

Curriculum vitae: Mr JJ GOOSEN

Name : **GOOSEN, JOHAN JACOBUS**
Date of Birth : 27 October 1975
Profession/Specialisation : Environmental Planner: landscape architecture and environmental planning
Years with Firm : 4
Nationality : South African
Years experience : 17

Key qualifications

Johan is employed as an environmental planner and landscape architect and at Aurecon. He has more than 15 years' experience in landscape architecture and environmental planning in a wide variety of sectors. His expertise includes urban open space planning and regional environmental planning frameworks, end land use planning for mining and waste facilities and brownfields site re-development. He has further been involved in numerous projects requiring environmental screening, impact assessment/permitting, construction monitoring and visual impact assessment (VIA) for linear infrastructure such as roads, rail, bulk water, urban and rural property developments and the mining and metals sector.

Johan holds a Bachelor in Landscape Architecture, which he obtained from the University of Pretoria (UP) in 1998, and completed a Graduate Diploma in Environmental Engineering from the Witwatersrand University (WITS) in 2014. He is a member of both the International Association of Impact Assessment (IAIA) and the Institute for Landscape Architecture in South Africa (ILASA). He is also a Registered Professional Landscape Architect with the South African Council for Landscape Architectural Professionals (SACLAP).

He has also been the co-writer and examiner of the environmental section of the SACLAP professional exam from 2009 to 2015, and regularly acts as external examiner for UP landscape architecture on environmental engineering aspects.

Employment record

07/2013 - Date Aurecon, Associate, Landscape Architect and Environmental Planner
01/2012 - 06/2013 Aurecon, Landscape Architect and Environmental Planner
07/2010 - 12/2011 Golder Associates Africa, Landscape Architect, Environmental Planner and Group Leader: Land Development
2008 - 06/2010 Golder Associates Africa, Landscape Architect, Environmental Planner and Line Manager: Land Development Division
2003 - 2007 African EPA (Pty) Ltd, Landscape Architect, Environmental Planner and Divisional Manager: Landscape Architecture and Environmental Management
2000 - 2003 @Land Landscape Architects cc, Landscape Architect, Geographic Information System (GIS) Specialist and Member
1999 - 2000 Willem Van Riet Landscape Architects & Ecological Planners, Landscape Architect
1999 Wehrs Gartenbau - Walsrode, German, Landscape Installation/Construction

Management experience

2013 - Date Associate for Environmental Services at Aurecon SA.
2010 - 2011 Division Leader of Land Development Division of Golder Associates. Reporting into the Business Unit Leader and management meeting. Responsible for managing and reviewing projects, and all required staff matters of the division as well as balanced scorecards and financial matters.
2008 - 2010 Line Manager of Land Development Division of Golder Associates, reporting into the Divisional Leader, responsible for managing projects and assisting with staff matters.
2003 - 2008 Divisional Manager of Landscape Architecture/Environmental Management Division of African EPA, responsible for managing projects and junior staff, as well

2001 - 2003

as monthly reporting to management meetings to the Board of Directors.
Member of @LAND Landscape Architects and Ecological Planners CC,
responsible for managing projects and junior staff.

Experience record

Waterberg feasibility (FEL 3) study for rail infrastructure (National, South Africa) 12/2014 - Date. The project involved providing professional services for Stages 3, 4 and 5 of the Waterberg feasibility (FEL 3) study for coal rail infrastructure from Lephalale to Ermelo, including an incremental rail capacity development plan for expanding coal tonnage throughput. Responsible for the environmental screening and report lead. (Transnet SOC Johannesburg).

Polokwane Neighbourhood Development Partnership Grant (NDPG) 2014 - 2016 (Limpopo Province, South Africa) 07/2014 - Date. *Environmental and Landscape Design Task Leader.* Aurecon was appointed for a 2 year period by Polokwane Local Municipality for the scope as indicated above. It is funded by National Treasury as part of the NDPG initiative. It later expired that Royal Huskoning is already involved in NMT designs in the area and a resolution was taken that Aurecon need to sub-consult a portion of the work to RH. (Polokwane Local Municipality).

Aganang strategic environmental assessment (SEA) (Limpopo Province, South Africa) 06/2014 - 06/2015. *Project Leader.* The project involved a strategic environmental assessment (SEA) of the Aganang Local Municipality to include environmental status quo and the desired state of environment and environmental management zones to guide future development against conservation targets. (Capricorn District Municipality).

