulk thermal power generation, utility-scale renewable energy projects, seawater reverse osmosis desalination, open-cast mining and associated infrastructure.

He has contributed to environmental impact studies and regulatory processes in South Africa, Angola, Mozambique, Tanzania, and Namibia. Patrick holds a master's in environmental management (2005) and is a registered Environmental Assessment Practitioner (EAPASA) and member of IAIAA. He plays a key role in business management, proposal development, and technical guidance, supporting project leaders in environmental management and project delivery.

Relevant experience

Cato Ridge Land EIA, South Africa, KwaZulu-Natal, Cato Ridge Development Company (CRDC), 07/2021 - 11/2030, Project Leader

The Cato Ridge Development Company (CRDC), a wholly owned subsidiary of Assmang Limited, undertook a scoping and environmental impact assessment (S&EIA) and application for environmental authorisation (EA) for the rezoning and subdivision of a 351-ha portion of land north of the N3 highway in Cato Ridge to develop a light industrial, logistics, commercial, warehousing and distribution precinct in three phases over 25 years. The project is envisaged as the next industrial complex and logistic node for the eThekweni region, in response to the increasing demand for industrial land and to provide logistics support to the Port of Durban. Lead EAP and responsible for project contract, financial management, specialist coordination, the compilation of key project documentation.

ILanga solar suite, South Africa, Western Cape, Seriti Green Developments South Africa (Pty) Ltd, 04/2022 - 08/2025, Lead EAP and Project Executive

Zutari was appointed for two expedited basic assessment applications for a 315 MW solar photovoltaic facility and a 6.67 km 132 kV overhead powerline connecting to the Gamma main transmission substation. Lead EAP responsible for project contract, financial management, specialist coordination and the compilation of key project documentation.

Garden Route District Municipality regional waste site, South Africa, Western Cape, Garden Route District Municipality, 09/2021 - 06/2025, Environmental Control Officer

Supervision and compliance monitoring in terms of the environmental authorisation and environmental management plan for the construction period of the regional waste facility near the Mossindustria industrial area, outside Mossel Bay. Environmental Control Officer undertaking monthly compliance audits.

Morkel's Cottage environmental assessment and maintenance management plan, South Africa, Western Cape, City of Cape Town, 11/2023 - 02/2025, Lead EAP and Project Executive

The City of Cape Town intends to conduct periodic repairs and maintenance work on the 810 mm bulk water pipeline within the Morkel's Cottage area in Strand, Western Cape Provincial Operations. The bulk (potable) water

Qualifications

MPhil (Environmental Management)
BTech (Forestry)
NDip (Forestry)

Professional registrations

Environmental Assessment Practitioner (EAP), Environmental Assessment Practitioners Association of South Africa (EAPASA)
Member, International Association for Impact Assessment, South Africa (IAIAA)

Specialisation

Project Leader/Senior Environmental Practitioner

Years in industry

20

pipeline traverses several residential areas including Onverwacht, Rusthof, Forbes and Broadlands Village and a conservation area as demarcated by the COCT. The bulk water mains supply potable water to the COCT and connect the water treatment works, dams and other water sources and the COCT's potable water reticulation system. The project also triggers a water use in terms of the National Water Act which requires registration as a general authorisation. Responsible for overseeing the specialist coordination and compilation of the MMP and a WULA application.

EIA for Paarden Eiland desalination plant, South Africa, Western Cape, City of Cape Town Water & Sanitation, 05/2023 - 01/2025, Lead EAP

Zutari was appointed by the City of Cape Town to undertake an S&EIA and application for environmental authorisation (EA) for the proposed 70 megalitre seawater desalination plant to provide potable water to the City of Cape Town. Intake and outlet pipelines and structures intersect and run adjacent to the Cape Town Harbour. Responsible for key project documentation and coordination of specialists.

Karoo wind energy facility cluster, South Africa, Western Cape, Mulilo Renewable Project Developments SA (Pty) Ltd, 01/2024 - 08/2024, Lead EAP and Specialist

Preparation of the defence and civil aviation compliance statements. Compile the compliance statements.

Mulilo Geelhoutboom wind energy facility cluster, South Africa, Mpumalanga, Mulilo Renewable Project Developments SA (Pty) Ltd, 01/2024 - 06/2024, Lead EAP and Project Leader

Application for environmental authorisation for four 360 MW wind energy facilities and four 132 kV overhead powerlines and substations. Oversaw project. Responsible for key project documentation and coordination of specialists.

