

### Qualifications

MPhil: Environmental Law

BTech Forestry

NDip Forestry

### Professional registrations

Member, International Association for Impact Assessment South Africa (IAIASa)

### Specialisation

Environmental assessments

**32**

years in industry



## Charles Norman

### Environmental Specialist

Charles is a principal environmental practitioner with three decades' experience in environmental services. His technical proficiency and strategic thinking, along with his international environmental experience, place him in a strong position to advise environmental impact assessment (EIA) teams on the integration of technical pragmatism and due environmental processes. His extensive review experience has placed him in a key role mentoring environmental assessment practitioners within Aurecon and coordinating the advisory and delivery functions of projects.

He has worked in a number of countries on a variety of environmental assessments and environmental planning assignments for a range of local and internationally funded public and private sector projects. His experience is predominantly related to large infrastructure, energy, mining and manufacturing projects across Africa and in Australia.

Charles holds a Master's Degree in Environmental Law from the University of Cape Town in South Africa. He also obtained a Bachelor of Technology in Forestry from the Nelson Mandela University in Port Elizabeth in 1999.

## Experience

**Environmental services for the implementation of Phase 1 of Welmoed Estate mixed-use housing development, Provincial Government of the Western Cape (PGWC): Department of Human Settlements (Western Cape Province, South Africa) 08/2020 – present, Project Leader.**

The Department of Human Settlements is implementing the largest greenfield housing development in Cape Town which forms part of the Southern Corridor Integrated Human Settlement Programme. Phase 1, the Southern Precinct, is in the process of being developed and Zutari was contracted to provide environmental services on the project, which includes environmental monitoring as the environmental control officer (ECO) during construction; botanical search and rescue; development of wetland rehabilitation areas; and advisory for the requisite biodiversity offset.

**Environmental impact assessment for Penhill greenfields development project, Provincial Government of the Western Cape (PGWC): Department of Human Settlements (Western Cape Province, South Africa) 12/2016 - present, Project Leader.**

The Department of Human Settlements is establishing a housing development to cater for approximately 8 000 units as part of the Southern Corridor initiative to upgrade informal settlements within the City of Cape Town. Aurecon was appointed to undertake an environmental impact assessment (EIA) and subsequent amendment for this greenfields housing development and is currently

appointed as the Environmental Control Officer (ECO) during construction. Responsible as project leader.

**Aga Khan Hospital Kampala, Aga Khan University Hospital (AKUH) (Kampala, Uganda) 09/2016 - 06/2017, Reviewer.**

Aga Khan University Hospital (AKUH) intends to develop a 600-bed hospital on a 60 acre site at the junction of Jinja and New Port Bell Rd in Nakawa, Kampala. The initial phase of the project known as the “Launch Phase” will be developed on a 7 – 10 acre portion of the site and will consist of a 50-bed hospital with an estimated 14 300 m<sup>2</sup> gross building area. In terms of the scope of works, the launch phase will consist of acute bed units; intensive care units; high-dependency units; surgical suites; imaging suites; cardiac catheterization (“cath”) laboratory; as well as labour and delivery suites. Aurecon will be providing full engineering services including geotechnical; civil; structural; wet services; fire safety and protection; mechanical; electrical; electronic (ICT, fire detection, audio visual and security) and acoustics; environmentally sustainable design (ESD) monitoring and management, provision of cost estimates and BOQs. Responsible for review of project reporting and liaison with sub-consultants.

**Design of Mizingani seawall and promenade, Phase IIA, Tanzania Ministry of Finance (Zanzibar City, Zanzibar) 12/2013 - 05/2018, Environmental Control Officer (ECO).**

The Revolutionary Government of Zanzibar (RGoZ), through its Zanzibar Urban Services Project (ZUSP), appointed Aurecon 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, Aurecon'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 auditing the site to ensure adequate implementation of environmental controls.

**Mossel Bay Upgrading of Informal Settlements Programme (UISP). (Western Cape Province, South Africa) 01/2017 – 07/2018, Phase Leader.**

The Mossel Bay Municipality appointed Aurecon to provide project management services for informal settlement upgrading in the Local Municipality via the UISP, as a follow on to the National Upgrading Support Programme (NUSP). Aurecon's scope of works included the project planning, procurement of requisite planning and environmental permissions and implementation oversight for 22 settlements. Responsible as phase leader for the Environmental Impact Assessment component, included managing specialist input and facilitating Environmental Authorisations (Mossel Bay Municipality).

**Project information memoranda (PIM) for Mtwara Port and the Mtwara/Mikindani municipal master plan, Development Bank of Southern Africa (DBSA) (Mtwara Region, Tanzania) 08/2014 - 09/2015, Environmental Process Advisor.**

The project entailed the development of project information memoranda (PIM) for Mtwara Port, which entailed a review of the Mtwara Port feasibility study of 2012 and other related material that would assist in the preparation of a bankable PIM. The project also involved the development of the Mtwara/Mikindani detailed municipal land use master plan to collect baseline spatial data that can assist in understanding the growth projections for the city and proposing suitable physical and social infrastructure and land uses to accommodate the growth. Responsible for liaising with the authority, coordination of sub-consultants and review.