Klipplaats 400 kV line deviation (Mpumalanga Province, South Africa) 05/2014 - Date. *Task Leader.* The project involved environmental studies, water use license application and preliminary design for the Klipplaats 400 kV line deviation at the Tweefontein Coal Mine, the registered land owner of the farm Klipplaats 141S in Mpumalanga. (Glencore Xstrata Coal South Africa (Glencore South Africa (Pty) Ltd)).

Assessment of various precincts (Regional, South Africa) 03/2014 - 10/2014. *Project leader.* This project involved an initial assessment of various sites to identify environmental contamination as well as compile an initial assessment report (IAR) and financial model for the closure and rehabilitation of these sites. (Transnet SOC).

Contamination assessment of selected Transnet properties (Regional, South Africa) 03/2014 - Date. *Project Leader.* The project involved the assessment of various sites to identify environmental contamination, compilation of site assessment reports and a financial model for the closure and rehabilitation of these sites through various specialist studies. (Transnet SOC).

Nkomazi Local Municipality environmental management framework (EMF) (Mpumalanga Province, South Africa) 01/2014 - 06/2014. *Project leader.* This project entailed compiling an environmental management framework (EMF) for the Nkomazi Local Municipality including environmental status quo, strengths weakness opportunities and threats (SWOT) analysis and EMF phases as well as delivering environmental management zones, each with a set of management guidelines. (Nkomazi Local Municipality).

Management of waste license applications for Rooiberg (Limpopo Province, South Africa) 01/2014 - Date. *Environmental Task Leader.* A study by Department of Environmental Affairs commissioned in 2007 identified waste disposal facilities that were not licensed in South Africa. It assisted in the development of a strategy on how to assess negative environmental impacts that may be caused by these facilities and to ensure that they are authorised for operation or closure. (Department of Environmental Affairs (DEA)).

Hammersdale mercury sludge ponds remediation (KwaZulu-Natal Province, South Africa) 10/2013 - 06/2015. *Task Leader.* Aurecon was appointed to perform a water quality management study on the remediation process and develop a remediation plan. Responsible for the rehabilitation landform design and also responsible as the report task leader. (KwaZulu-Natal Provincial Government Department of Water Affairs).

Hazardous waste and tyre storage area (Limpopo Province, South Africa) 07/2013 - 04/2014. *Environmental task leader.* Grootegeluk mine has two temporary hazardous waste storage areas where different types of Hazardous waste are being stored before it is removed from site for safe disposal at a

licensed facility. These areas were not compliant with environmental requirements, so it was decided to design a consolidated hazardous waste storage area for temporary storage until disposed to a licensed hazardous waste facility. Aurecon provided the designs with particular attention paid to safety standards, hazards, handling and storage. (Exxaro Coal Lephalalale).

Basic assessment for the Pangaea/Kanga 88 kV powerlines (Mpumalanga Province, South Africa) 05/2013 - Date. *Landscape Architect.* Aurecon was appointed to conduct a basic assessment as well as a level 1 wetland assessment to determine the extent of wetland or wet areas that are related to the proposed routes chosen for the construction of the Pangaea and Kanga 88 kV powerlines. (Eskom).

Technical advisory services for the Mauritius Light Rapid Transit (MLRT) system (Port Louis, Mauritius) 09/2012 - 01/2014. *Task Leader and Environmental Specialist.* Aurecon was appointed, as a partner to lead agency Singapore Cooperation Enterprise (SCE) and the Singapore Mass Transit Corporation (SMRT), to provide technical advisory services for the development of the Mauritius Light Rapid Transit (LRT) system. This included advisory services for transport and traffic planning, engineering and business case/financial planning. The Government of Mauritius is committed to build a LRT system to serve the established city areas running between the capital of Port Louis and Curepipe in order to relieve the main road arteries and to review its existing bus network in order to achieve an efficient multi-modal public transport network that can serve Mauritius over the long term. Task leader responsible for the environmental screening process undertaken as part of the reference design of the public-private partnership (PPP). Involved for 4 person-months. (Aurecon Singapore).

Development of a socio-economic framework and category for Green Star South Africa rating tool (South Africa) 07/2012 - Date. *Project Leader.* The project entailed the development of a category framework for international use, a socio-economic category for the Green Star South Africa rating tool and five related socio-economic credits. Responsible for the overall project management and delivery and quality review of socio-economic specialist. Involved for 3 person-months. (Green Building Council of South Africa (GBCSA)).