Namies and Wolf Wind farm environmental authorisation (EA) amendments, South Africa, Northern Cape, Juwi Renewable Energies (Pty) Ltd, 07/2017 - 08/2022, Project Leader

The project entailed the second part of the environmental authorisation (EA) amendment process to increase the size of the wind turbines that can be deployed on the Namies and Wolf Wind energy facilities. Responsible as team lead and EAP for all aspects of the project and overseeing the compilation of EA amendment application, associated amendment report and associated public participation process.

Nuweveld Wind Farm Projects, South Africa, Western Cape, Red Cap Nuweland North (Pty) Ltd, 03/2019 - 12/2021, Project Leader

Red Cap Energy (Pty) Ltd is proposing three wind energy facilities (wind farms) approximately 65 km north of Beaufort West and 30 km south of Loxton along the R381 in the Beaufort West Local and Central Karoo District Municipalities, in the Western Cape. The project includes the development of an approximately ~120 km 132 kV or 400 kV (132/400 kV) transmission line (gridline) which will connect the proposed wind farms to the Eskom Droërvier substation located southwest of Beaufort West. Zutari has been appointed as the independent environmental assessment practitioner (EAP) to facilitate the requisite scoping and environmental impact reporting (S&EIR) processes for all four applications under the NEMA and associated legislation.

Environmental and social impact assessment (ESIA) and resettlement action plan (RAP) for the Zambeze Coal Mine, Mozambique, Tete, International Coal Ventures Private Limited (ICVL), 11/2015 - 12/2021, Project Manager

Zutari was appointed to develop the environmental and social studies that will enable the licensing of the Zambeze Coal Project. The project aims to provide the client with a sound assessment of the potential impacts of the proposed Zambeze mine development and to demonstrate proposed mitigation or enhancement measures on these to the environmental authority, namely the Ministry of Land, Environment and Rural Development/Ministério da Terra, Ambiente e Desenvolvimento Rural (MITADER). Responsible for project contract and financial management.

Koeris dangerous goods basic assessment and environmental authorisation, South Africa, Northern Cape, SA Mainstream Renewable Power, 10/2018 - 11/2021, Project Leader

Zutari undertook a National Environmental Management Act (NEMA) Part 2 environmental authorisation (EA) amendment for the increase in turbine size and basic assessment (BA) for a temporary above ground diesel storage tank. Responsible as team lead and EAP for all aspects of the project and overseeing the compilation of EA amendment application and associated amendment report.

Environmental amendment for the 200 MW Hotazel Solar Park, South Africa, Northern Cape, Juwi Renewable Energies (Pty) Ltd, 04/2019 - 11/2021, Project Leader

The project entailed the environmental authorisation (EA) amendment to expand and split the 200 MW solar PV facility and associated infrastructure, including a 100 MWh grid scale battery storage facility on a site near Hotazel in the Northern Cape into two discreet projects. Responsible as team lead and EAP responsible for all aspects of the project and overseeing the compilation of EA amendment application and associated amendment report.

Design of Mizingani seawall and promenade, Phase IIA, Zanzibar, Tanzania Ministry of Finance, 11/2013 - 03/2020, EMPr Specialist and ECO

The Revolutionary Government of Zanzibar (RGoZ), through its Zanzibar Urban Services Project (ZUSP), appointed Zutari to lead a consortium of six consultancy companies for the design of the 340 m-long vertical seawall, with a 5 m-wide sea reclamation, along Mizingani Road. Based on design work completed under the Aga Khan Trust for Culture's (AKTC's) technical support, Zutari's scope of work included detailed design of the seawall and promenade; the preparation of construction drawings, specifications, contract packages and tender documents; building condition assessment and review of the environmental and social management plan (ESMP). Responsible for the compilation of a detailed environmental management programme (EMPr) and later appointed to monitor and audit of the project performance against the conditions of authorisation and EMPr.

Water augmentation study for the Bitou Local Municipality, South Africa, Western Cape, Bitou Local Municipality, 10/2009 - 01/2020, Project Leader

The Wadrif 1E Dam scheme was for the augmentation of the bulk water supply to the Plettenberg Bay area. Zutari's project scope focused on the Wadrif 1E off-channel dam and included a basic assessment process for an emergency pipeline and the remainder of the pipeline in terms of the relevant environmental legislation. An application for a license to store was made in terms of the National Water Act, 1997 (NWA) and a forestry permit application for a drilling site investigation for the Wadrif 1E Dam site and for dam construction. Responsible as team lead and EAP responsible for all aspects of the project and compilation of interim monitoring report need to allow for the continuation of the authority's stalled decision-making process.