**Coleambally Solar Farm (New South Wales, Australia) 11/2019 – 12/2019 Team Member.**

Aurecon was appointed by Neoen, which owns the Coleambally Solar Farm, to address annual reporting requirements mandated under its Syndicated Facility Agreement (SFA). The assignment required the review of the Environmental Impact Statement (EIS), the Conditions of Consent issued for Modification 1 (Mod 1), relevant management plans and licences, and the Equator Principles to identify compliance against each. This included a review of site specific environmental and approvals documentation and an interview with staff. (Neoen)



**Tallawarra-B Power Station (New South Wales, Australia) 11/2019 – present. Team Member.**

Aurecon was appointed by Energy Australia which owns the Tallawarra Power Station to undertake a modification to an approval granted on 21 November 2010. The modification involved a change to the description in a Condition of Approval to allow for a range of open cycle gas turbine (OCGT) units to be utilised at the time of development. (EnergyAustralia)

**Mossel Bay NUSP participatory based planning support, Department of Human Settlement (DHS) (Western Cape Province, South Africa) 08/2015 - 11/2017, Environmental Specialist.**

The National Department of Human Settlements appointed Aurecon to provide participatory based planning support for informal settlement upgrading in Mossel Bay Local Municipality via the National Upgrading Support Programme (NUSP). Aurecon's scope of works included the production of an assignment implementation plan, upgrading plans and sustainable livelihoods programmes for 18 settlements, community capacity building programme, and a skills transfer report. Responsible as project leader for the screening of environmental constraints and preparation of applicability checklists for the competent environmental authority.

**Impofu Windfarm 132kV Transmission Line EIA. (Eastern Cape Province, South Africa) 07/2019 – 02/2020. Project Leader.**

The client proposed to build three windfarms at Jeffrey's Bay and an associated 120km 132kV transmission line for power evacuation to the Chatty Substation in Nelson Mandela Bay Metropolitan Municipality. This component of the project requires a Basic Assessment impact study to run in parallel with the EIAs being conducted for the wind farms and includes the assessment of a 2km wide corridor within which the transmission line would run. (Red Cape Energy)

**Nuweveld Windfarm 400kV Transmission Line EIA. (Western Cape Province, South Africa) 05/2019 – 04/2020. Project Leader.**

The client proposed to build three windfarms at Nuweveld farming area and associated 100km long 400kV transmission line for power evacuation to the Droerivier Substation near Beaufort West. This component of the project required a Scoping and EIA study to run in parallel with the EIAs being conducted for the wind farms, which included an investigation of constraints and a screening of options study of two 3km wide corridors prior to commencing with the EIA. (Red Cap Energy)

**Newcastle Power Station Project EIS (New South Wales, Australia) 06/2019 – 08/2019. Team Member.**

Aurecon was appointed by AGL Energy Limited which owns and operates the Newcastle Power Station to compile an Environmental Impact Statement to meet the requirements of a SEAR issued to AGL in accordance with Section 5.16 of the Environmental Planning and Assessment Act 1979 (EP&A Act). The proposal was declared a controlled action and was thus assessed under Section the accredited process of Division 5.2 of the EP&A Act. (AGL Energy Limited).

**Closure and Rehabilitation of Kerosene Vale Ash Repository (KVAR) Stage 2 (New South Wales, Australia) 06/2018 – 07/2018. Phase leader.**

Aurecon was appointed by EnergyAustralia which owns and operates Kerosene Vale Ash Repository (KVAR) Stage 2 to undertake an Environmental Assessment to support an application under the former Section 75W of the Environmental Planning and Assessment Act 1979 (EP&A Act) to modify PA 07\_0005 to allow for the proposed closure and rehabilitation of KVAR Stage 2. This would occur as part of the rehabilitation of the wider Wallerawang Ash Repository. Responsible for the coordination of Noise and Vibration, Visual, Traffic and Air Quality desktop studies. (EnergyAustralia).