Development of reconciliation strategies for the bulk water supply of the Orange River (South Africa) 03/2012 - 05/2015. *Task Leader and Environmental Specialist.* The project entailed the formulation of a water reconciliation strategy for the Orange River System, based on the recent extensive studies in the area and a similar reconciliation strategy study on the Vaal River Catchment. Aurecon was appointed for the preliminary screening workshop; reviewing schemes and updating cost estimates, viewing/assessing social and environmental impacts, assembling information and formulating scenarios as well as the final screening workshop. A preliminary and a final water reconciliation strategy were the two main outputs of the study. Task leader responsible for the environmental screening undertaken to compare environmental and social impacts of the various proposed dam options in the Orange River Catchment. Involved for 2 person-months. (Department of Water Affairs (DWA)).

Feasibility study for the treatment of acid mine drainage (AMD) (Gauteng Province, South Africa) 12/2011 - 10/2014. *Environmental Specialist.* Aurecon was appointed to conduct a feasibility study to address the treatment of acid mine drainage (AMD) from Gauteng's underground mining basins, by removing salts and metals, to protect the receiving water resources and reduce the dilution releases from the Vaal Dam to the Vaal Barrage. The work included investigating future scenarios, analysing alternative infrastructure options and exploring alternatives for implementation. Responsible for advising the client on environmental impact assessment (EIA) process options, assisting with the writing of the "Options for Discharge of Water and Waste" report and the analysis of project options against the receiving environment. Involved for 1 person-month. (Department Water Affairs (DWA)).

Moreleta Spruit Adopt-a-River project (Gauteng Province, South Africa) 07/2011 - 12/2011. *Project Leader.* The project involved the compilation of a situation analysis, gap analysis and high-level action plan, as well as stakeholder engagement with relevant role players in the catchment in order to set up the Adopt-a-River forum. The situation analysis included historical context, land use and zoning, terrestrial and aquatic ecology, infrastructure and flood risk. A comprehensive geographic information system (GIS) database was also developed and made available for use via free software to relevant stakeholders. This was all deemed as Phase 1, with a view towards Phase 2 of the project, which entails the compilation of a state-of-the-rivers report as well as a master environmental management plan (EMP). Responsible for project management and environmental reporting. Involved for 4 person-months. (Department Water Affairs (DWA)/IKAMVA Strategic Insights).

Consolidation, update and amendment of the Lonmin environmental management programme report (EMPR) (North West Province, South Africa) 02/2011 - 08/2011. *Project Manager.* The project entailed

the consolidation of all the approved environmental management programme reports (EMPRs) and amendments into two documents, one for each mineral rights area. This included updating activities according to more recent approvals in terms of other legislation and specialist studies, and the amendment of the environmental management plans (EMPs) for newly planned activities, all in terms of the Mineral and Petroleum Resources Development Act (MPRDA) and the National Environmental Management Act (NEMA) legislation. Responsible for project management, master planning and reporting of findings. Involved for 6 person-months. (Lonmin Plc).

Zululand Anthracite Colliery (ZAC) environmental management plan (EMP) (KwaZulu-Natal Province, South Africa) 01/2011 - 10/2011. *Project Manager.* The project entailed the amendment of the existing environmental management programme report (EMPR) and a new National Environmental Management Act (NEMA) basic assessment application and process for a new open pit and ancillary activities. Responsible for the environmental impact assessment (EIA) project management and report writing, as well as the visual impact assessment (VIA) task as specialist. Involved for 3 person-months. (Zululand Anthracite Colliery (ZAC)).

Foskor Pyroxenite Expansion Project (PEP), Phase 2: visual impact assessment (VIA) (Mpumalanga Province, South Africa) 04/2010 - 09/2010. *Task Leader.* Golder conducted an environmental impact assessment (EIA) for the Foskor Pyroxenite Expansion Project (PEP), Phase 2. As part of the EIA, a visual impact assessment (VIA) was required, especially due to the close proximity of the project to the Kruger National Park and other tourism areas. The VIA included aspects such as site photo assessment with a global positioning system (GPS), geographic information system (GIS) Viewshed Analysis, adjacent land use analysis and mapping of human receptors. Responsible for the task management and VIA report. Involved for 2 person-months. (Foskor (Pty) Ltd).

Zanzibar Urban Services Project (ZUSP) visual impact assessment (VIA) (Dar es Salaam and Zanzibar, Tanzania) 06/2009 - 02/2010. *Task Leader.* Golder conducted an environmental impact assessment (EIA) for the Zanzibar Urban Services Project (ZUSP). As part of the EIA, a visual impact assessment (VIA) was required, especially due to the World Heritage Status of Stonetown in Zanzibar, and the high tourism usage of the area. The VIA included aspects such as site photo assessment with a global positioning system (GPS), developing a unique street view assessment method, and analysis and mapping of culturally sensitive areas. Responsible for task management and VIA report. Involved for 4 person-months. (World Bank).