Table Mountain Group (TMG) Aquifer exploratory phase, South Africa, Western Cape, City of Cape Town, 12/2015 - 08/2019, EMPr Specialist

The Table Mountain Group (TMG) Aquifer is an aquifer system with significant storage volume which can provide large bulk water supply for local municipalities and irrigation water for agriculture in the Western Cape and Eastern Cape Provinces in South Africa. Zutari was appointed to manage the exploration of groundwater in the aquifer system to establish the potential of the TMG Aquifer as a long-term water resource for the Western Cape. Responsible for contributions to the environmental management programmes (EMPrs) and advisory support and quality management to ECOs.

Wallerawang Closure Project, Australia, EnergyAustralia NSW Pty Ltd, 09/2016 - 06/2019, Team Member

Energy Australia's Wallerawang Closure Project went underway to decommission, deconstruct and rehabilitate the site which formerly housed the Wallerawang Power Station, an ash disposal area and associated infrastructure. The 200 ha Wallerawang Ash Repository comprises Kerosene Vale Ash Repository (KVAR), Kerosene Vale Ash Dam (KVAD), Sawyers Swamp Creek Ash Dam (SSCAD), Lidsdale Cut landfill area, an asbestos repository and infrastructure that services these land uses including a pipeline easement, access tracks, haul roads and water management features. Responsible for the section dealing with assessment, management and mitigation of noise and vibration aspects.

Hotazel Solar Park, South Africa, Northern Cape, Juwi Renewable Energies (Pty) Ltd, 05/2016 - 10/2017, Project Leader

Hotazel Solar Farm, owned by Juwi Renewable Energies (Hotazel Solar 1 (Pty) Ltd), is proposing the construction of a solar photovoltaic (PV) park and associated grid connection infrastructure near Hotazel in the Northern Cape. Zutari has been appointed to undertake two separate applications for environmental authorisations from the Department of Environmental Affairs (DEA). Responsible as team lead and EAP for all aspects of the project and the compilation of all impact assessment documents, environmental management programme (EMPr) and associated public participation process.

Road materials supply strategy, South Africa, Western Cape, Provincial Government of the Western Cape (PGWC): Department of Transport and Public Works, 06/2008 - 07/2017, Team Member/EMP Specialist/ECO Support and Review

The Western Cape Province initiated a proactive approach to identifying and legalising a network of approved pits. Zutari was responsible for prospecting suitable road making materials, sampling, testing, and identifying technically suitable sources to be used for both identified projects and as strategic pits and was responsible for getting all the required approvals. Responsible as team member and assisted with the compilation of application documentation, environmental management programmes (EMPrs) and provided ECO support and quality control functions.

Optimisation of the Kupferberg landfill site, Namibia, Windhoek, Jan Palm Consulting Engineers (JPCE), 08/2015 - 09/2016, Project Leader

The Kupferberg waste disposal site is currently the only waste disposal facility that serves the City of Windhoek and is one of two in Namibia with a hazardous waste component. The City of Windhoek plans to expand the disposal site and service the City of Windhoek for up to 20 years. Zutari was engaged to undertake an environmental impact assessment (EIA) on the project. Responsible as team lead and EAP for all aspects of the project and the compilation of all impact assessment documents, environmental management programme (EMPr) and associated public participation process.

Environmental authorisation (EA) amendment for the Kangnas and Koeris wind energy facilities, South Africa, Northern Cape, Mainstream Renewable Power (Pty) Ltd, 02/2016 - 09/2016, Project Leader

Zutari was appointed by Mainstream Renewable Power (Pty) Ltd to undertake two Part 2 amendment and one Part 1 amendment, in terms of the NEMA EIA Regulations, 2014, of an environmental Authorisation for the Kangnas and Koeris Wind Energy Facilities. The amendment centred on a change to the specifications of the proposed wind turbines to allow for a wider turbine specification envelope that permits the new modern turbine models. Responsible as team lead and EAP for all aspects of the project and the compilation of all EA amendment documentation and associated public participation process.

Environmental authorisation amendment for the 96 MW Wolf Wind Energy Farm, South Africa, Eastern Cape, Juwi Renewable Energies (Pty) Ltd, 04/2016 - 08/2016, Project Leader

Zutari was appointed by Juwi Renewable Energies (Pty) Ltd to undertake a Part 2 amendment, in terms of the NEMA EIA Regulations, 2014, of an environmental authorisation for the Wolf Wind Energy Facility near Wolwefontein in the Eastern Cape. The amendment centered on a change to the specifications of the proposed wind turbines, increased blade tip and increased generation power. Responsible as Team Lead and EAP for all aspects of the project and the compilation of all impact assessment documents, environmental management programme (EMPr) and associated public participation process.