**Botswana-South Africa (BOSA) Transmission Interconnection Project ESIA. (Botswana and South Africa) 09/2018 – 12/2019. Environmental and Social Analyst.**

The client identified the BOSA Transmission Interconnection Project as one of the initiatives to reduce electricity supply constraints and assist in improving distribution of electricity in the Southern African region. Eskom of South Africa (Eskom) and the Botswana Power Corporation (BPC) will be the beneficiaries of the project. Aurecon was appointed to undertake the Preliminary Design and the Environmental and Social



Impacts Assessment (ESIA) on a transmission corridor for a 400kV transmission power line. The proposed 210 km transmission line stretches between the Mahikeng area in South Africa and Gaborone in Botswana (South African Power Pool)

**Prefeasibility Environmental and Social Screening for Luapula River Hydroelectric Scheme. (Zambia and Democratic Republic of Congo (DRC)) 06/2019 – 11/2019. Environmental Leader.**

The client identified the Luapula River Hydroelectric Scheme as one of the initiatives to reduce electricity supply constraints in the Southern African region. Société Nationale d'Electricité of the DRC (SNEL) and Zambia Electricity Supply Corporation (ZESCO) will be the beneficiaries of the project. Aurecon, with AF-Consult, were appointed to undertake the Prefeasibility Environmental and Social Screening for a number of components of a cascading series of hydro power plants on the Luapula River between Zambia and the DRC. (South African Power Pool)

**Proposed hydropower station and associated infrastructure at Riemvasmaak (Northern Cape Province, South Africa) 02/2012 - 06/2017. Technical Advisor.**

Aurecon was appointed to provide the lead consultancy services for the environmental impact assessment (EIA) for the proposed 25 MW hydropower station at Riemvasmaak on the Orange River, adjacent to the Augrabies National Park. Responsible for providing advice on legal procedure and technical project aspects. (Riemvasmaak Hydro Electric Power (Pty) Ltd).

**Upgrading of DR1609 and portion of DR01625, Western Cape Province, South Africa, Provincial Government of the Western Cape (PGWC): Department of Transport and Public Works, 12/2005 - 12/2017, Environmental Specialist**

Aurecon was appointed to undertake design and authorisation services for the upgrading of the DR1609 and a portion of DR01625 in Rondevlei, Western Cape, which is adjacent to the Garden Route National Park and crosses within a Ramsar protected wetland. The scope of works included the preparation of an environmental impact assessment (EIA). Responsible as project leader for the EIA component, including leading the compilation of the EIA and coordinating specialist inputs.

**Upgrading of Plettenberg Bay Airport, Western Cape Province, South Africa, Bitou Local Municipality, 09/2016 - 06/2017, Environmental Specialist**

Bitou Municipality intends to upgrade the Plettenberg Bay Airport in the Western Cape Province, including adding additional infrastructure and hangars to comply with Civil Aviation Authority (CAA) regulations. Responsible for compilation of an environmental constraints analysis.

**Proposed hydropower station and associated infrastructure at Riemvasmaak, Northern Cape Province, South Africa, Riemvasmaak Hydro Electric Power (Pty) Ltd, 02/2012 - 06/2017, Technical Advisor**

Aurecon was appointed to provide the lead consultancy services for the environmental impact assessment (EIA) for the proposed 25 MW hydropower station at Riemvasmaak on the Orange River, adjacent to the Augrabies National Park. Responsible for providing advice on legal procedure and technical project aspects.

**Perdekraal East Wind Farm environmental and social due diligence (ESDD), Western Cape Province, South Africa, African Infrastructure Investment Managers (AIIM), 11/2016 - 04/2017, Project Leader**

In order to consider providing funding for the development of the Perdekraal East Wind Farm, the client required the undertaking of an environmental and social due diligence (ESDD) study, including an environmental and social action plan (ESAP), to ensure that environmental authorisations in place were compliant with the requirements of the IFC. Responsible for the compilation of the ESDD and ESAP and coordination of specialist inputs.

**Curepipe Point wind farm assessment, Mauritius, Southern Energy Holdings, 05/2016 - 06/2016, Environmental Specialist**

Aurecon was appointed to undertake a fatal flaw review of a 29 MW wind energy development near the town of Curepipe in Mauritius. Responsible for the review of an environmental impact assessment (EIA) study as well as the identification and evaluation of environmental risks.

**Environmental and social impact assessment (ESIA) for the Makambako Wind Farm, Njombe Region, Tanzania, Windlab Limited, 11/2015 - 03/2017, Project Leader**

Windlab Tanzania SPV 1 Limited (Windlab) want to construct a wind farm and associated infrastructure, including a transmission line (project referred to as the Miombo Hewani Wind Farm) with a generation capacity of between 100 MW and 300 MW north of Makambako in the Njombe Region, Tanzania. Aurecon was appointed to undertake the requisite environmental process on behalf of Windlab as required in terms of the Environmental Management Act (Act 20 of 2004) (EMA). Responsible for leading the team of specialists and sub-consultants to develop an IFC compliant ESIA.

**Working for Wetlands Plan 2014 - 2017, National, South Africa, South African National Biodiversity Institute (SANBI), 06/2013 - 09/2016, Environmental Advisor**

Aurecon was appointed in 2010 for a three year cycle for the design, planning, environmental, project and risk management of the South African Government's Working for Wetlands Programme, which is a nationally run initiative by the South African National Biodiversity Institute (SANBI). The programme's objective is to rehabilitate damaged wetlands and to protect wetlands throughout South Africa, with an emphasis on complying with the with an emphasis on complying with the principles of the expanded public works programme (EPWP) through employing only local small, medium and micro enterprises (SMMEs). Responsible for a review and giving advice on legal process requirements.