Environmental processes for the Kronos Solar Park, South Africa, Northern Cape, Juwi Renewable Energies (Pty) Ltd, 11/2014 - 11/2015, Project Leader

Zutari was appointed to undertake five individual environmental processes to assess the environmental impacts associated with the three proposed 75 MW photovoltaic (PV) facilities and two 132 kV overhead transmission lines at the Kronos Solar Park near Copperton. Responsible as team lead and EAP for all aspects of the project and the compilation of all impact assessment documents, environmental management programme (EMPr) and associated public participation process.

Kangnas Wind Energy Facility (WEF) and photovoltaic EIAs, South Africa, Western Cape, Mainstream Renewable Power, 03/2012 - 11/2015, Project Leader

The project involved updating the final environmental management programmes (EMPrs) and layouts for the approved 140 MW Kangnas Wind Energy Facility (WEF) and associated infrastructure as part of the project financial close ahead of construction for submission to the Department of Environmental Affairs (DEA). Responsible as team lead and EAP for all aspects of the project and the compilation of all impact assessment documents, environmental management programmes (EMPr) and associated public participation process.

Outeniqua Wind Farm, South Africa, Western Cape, Juwi Renewable Energies (Pty) Ltd, 03/2013 - 10/2015, Project Leader

The project involves conducting an environmental impact assessment process in terms of the National Environmental Management Act for a 39 MW wind energy facility (WEF). Responsible as team lead and EAP for all aspects of the project and the compilation of all impact assessment documents, environmental management programme (EMPr) and associated public participation process.

Wolf Wind Farm assessment, South Africa, Eastern Cape, Juwi Renewable Energies (Pty) Ltd, 08/2013 - 10/2015, Project Leader

Juwi Renewable Energies (Pty) Ltd (Juwi) proposes to construct a wind energy facility (WEF) and associated infrastructure, with a generation capacity of 80 MW on farms near Wolwefontein in the Eastern Cape with 132 kV or 220 kV overhead transmission lines for transmission and distribution. Responsible as team lead and EAP for all aspects of the project and the compilation of all impact assessment documents, environmental management programme (EMPr) and associated public participation process.

Muxima shopping centre environmental impact assessment (EIA), Angola, Luanda, SWB Comercio e Industria, 07/2014 - 10/2015, EMPr Specialist

Zutari was appointed for the environmental impact assessment (EIA) for Muxima, a new shopping retail centre in Viana with more than two 5 000 m² of retail space. Responsible for various impact assessment documents, environmental management programme (EMPr) and stakeholder management plan undertaken to IFC standards.

Knysna-Bitou scheme feasibility, South Africa, Western Cape, Eden District Municipality, 01/2013 - 09/2015, Specialist

The Knysna and Bitou local municipalities within the Eden District Municipality recently experienced the worst drought in more than 100 years. The need to consider cross-boundary projects was identified in the Eden District Municipality's regional bulk water supply master plan study. The project involved the identification of the water resource and bulk water requirements of both Knysna and Bitou local municipalities for the next 20 years and exploring the technical and economic viability of integrating the bulk water supply systems serving the towns of Knysna and Plettenberg Bay. Responsible for assisting with the identification of options, screening of options using MCDM and compiling a results report on the preferred options for further development.

Distillery Road upgrade for Drakenstein Municipality, South Africa, Western Cape, SKCMasakhizwe Engineers, 10/2013 - 07/2015, Project Leader

The project entailed the provision of an environmental control officer (ECO) during the upgrading of Distillery Road in Wellington. Responsible as team lead and EAP for all aspects of the project and the compilation of all impact assessment documents, environmental management programme (EMPr) and associated public participation process.

Volkstrust wind energy facility constraints analysis, South Africa, Mpumalanga, Juwi Renewable Energies (Pty) Ltd, 02/2015 - 06/2015, Project Leader

The project entailed an investigation of the potential environmental and social constraints affecting the feasibility of a wind energy facility in Volkstrust. Zutari undertook a preliminary desktop assessment of the following areas: heritage (archaeology and cultural heritage); botany; avifauna; freshwater resources; bats; and agricultural potential. Responsible as team lead and compiled the screening and constraints analysis report including GIS inputs.

Rössing Desalination Plant, Namibia, Erongo Region, Rio Tinto Rössing Uranium Limited, 07/2014 - 03/2015, Project Leader

This project consisted of a 10 Ml/d seawater desalination plant, north of Swakopmund to supply the water needs of Rössing Uranium Mine. Responsible as the Zutari team lead and EAP for some aspects of the project and the compilation of all impact assessment documents, environmental management programme (EMPr) and associated public participation process.

Second bridge on the River Niger, Nigeria, Niger, Nigeria Sovereign Investment Authority (NSIA), 05/2014 - 12/2014, Team Member

The Federal Government of Nigeria proposed to construct a second bridge across the River Niger between Onitsha and Asaba and selected the Julius Berger-AIIM Consortium as the preferred bidder. Zutari was appointed on behalf of AIIM to undertake an environmental and social impact assessment (ESIA) required in terms of the Environmental Decree No 86 of 1992, under the International Finance Corporation (IFC) guidelines, which included a resettlement action plan (RAP). The aim was to ensure regulatory compliance with the Nigerian environmental legislation and achieve the highest possible compliance with Equator Principles (EPs). Responsibilities included client liaison; coordination of the ESIA process, including 16 specialists; writing and reviewing key aspects of the environmental management programme (EMPr).

Pilot catchment management plan: Kyoga water management zone, Uganda, World Bank, 12/2012 - 07/2014, Team Member

The pilot catchment management plan (CMP) fits into a larger development framework and coordinated water-related investment strategy for the region, as well as within the context of development goals and key water-related policies of Uganda. Zutari was appointed for water planning and management and adopted an integrated water resources management (IWRM) approach for this project. Responsible for contributing to various sections of the catchment management plan and assisted with the compilation of the overall document.

Franschhoek traffic circle concept design, South Africa, Western Cape, Stellenbosch Local Municipality, 04/2013 - 06/2014, Project Leader

The Stellenbosch Municipality appointed Zutari to provide full professional services relating to the upgrading of intersections on the main road through Franschhoek, the R45/Provincial Main Road 191 (MR191). The appointment included the preliminary design, detailed design, documentation and construction supervision stages. Responsible as team lead and EAP for all aspects of the project and the compilation of all impact assessment documents, environmental management programme (EMPr) and associated public participation process.

450 MW Khanyisa coal fired power station, South Africa, Mpumalanga, AngloGold, 09/2010 - 01/2014, Consulting Team Member

The project entailed the compilation of construction and operations phase environmental management programmes (MP's) for a 450 MW coal-fired power station and associated infrastructure, including ash disposal dumps. Responsible for the development of the environmental management programme (EMPr).

Constraints analysis for a wind farm, South Africa, Eastern Cape, Juwi Renewable Energies (Pty) Ltd, 09/2013 - 12/2013, Project Leader

Zutari was appointed by Juwi Renewable Energies (Pty) Ltd to undertake an environmental constraints analysis on three potential sites near Aberdeen in the Eastern Cape to be considered for development as wind energy facilities. Zutari undertook a preliminary desktop assessment of the following areas: heritage (archaeology and cultural heritage); botany; avifauna; freshwater resources; bats; and agricultural potential. Responsible as Team Lead and compiled the screening and constraints analysis report including GIS inputs.

Mineral exploration environmental management plan (EMP) for License Areas No 3450L and 3451L, Mozambique, Tete, Coal India Africana Limitada, 02/2012 - 04/2013, Consulting Team Member

The project entailed the compilation of an environmental management plan (EMP) for mineral exploration drilling (diamond core and percussion drilling) in Licence Area no's 3450L and 3451L of the Moatize coal fields. Responsible for compilation of the exploration drilling environmental management programme (EMPr).

Environmental and socio-economic impact assessment (ESIA) for a coal-fired power station, Namibia, Erongo Region, NamPower, 09/2011 - 04/2013, Consulting Team Member

To meet the increasing power demands and reduce Namibia's dependency on South Africa for electricity, the Namibia Power Corporation (NamPower) proposed an increase in its electricity-generating capacity. The national peak is approximately 550 MW, of which a significant portion is imported, especially during the dry season. This is when the flow of the Kunene River is far below what is needed to operate the Ruacana Power Station on full base load. The proposed power station, Erongo, is set to contribute to the base load supply and assist in stabilising the grid under load and supply fluctuations. The project aimed to assess the impact of a 150/300/800 MW coal-fired power station with associated coal stockyard, an ash disposal facility and transport systems to deliver coal. This project aimed to investigate one of the alternative sites from the previous study in Walvis Bay and two new sites in the vicinity of Arandis, east of Swakopmund. Responsible for the development of the environmental management programme (EMPr).

Environmental socio-economic impact assessment (ESEIA) for Erongo Power Station, Namibia, Erongo Region, Namibia Power Corporation (NamPower), 09/2011 - 04/2013, EMPr Specialist

The Namibia Power Corporation (NamPower) proposed an increase in its electricity-generating capacity to meet increasing power demands and reduce Namibia's dependency on South Africa. Zutari undertook an environmental socio-economic impact assessment (ESEIA) for the construction of the proposed Erongo Power Station to obtain authorisation from the Directorate of Environmental Affairs and the Ministry of Environment and Tourism. This ESEIA aimed to assess the impact of a 150/300/800 MW coal-fired power station with associated coal stockyard, an ash disposal facility and transport systems to deliver coal. Responsible for compiling the project environmental management programme (EMPr).