**Kinangop Wind Farm Phase 1A status review and risk assessment, Nakuru, Kenya, Kinangop Wind Park, 11/2015 - 03/2016, Environmental Specialist**

Following termination of the engineering, procurement and construction (EPC) contract, Aurecon was appointed to assess the project status and risks associated with remobilising the Kinangop Wind Farm project. Responsible for environmental review.

**Pre-feasibility study for Rukwa coal-to-power project, Mbeya, Tanzania, Rukwa Development Company, 11/2014 - 09/2015, Team Member**

Aurecon was engaged by Kibo Mining to carry out a pre-feasibility study for a coal-fired power station to be located adjacent to an opencast coal mine in the Rukwa region of Tanzania. The study included preliminary environmental assessments of the power station and the mine, power evacuation assessment, power station design and modelling of various configurations, reporting and technical input to the project financial model. Responsible for contributing to the drafting of an environmental and social prefeasibility study.

**Environmental impact assessment (EIA) for the construction of the AfriSam cement factory, Western Cape Province, South Africa, AfriSam South Africa (Pty) Ltd, 02/2011 - 09/2015, Project Leader**

AfriSam was looking to enter the Western Cape market, and consequently decided to fund the construction of a cement factory and associated infrastructure. Aurecon was appointed to undertake an environmental impact assessment (EIA) process for the cement plant, mine and associated infrastructure located on Farm 1139 in the Saldanha industrial area. Services involved undertaking and managing the EIA process, traffic impact study (TIS), surface water investigation and social impact assessment (SIA). Responsible for project management, client and authority liaison, coordination of technical information and specialists inputs, management of public processes, EIA and compilation of an environmental management plan (EMP) report.

**Environmental screening of a potential wind energy site, Tanzania, Windlab Limited, 02/2015 - 04/2015, Project Leader/Technical Coordinator**

Aurecon was appointed to determine the feasibility of establishing a wind energy facility (WEF) in Tanzania. As part of evaluation Aurecon was appointed to undertake a comparative environmental constraints



analysis, including the biophysical, social and heritage aspects of the identified sites. Responsible for the identification and assessment of environmental constraints.

**Western Cape road materials supply strategy, Western Cape Province, South Africa, Provincial Government of the Western Cape (PGWC): Department of Transport and Public Works (DTPW), 06/2008 - 03/2015, Principal Environmental Practitioner**

Increasing pressures from tightened environmental legislation have resulted in lengthy waiting periods (about 18 months) for identifying required material sources. The wait is also caused by investigation phases, getting approval from the Mineral Resources and Petroleum Development Act (DMR), the Department of Environmental Affairs and Development Planning (DEADP), the National Environmental Management Act (NEMA) and the Land Use Planning Ordinance (LUPO). Aurecon 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, as well as for getting all the required approvals. Responsible for planning of authorisation processes and review of submissions. Also responsible for liaison with authorities and partner consultants.

**Upgrading of Distillery Road in Wellington, Western Cape Province, South Africa, Drakenstein Local Municipality, 10/2013 - 02/2015, Project Manager**

The project entailed a basic environmental impact assessment (EIA) for the proposed upgrading of Distillery Road in Wellington, including a heritage assessment. Responsible for project management, client and authority liaison, coordination of specialist input and review of final reports.

**George mobility strategy for the improvement of public transport, Western Cape Province, South Africa, Provincial Government of the Western Cape (PGWC): Department of Transport and Public Works (DTPW), 09/2003 - 02/2015, Consulting Team Member**

This broad based mobility strategy project, which is centred on the improvement of public transport in the George municipal area, is one of many national interventions to upgrade public transport in South Africa. The objective is the transformation of the existing bus and minibus taxi industry into a single entity contracted to the local authority to provide scheduled, subsidised public transport services. Work has included detailed operational design and costing; contract development as well as planning for the upgrading of road and other infrastructure, including a bus stop, a temporary bus depot, and an inter-urban bus station. The project has also comprised a considerable amount of engagement with the local bus and minibus industry representatives as well as broad based public consultation. Responsible for the advisory role on environmental constraints for implementation of public transport initiative.

**Feasibility study for the Knysna-Bitou water supply scheme, Western Cape Province, South Africa, Eden District Municipality, 01/2013 - 12/2014, Project Member**

The project involved the identification of the water resource and bulk water requirements of the local municipalities of Knysna and Bitou 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 the identification and evaluation of environmental constraints for the screening of options exercise.

**Environmental constraints analysis of potential wind energy sites near Aberdeen, Eastern Cape Province, South Africa, Juwi Renewable Energies (Pty) Ltd, 06/2013 - 08/2014, Project Leader/Technical Coordinator**

The client wished to determine the feasibility of establishing a wind energy facility at Aberdeen in the Eastern Cape. As part of evaluation Aurecon was appointed to undertake a comparative environmental constraints analysis, including the biophysical, social and heritage aspects of the identified sites. Responsible for contributing to identification and assessment of environmental constraints. Also responsible for constraints identification and evaluation as well as a review.



**Water augmentation study for the Bitou Local Municipality, Western Cape Province, South Africa, Bitou Local Municipality, 10/2009 - 03/2014, Environmental Scientist**

The Wadrif 1E Dam scheme was for the augmentation of the bulk water supply to the Plettenberg Bay area. Aurecon'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 licence 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 for the management of specialist environmental impact assessment (EIA) consultant and review of all reports.

**Independent review of environmental impact assessment (EIA) applications, Western Cape Province, South Africa, Department of Environmental Affairs and Development Planning (DEA&DP), 03/2011 - 12/2013, Task Leader**

The purpose of the project was to review contentious environmental impact assessment (EIA) applications in terms of the National Environmental Management Act 107 of 1998 (NEMA) to support authority decision making. Responsible for project management, client liaison, advisory role to team members and review and coordination of final products.

**Pilot catchment management plan: Kyoga water management zone, Kampala, Uganda, The World Bank, 12/2012 - 12/2013, Co-author of report**

Aurecon was appointed to prepare a pilot catchment management plan (CMP) for the Awoja Catchment. Major social and environmental issues within the catchment area were identified early in the process as critical informants to catchment management planning so these can be integrated into the planning process at an early stage. The rapid strategic environmental assessment (RSEA) focussed on identifying the issues and conditions in the catchment related to water and natural resources that are likely to be a major influence and that might represent important risks, as linked to potential water resource development options. Responsible for contributing to the coordination of and reporting on implementation options.

**Update to rapid strategic environmental assessment (RSEA): development of a pilot catchment management plan (CMP), Kampala and Mbale, Uganda, Ministry of Water and Environment (Uganda), 12/2012 - 11/2013, Project Member**

This water management and development project (WMDP) for Uganda comprised the development of a pilot catchment management plan (CMP) in the Kyoga water management zone (WMZ). The CMP outlines the changes required and the benefits of these changes towards ensuring sustainable development and the equitable distribution of the resulting benefits. The integrated water resources management-based (IWRM-based) CMP provides an integrated strategy for the sustainable water resource management in the pilot Kyoga WMZ catchment. Responsible for the coordination of and reporting on implementation options.

**Operational environmental management plan (EMP) for Shoprite Checkers, Western Cape Province, South Africa, Shoprite Checkers, 04/2010 - 07/2013, Task Leader**

The project included the compilation of an operational environmental management plan (EMP) to meet the local municipality's requirements for the new shopping centre at Sandown Road in Cape Town. Responsible for project management, client and authority liaison and the compilation of EMP report.

**Environmental impact assessment (EIA) for the Riemvasmaak Hydropower Station, Northern Cape Province, South Africa, Mulilo Renewable Energy (Pty) Ltd (MRE), 12/2011 - 06/2013, Technical Advisor**

Aurecon was appointed to submit a proposal to undertake an environmental impact assessment (EIA) for the construction of a hydropower station on the Riemvasmaak Farm north of Augrabies Falls National Park. Services provided included legislation and policy review, strategic review, public consultation, EIA coordination and facilitation and various specialist disciplines. Responsible for providing advice on the legal procedure and technical project aspects.



**Exploratory drilling environmental management plan (EMP), Tete Province, Mozambique, Coal India Africana Limitada (CIAL), 02/2012 - 04/2013, Project Leader**

The project entailed the compilation of an environmental management plan (EMP) for exploratory drilling operations for coal prospecting in Moatize. Responsible for client liaison, project management, coordination of team members and review of final products.

**Environmental management plans (EMPs) for coal bed methane prospecting activities, Tete Province, Mozambique, Rio Tinto Coal Mozambique (RTCM), 07/2012 - 02/2013, Project Member**

Aurecon was appointed by Rio Tinto to compile the environmental management plan (EMP) for the coal bed methane (CBM) prospecting activities in each of the lease areas, ensuring the necessary licensing of the activities. Responsible for project management, coordination of information and team inputs.

**Social and environmental impact assessment (SEIA) for the Rössing Uranium Mine expansion project, Erongo Region, Namibia, Rössing Uranium Mine, 09/2009 - 08/2012, Project Member**

Rössing Uranium wanted to obtain environmental authorisations for the expansion of the mine to increase production and extend the life of the mine. Aurecon undertook a social and environmental impact assessment (SEIA) to determine the environmental impacts brought about by the proposed activities, proposed measures to minimise detrimental impacts or enhance positive impacts and presented the findings to the Namibian authorities. The SEIA included two primary product deliverables, namely the environmental scoping report (ESR) and the subsequent SEIA report. Responsible for providing support to the team appointed to facilitate the required environmental authorisations for the expansion of the Rössing Uranium Mine, including the review of legislative requirements and specialist reports.