Construction of a bulk water supply scheme to the town of Aussenkehr, Namibia, Namibian Water Corporation, 12/2011 - 03/2013, Consulting Team Member

The project comprised the compilation of a life-cycle environmental management plan for the bulk water supply scheme for the town of Aussenkehr. Responsible for the development of the environmental management programme (EMPr).

Mine life extension for Rössing Uranium Mine, Namibia, Erongo Region, Rio Tinto Rössing Uranium Mine Limited, 09/2009 - 08/2012, Consulting Team Member

Compiling a social and environmental impact assessment (SEIA) for various activities associated with the life extension of Rössing Uranium Mine, including the extension of the open pit operations, the acid manufacturing plant, the ore sorting plant, extended waste rock disposal areas, and tailings facilities. Responsible for assisting with compiling the social and environmental impact assessment (SEIA).

Mine life extension for Rössing Uranium Mine, Namibia, Rio Tinto Rössing Uranium Mine Limited, 06/2007 - 12/2011, Consulting Team Member

The project comprised the compilation of a social and environmental management plan (SEMP) for various activities associated with the life extension of Rössing Uranium Mine. This included the extension of the open pit operations, acid manufacturing plant, ore sorting plant, extended waste rock disposal areas, and tailings facilities, as well as a bulk sulphur handling facility in the port at Walvis Bay. Responsible for the development of the environmental management programme (EMPr).

Upgrading the Keurbooms pump station, abstraction works and rising main, South Africa, Western Cape, Bitou Municipality, 11/2009 - 12/2011, Environmental Control Officer (ECO)

Zutari was appointed by the Bitou Municipality to compile an environmental management plan (EMP) associated with the proposed urgent upgrading of the Keurbooms Pumpstation, abstraction works and a 650 m length of 500 mm diameter steel rising raw water main. Responsible for compiling an EMP associated with the proposed urgent upgrading of the Keurbooms pump station, abstraction works and a 650 m length of 500 mm diameter steel rising raw water.

Pipeline for reclamation of water from wastewater treatment works (WWTW), South Africa, Western Cape, Beaufort West Municipality, 02/2007 - 06/2011, Consulting Team Member

Zutari was appointed for the facilitation of the required environmental authorisation and waste licence for the upgrading of the wastewater treatment works in Merweville. Responsible for routine environmental auditing to confirm compliance with the environmental authorisation (EA) and environmental management programme (EMPr) as required by ECO role.

Decommissioning of the Sonae Novobord fibreboard factory, South Africa, Western Cape, Sonae Novobord (Pty) Ltd, 06/2009 - 06/2011, Consulting Team Member

Zutari was appointed by the Sonae Novobord to compile an environmental management plan (EMP) and act as the environmental control officer (ECO) for the decommissioning of their factory in George Industria, with a focus on the recovery and handling of salvageable materials and the lawful recovery and disposal of hazardous wastes and contaminated soil. Responsible for authoring various documents including the environmental impact assessment (EIA), public consultation materials and environmental management programmes (EMPRs). Also fulfilled the role as ECO overseeing the decommissioning process and ensuring compliance with the environmental authorisation (EA) and EMPr.

15 Ml/d emergency desalination plant in Mossel Bay, South Africa, Western Cape, Mossel Bay Municipality, 05/2010 - 01/2011, Project Manager, Lead Consultant and Environmental Control Officer (ECO)

The project involved the compilation of a Section 24G application in terms of the National Environmental Management Act for an emergency 15 Ml/d seawater reverse osmosis plant because of a more than 1:150-year drought situation in the Southern Cape, inclusive of a construction phase environmental management plan (EMP) and environmental control officer (ECO) services. Responsible as Team Leader and EAP for the compilation of a Section 24G retrospective environmental impact assessment (EIA) and the ECO, auditing compliance against the provisional environmental management programme (EMPr).

2 Ml/d emergency desalination plant in Plettenberg Bay, South Africa, Western Cape, Bitou Municipality, 12/2009 - 12/2010, Lead Consultant and Environmental Control Officer (ECO)

Compilation of a Section 24G application in terms of the National Environmental Management Act for an emergency 2 Ml/d seawater reverse osmosis plant because of a more than 1:150-year drought situation in the Southern Cape, inclusive of a construction phase environmental management plan and environmental control officer services. Responsible as team leader and EAP for the compilation of a Section 24G retrospective environmental impact assessment (EIA) and the ECO, auditing compliance against the provisional environmental management programme (EMPr).