**Bankable feasibility study (BFS) for a Zuma Energy project, Kogi State, Nigeria, Zuma Energy Nigeria Limited, 10/2011 - 01/2012, Project Leader**

Zuma Energy Nigeria Ltd was planning to construct and operate a 1 200 MW coal-fired power station along the Niger River. Aurecon prepared a bankable feasibility study (BFS) using a gap analysis of all existing documents and work already done by Zuma Energy. The study included a review of the environmental and social issues by conducting an environmental and social impact assessment (ESIA) to determine adequacy and compliance to the Nigerian Statutory requirements and the World Bank's standard Equator Principles (EPs) and to a level suitable for financial closure. Responsible for the review of final report against World Bank standards and EPs.

**Independent review of environmental impact assessment (EIA) for report, KwaZulu-Natal Province, South Africa, Knight Piésold, 11/2011 - 12/2011, Consulting Team Member**

The purpose of the project was to review the environmental impact assessment (EIA) process undertaken by Knight Piésold for a bulk water supply pipeline in KwaZulu-Natal. Responsible for the review of impact assessment methodology.

**Pre-feasibility study on the Great Lakes Railway, Burundi, Rwanda, Tanzania, Uganda and Zambia, Common Market for Eastern and Southern Africa (COMESA), 03/2010 - 12/2011, Consulting Team Member**

The project entailed a pre-feasibility study to improve port, inland waterway and rail inter-connectivity in the Great Lakes Region (Lake Kivu, Lake Edward, Lake Tanganyika, Lake Victoria and Lake Albert) based on several transportation constraints experienced. The primary objective was reduced transportation costs for the provision of rail links to connect existing rail networks with each other, and the development of the inland water transport services across lakes within the region. The work included a pre-feasibility study that consisted of resource mapping, traffic forecasts, alignment surveys, engineering cost estimates, an environmental impact assessment (EIA), institutional review, financing mechanisms review and economic evaluation and feasibility study. Responsible for authority consultation, site inspection and review of proposed rail alignments and reporting on environmental constraints.





**Application for an atmospheric emissions licence (AEL) in Albertinia, Western Cape Province, South Africa, South Cape Poles, 03/2007 - 11/2011, Task Leader**

The project entailed facilitating an application for an atmospheric emissions licence (AEL) in terms of the National Environment Management (NEM): Air Quality Act (No 39 of 2004) for the operation of a creosote treatment facility in Albertinia. Responsible for project management, client and authority liaison, coordination of specialist inputs and final report compilation.

**Environmental impact assessment (EIA) for the Moatize Coal Mine expansion, Tete Province, Mozambique, Vale Moçambique Limitada, 03/2010 - 09/2011, Assistant Project Leader**

The aim of the project was to expand operations at Moatize Coal Mine due to the favourable global market for coal. Aurecon was appointed to undertake separate environmental impact assessments (EIAs) for each of the proposed components of the project. The particular work plan addressed EIA Package 1, which was for the proposed expansion of the mine at Moatize and related infrastructure. Responsible for client and specialist liaison, coordination of technical information and review of final reporting.

**Environmental impact assessment (EIA) for the Nacala Rail Corridor, Malawi and Mozambique, Vale Moçambique Limitada, 03/2010 - 09/2011, Project Member**

The project entailed the completion of four environmental impact assessments (EIAs) for the upgrading of existing and the construction of new railway sections along the Nacala Corridor from the Moatize Coal Mine in Mozambique, through Malawi, to the Port of Nacala, and a new coal handling terminal. This particular work plan addressed Packages 2 to 5, which were for the components of the Nacala Logistics Corridor. Responsible for client and specialist liaison, coordination of technical information and review of final reporting.

**Decommissioning of the Sonae Novobord board manufacturing plant in George, Western Cape Province, South Africa, Sonae Novobord, 07/2009 - 07/2011, Project Leader/Manager**

Aurecon was appointed to prepare an environmental management plan (EMP) for the decommissioning of Sonae Novobord's board manufacturing and veneering plant in George. Responsible for project management, client and authority liaison and review of the final EMP report.

**Upgrading of Merweville wastewater treatment works (WWTW), Western Cape Province, South Africa, Beaufort West Local Municipality, 02/2007 - 06/2011, Project Manager**

The project entailed the facilitation of the required environmental authorisation and waste licence for the upgrading of the wastewater treatment works (WWTW) in Merweville. Responsible for project management, review of final reports.

**Emergency desalination plant for Mossel Bay, Western Cape Province, South Africa, Mossel Bay Local Municipality, 05/2010 - 01/2011, Environmental Assessment Practitioner**

The Mossel Bay Local Municipality appointed Aurecon to undertake an environmental impact assessment (EIA), which is required by Act 107 of 1998 of the National Environmental Management Act (NEMA), to assess the potential impacts related to the construction and operation of a 15MI/day emergency desalination plant in the Voorbaai area. Aurecon was responsible for consultation with the authorities throughout the EIA to confirm that all potential issues were identified; for the compilation of a report that provided a detailed description of the potential impacts associated with the development, and the findings; an evaluation of the potential impacts; and recommendations regarding mitigation and the way forward. Responsible for project management, review of EIA and environmental management plan (EMP) reports.

**Environmental impact assessment (EIA) for infrastructure upgrades at the Etosha National Park, Oshikoto Region, Namibia, Millennium Challenge Account (MCA), 04/2010 - 11/2010, Consulting Team Member**

The project entailed the completion of two environmental impact assessments (EIAs), including environmental management plans (EMPs), for the construction of staff housing and management centres at the Ombika and Galton gates as well as the Okaukuejo and Otjovasandu villages in the Etosha National Park. The aim was to improve the quality of infrastructure to attract senior management to the park to ensure



that the park retains its status as a premier tourist destination. Responsible for the review of specialist reports and final reporting.

**Pre-feasibility (FEL 2) social and environmental screening of rail corridor alternatives through Malawi, Southern Region, Malawi, Vale Moçambique Limitada, 09/2009 - 09/2010, Principal Environmental Practitioner**

The project involved a pre-feasibility (FEL 2) level investigation into alternative routes for the proposed railway alignment section between Moatize in Mozambique and the Nkaya Junction in Malawi. Aurecon prepared the social and environmental screening report, which provided a background to the methodology for environmental (social and biophysical) screening. A high-level impact study and comparative assessment of alternative alignments were undertaken to determine the most environmentally responsible and sustainable options. Responsible for gathering field data and contribution to the screening report.

**Independent review of environmental impact assessment (EIA) applications for the Department of Economic Development, Environment and Tourism, Eastern Cape Province, South Africa, Department of Economic Development, Environmental Affairs and Tourism, 02/2007 - 07/2010, Project Manager**

The project entailed the review of environmental impact assessment (EIA) applications to assist with the processing of backlog applications in terms of the Environment Conservation Act (Act 73 of 1989) (Cacadu Region). Responsible for project management, liaison with authorities and applicants, advising authorities on fatal flaws and policy conflicts, drafting environmental authorisations and training authority staff.

**Relocation of the Sedgefield water treatment works (WTW) and associated infrastructure, Western Cape Province, South Africa, Knysna Local Municipality, 12/2004 - 06/2010, Project Manager**

The purpose of the project was to undertake an environmental impact assessment (EIA) to facilitate the relocation of the Sedgefield water treatment works (WTW) out of a floodplain. Responsible for managing the basic assessment reporting procedure for the relocation. Also responsible for project management, client liaison and the identification and assessment of impacts.

**Independent review of environmental impact assessment (EIA) applications for the Department of Environmental Affairs and Development Planning (DEA&DP), Western Cape Province, South Africa, Department of Environmental Affairs and Development Planning (DEA&DP), 04/2009 - 05/2010, Project Leader**

The project entailed the review of environmental impact assessment (EIA) applications and appeals to assist the competent authority with the processing of backlog applications in terms of the Environment Conservation Act (Act 73 of 1989) and the National Environmental Management Act 107 of 1998 (NEMA). Responsible for project management, client liaison, staff advisory and review of all final submissions.

**Decommissioning of creosote treatment facility at Tergniet, Western Cape Province, South Africa, Outeniqua Pale (Pty) Ltd, 06/2007 - 04/2010, Project Manager**

Aurecon was appointed to facilitate the relocation of Outeniqua Pale's timber treatment works, including a waste licence for the decommissioning of a site contaminated with hazardous waste and the drafting of an environmental and health impact assessment (EHIA) on instruction from the Environmental Management Inspectorate (EMI). Responsible for project management, client and authority liaison, advising legal representatives, managing public process and the compilation of the final EHIA and environmental management plan (EMP) reports.

**Environmental management plan (EMP) for Garden Route Casino, Western Cape Province, South Africa, Garden Route Casino (Pty) Ltd, 12/2008 - 04/2010, Project Leader**

Aurecon was appointed to update the environmental management plan (EMP) to accommodate various proposed upgrades to the casino and associated facilities. Responsible for project management, client and authority liaison and review of the final report.

**Upgrading of creosote treatment facility at Albertinia, Western Cape Province, South Africa, Outeniqua Pale (Pty) Ltd, 05/2008 - 02/2010, Project Leader**

The purpose of the project was to facilitate the upgrading of an unlicensed timber treatment works, including the formulation of environmental management plans (EMPs), at Albertinia, Western Cape. Responsible for project management, client and authority liaison, coordination of specialist input, impact assessment and, advising the client's legal representatives.