New sulphuric acid storage tank at the Rössing Uranium Mine, Namibia, Rio Tinto Rössing Uranium Mine Limited, 02/2010 - 06/2010, Consulting Team Member

Commissioned by Rössing Uranium to compile of a social and environmental management plan (SEMP) for the proposed new 15 Kt sulphuric acid storage tank located within the mine precinct. Responsible for compilation of the impact assessment documentation and environmental management programme (EMPr).

Social and environmental management for mineral exploration drilling plan, Namibia, Rio Tinto Rössing Uranium Mine Limited, 11/2008 - 04/2010, Consulting Team Member

Commissioned by Rössing Uranium Limited to compile a social and environmental management plan (SEMP) for the proposed exploration drilling activities within the Namib-Naukluft Park and mine licence area. Responsible for compiling the exploration drilling environmental management programme (EMPr).

Creosote and CCA timber pole treatment facility, South Africa, Outeniqua Pale (Pty) Ltd, 06/2007 - 03/2010, Consulting Team Member

Responsible for assisting with an environmental impact assessment (EIA) for the decommissioning of an Outeniqua Pale Creosote and CCA pole treatment facility in Groot Brak and re-establishing it on a new site in Albertinia. Appointed by Outeniqua Pale (Pty) Ltd to compile of a construction, operation and decommission phase environmental management plan (EMP) for a Creosote and CCA pole treatment facility in conjunction with a basic assessment report (BAR).

Social and environmental management plan for a bulk sulphur handling facility, Namibia, Rio Tinto Rössing Uranium Mine Limited, 04/2008 - 12/2009, Consulting Team Member

Commissioned by Rössing Uranium to compile of a social and environmental management plan (SEMP) for the proposed bulk sulphur importation, stockpiling and handling facility in the port of Walvis Bay. Responsible for co-compilation of the impact assessment documentation and environmental management programme (EMPr).

Emergency upgrading of Keurbooms rising main and pumps, South Africa, Western Cape, Bitou Municipality, 10/2009 - 11/2009, Lead Consultant

Appointed by the Bitou Municipality to undertake an Emergency application for the upgrading of a 295 m section of perished pipeline, with 500 mm diameter steel pipe and the upgrading of pump impellers to increase abstractions from 100 l/s to 120 l/s out of the Keurbooms River. Responsible to compile an EMP and to function as the ECO for the emergency application and subsequent upgrading of a 295 m section of perished pipeline, with 500 mm diameter steel pipe and the upgrading of pump impellers to achieve a greater abstraction rate.

Upgrading of the Merweville wastewater treatment works (WWTW), South Africa, Western Cape, Beaufort West Municipality, 05/2009 - 10/2009, Project Manager and Lead Consultant

Zutari was appointed by the Beaufort West Municipality to undertake waste license application involving the compilation of a basic assessment report and a construction, operation and decommissioning phase environmental management plan (EMP) for the upgrading of the Merweville wastewater treatment works (WWTW). Responsible as team leader and EAP for the compilation of impact assessment and environmental management programme (EMPr) documents.

Environmental and socio-economic impact assessment (ESEIA) for a proposed NamPower coal-fired power station at Walvis Bay, Namibia, Erongo Region, NamPower, 04/2008 - 08/2009, Consulting Team Member

ESEIA for the proposed NamPower coal-fired power station at Walvis Bay. This included a site screening and selection process, a scoping study, and an ESEIA, all supported by an environmental management plan (EMP). Responsible for acting as lead consultant on the ESEIA.

40 MI off-channel reservoir in Karatara, South Africa, Western Cape, Knysna Municipality, 04/2008 - 07/2009, Principle Environmental Consultant/Environmental Control Officer

The project entailed the compilation of the construction phase environmental management plan (EMP) for a 40,000 m² off-channel reservoir, in-channel abstraction works, and associated pipe work. Responsible for acting as environmental control officer (ECO) to supervise the implementation of the environmental management plan (EMP) and undertake compliance monitoring and reporting.

Independent review of environmental impact assessment (EIA) applications, South Africa, Eastern Cape, Department of Environmental Affairs and Tourism (DEAT), 01/2007 - 02/2009, Consulting Team Member

Independent review of environmental impact assessment (EIA) applications in terms of the Environmental Conservation Act (Act 73 of 1989) for the Department of Economic Affairs, Environment and Tourism (DEAET). Responsible for assisting with the review of various Section 22 EIA applications.