**Upgrading of the Outeniqua effluent pump station and pipeline, Western Cape Province, South Africa, George Local Municipality, 09/2009 - 08/2010, Project Member**

The growth of the residential sectors in George necessitated the upgrading of the existing regional wastewater treatment works (WWTW). Aurecon was appointed for the design, tender compilation and contract supervision for the upgrading of the plant from a capacity of 9.3 Ml/day to 15 Ml/day. The upgrade included the addition of more aerators to the bioreactor, a dissolved air flotation (DAF) unit and a sludge digester. Responsible for managing an application for amendment to an existing authorisation and facilitating the public process.

**Upgrading of Hartenbos wastewater treatment works (WWTW), Western Cape Province, South Africa, Mossel Bay Local Municipality, 04/2009 - 07/2009, Project Leader**

Aurecon was appointed to facilitate the requisite environmental process for the upgrading of the wastewater treatment works (WWTW) in Hartenbos. Responsible for project management, client and authority liaison and review of the final reports.

**Environmental processes for the Beaufort West wastewater reclamation plant, Western Cape Province, South Africa, Water & Wastewater Engineering, 10/2008 - 07/2009, Project Manager**

The purpose of the project was to facilitate the requisite environmental processes for the implementation of a wastewater reclamation plant for Beaufort West Municipality, inclusive of a waste licence and environmental authorisation. Responsible for project management, client and authority liaison, management of specialists and public processes and the compilation of final reports.

**Alien vegetation eradication and rehabilitation, Fancourt Estate, George, Western Cape Province, South Africa, Fancourt Golf and Country Estate, 2008, Project Manager**

The project entailed the formulation of an alien vegetation eradication and rehabilitation plan for the Fancourt landholding on the Malgas River. Responsible for project management, client liaison and report compilation.

**Review of the biodiversity components of municipal spatial development frameworks (SDFs) in the C.A.P.E. domain, Western Cape Province, South Africa, South African National Biodiversity Institute (SANBI), 2008, Consulting Team Member**

The aim of the project was to provide an overview of the requirements for biodiversity in spatial development frameworks (SDFs), and an assessment of the current status of biodiversity in these SDFs. Responsible for the review of SDFs and final reports.

**Additional units at the open cycle gas turbine (OCGT) plant in Mossel Bay, Western Cape Province, South Africa, Eskom, 01/2005 - 01/2006, Consulting Team Member**

The project entailed the management of a comprehensive and multi-disciplinary environmental impact assessment (EIA) process for three additional gas turbine units at the peaking generation power plant in Mossel Bay. Responsible for project management assistance, liaison with specialists and report review.

**Review of environmental impact assessment (EIA) applications and appeals, South Africa, Provincial Department of Environmental Affairs and Development Planning (DEA&DP), 2004 - 2006, Principal Environmental Officer**

The project entailed reviewing environmental impact assessment (EIA) applications and appeals and drafting environmental authorisations. Responsible for reviewing EIA applications, advisory role to competent authority and the drafting of environmental authorisations.

**Assessment of plantation plans, George, Western Cape Province, South Africa, Woodifield Farm, 2004, Consultant**

The project entailed the evaluation of Woodifield Farm's existing management plans and making recommendations for optimising forestry operations.

**Proprietor of Southern Cape environmental services, Western Cape Province, South Africa, 1992 - 2004, Consultant**

The project entailed the compilation of a number of environmental management plans (EMPs) and environmental assessments and evaluations for a variety of developments in the Southern Cape. This included the mapping of soils of various Southern Cape forestry plantations and indigenous forests for the Council for Scientific and Industrial Research (CSIR), South African Forestry Company Ltd (SAFCOL), the Department of Water and Sanitation (DWS) and private companies, for productivity and planning purposes as well as the sampling of river water for analysis by Stellenbosch University: Department of Soil Science. Responsible for financial management, project management, report compilation and client liaison.

**Plantation environmental auditing, Western Cape Province, South Africa, NCT Forestry Co-operative Limited (NCT), 2003, Consultant**

The project entailed the auditing of Van Reenen plantations for compliance with Forestry Stewardship Council (FSC) requirements. Responsible for environmental auditing.

**Alien vegetation mapping, Western Cape Province, South Africa, EnviroGIS, 2001 - 2003, Consulting Team Member**

Appointed to map and quantify alien vegetation status in the Barrydale, Botvlei, Kamanassi and Karatara catchments.

**Western Cape forestry land use study, Western Cape Province, South Africa, Department of Water and Sanitation (DWS), 2001, Project Manager**

Appointed and commissioned by Department of International Development (DFID) as project leader and co-author to conduct a study on the Western Cape land forestry land use.

**Mapping of soils for forest planning, Western Cape Province, South Africa, Department of Water and Sanitation (DWS), 1988 - 1992, Consulting Team Member**

As part of a function while employed at the Council for Scientific and Industrial Research (CSIR), mapped extensive soil bodies within the Southern Cape catchments for productivity evaluation and species choice. Responsible for mapping soil bodies.