Paratus emergency generation facility in Walvis Bay, Namibia, NamPower, 04/2008 - 08/2008, Consulting Team Member

Environmental process management and documentation in relation to a proposed 50 MW heavy fuel oil emergency generation facility located in the industrial port area. Responsible for assisting with the environmental process management and compiling documentation.

Review of the biodiversity components of municipal spatial development frameworks (SDFs) in the Cape domain, South Africa, Western Cape, South African National Biodiversity Institute (SANBI), 09/2007 - 06/2008, Consulting Team Member

Zutari was appointed to provide an overview of the requirements for biodiversity in SDFs, and an assessment of the status of biodiversity in these SDFs, as well as to undertake the review as Phase I of a process to improve the input of biodiversity priorities in spatial planning documents and processes. Responsible for reviewing the first phase of a process to improve the input of biodiversity priorities in spatial planning documents and processes.

Overhead power lines between Ha Lejone and the Lqhobong and Kao Diamond Mines, Lesotho, Lqhobong Mining Development Company and Kao Diamond Mine/Plantech Associates, 03/2007 - 02/2008, Consulting Team Member

EIA for a 38 km, 132 kV overhead power line and associated step-up and step-down substations. Responsible for assisting with compiling an environmental impact assessment (EIA).

Relocation of Sedgefield's water treatment and supply infrastructure, South Africa, Western Cape, Knysna Municipality, 08/2007 - 12/2007, Consulting Team Member

The project consisted of a basic assessment report for the construction of a 4,5 MI water treatment works; a 1,8 km, 300 mm rising raw water pipeline; and the decommissioning and upgrading of the Ruigtevlei water treatment works into a pump station. Conduct a Basic Assessment process for the construction of a 4,5MI water treatment works, a 1,8 km, 300 mm rising raw water pipeline and the decommissioning and upgrading of the Ruigtevlei water treatment works into a pump station. Compilation of the construction, operational and decommissioning phase EMP's for the construction of a 4,5 MI water treatment works, a 1,8 km, 300 mm rising raw water pipeline and the decommissioning and upgrading of the Ruigtevlei water treatment works into a pump station. Responsible for assisting with the compilation of project documentation including impact assessment and environmental management programmes (EMPrs).

Chemical storage and distribution facility in George, South Africa, Western Cape, Metsi Chem Ikapa (Pty) Ltd, 06/2007 - 11/2007, Consulting Team Member

The project involved Section 24G retrospective applications for the authorisation of illegal activities relating to the storage of various hazardous chemicals used in the water purification industry, and the development of an associated operational phase environmental management plan (EMP) for incorporation into an ISO14001

environmental management system (EMS). Responsible for compilation of a section 24G retrospective environmental impact assessment (EIA) and environmental management programme (EMPr).

Alien vegetation eradication and rehabilitation, Fancourt Estate, George, South Africa, Western Cape, Fancourt Golf and Country Estate, 05/2006 - 06/2007, Consulting Team Member

Formulation of an alien vegetation eradication and rehabilitation plan for Afromontane Forest for the estate's landholding on Malgas River. Responsible for formulating the alien vegetation eradication and rehabilitation plan.

Berg water project, Franschhoek, South Africa, Western Cape, Trans-Caledon Tunnel Authority (TCTA), 03/2004 - 03/2007, Environmental Monitor

The project entailed the construction of bulk water supply infrastructure to service the greater Cape Town metropolitan area, which is comprised of the Berg River Dam, large diameter water transfer pipelines, two heavy duty pump stations, a scheme control centre, a balancing dam, several gauging weirs, a diversion weir, an asphalt access road, and an 80-unit residential village with associated bulk services. Responsible for construction supervision, environmental monitoring and reporting, review and assistance with construction method statements, monitoring health and safety aspects and legal compliance, as well as investigating and advising on internal and external entities about environmental issues.

Keurbooms River raw water pipeline, South Africa, Bitou Municipality, 01/2007 - , Environmental Control Officer

The project consisted of the provision of ad hoc environmental planning, routine audits, and compliance monitoring of the implementation of the environmental management plan (EMP) and ROD conditions of approval for the installation of a 9 km raw water pipeline and the rehabilitation of the construction servitude on completion. Responsible for the monitoring and auditing of the project performance against the conditions of environmental authorisation (EA) and environmental management programme (EMPr).

Timber treatment facility, South Africa, Outeniqua Pale (Pty) Ltd, 01/2008 - , Consulting Team Member

The project was concerned with the compilation of a construction, operation and decommission phase environmental management plan (EMP) for a Creosote and CCA pole treatment facility in conjunction with a basic assessment report. Responsible for contributions to the environmental management programme (EMPr) and assisting with air quality monitoring.