Greenbelt master plan and business case for the Galeshewe Urban Renewal Programme (GURP) (Northern Cape Province, South Africa) 02/2009 - 09/2009. *Project Leader of open space component.* The Galeshewe Urban Renewal Programme (GURP) is a presidential project as part of a national urban renewal strategy started in 2001. GURP was funded by the Neighbourhood Development Partnership Grant (NDPG) under the National Treasury. Galeshewe, a township adjacent to Kimberley, was one of the nominated areas of this project. The Green Belt Project entailed strategic open space planning, and the delineation of green corridors/belts, with the primary focus on urban design principles in combination with ecological design methodologies. Concept designs and a business case were submitted in order to gain funding for the greening of Galeshewe. Responsible for project management, master planning, landscape design and drafting of the business case. Involved for 4 person-months. (Sol Plaatje Local Municipality).

Pixley Ka Seme integrated environmental management programme (IEMP) (Northern Cape Province, South Africa) 02/2009 - 06/2009. *Project Leader.* The project entailed undertaking a process to draw up an integrated environmental management programme (IEMP) for the district. The work included existing and desired status quo environmental reporting; an assessment of all integrated development planning (IDP) and spatial development frameworks (SDFs) of local municipalities; stakeholder engagement to determine the environmental challenges and needs of each local council and the drafting of the IEMP. Responsible for project management and environmental reporting. Involved for 5 person-months. (Pixley Ka Seme Local Municipality).

Urban design framework (UDF) for Kimberley central business district (CBD) (Northern Cape Province, South Africa) 12/2008 - 08/2010. *Project Leader.* The project entailed the landscape design of six areas in the Kimberley central business district (CBD). This appointment developed into an urban design framework (UDF) for the Kimberley CBD on concept level, reporting into a municipal infrastructure grant (MIG) funding application in order to gain funding for the various projects. Responsible for project management, urban design, client liaison and drafting of the UDF. Involved for 8 person-months. (Sol Plaatje Local Municipality).

Visual impact assessment (VIA) for the proposed Meteor Estate in the Vredefort Dome area (Free

State Province, South Africa) 12/2008 - 04/2009. *Specialist Landscape Architect: visual impact assessment (VIA) task.* The project entailed visual assessment for a proposed residential estate on the boundaries of the Vredefort Dome World Heritage Site. This included site assessment, determination of visual baseline qualities, into modelling the changes the proposed development would have on the surrounding environment through geographic information systems (GIS) modelling and impact assessment. Responsible for project management, photo and impact assessment. Involved for 2 person-months. (AGES (Pty) Ltd Potchefstroom).

Environmental impact assessment (EIA) for Secunda Corridor (light industrial) (Mpumalanga Province, South Africa) 2008 - 2011. *Project Manager.* The project entailed an environmental impact assessment (EIA) and environmental management plan (EMP) for an urban development in Secunda. Responsible for conducting an EIA and compiling the EMP. Involved for 4 person-months. (Private Property Developer).

Environmental impact assessment (EIA) for The Hills Link Road (K40) (Gauteng Province, South Africa) 2008 - 2009. *Project Manager.* The project comprised an environmental impact assessment (EIA) and environmental management plan (EMP) for a new 5 km section of road. Responsible for conducting an EIA and compiling the EMP. Involved for 3 person-months. (Private Property Developer).

Visual impact assessment (VIA) for Benga mine and power plant (Tete Province, Mozambique) 08/2008 - 02/2009. *Specialist Landscape Architect.* Riversdale Mining, through their Mozambican arm Riversdale Mozambique Limitada (RML), appointed Golder for the full scope of feasibility and environmental assessment for the Benga Coal Resource adjacent to the Zambezi River. Part of the specialist studies included a visual impact assessment (VIA), complete with Viewshed analysis, digital terrain model, sections, artificial modelling of the mine process and infrastructure. Responsible for project management, site inspection and on-site photo assessments, report writing and impact assessment. Other duties included management of all geographic information systems (GIS) modelling. Involved for 5 person-months. (Riversdale Mozambique Limitada (RML)).

Waste site buffer zone feasibility studies (Gauteng and North West Provinces, South Africa) 06/2008 - 05/2010. *Specialist Landscape Architect (buffer zone planning).* Buffer zones required by legislation around general and hazardous waste sites cause the sterilisation of land. Feasibility studies for the alternative "some use" development options have been completed for Cape Gate in Vanderbijlpark (hazardous) and Mooiplaats private landfill site in Gauteng and Rustenburg Municipality (general waste), where health and safety perimeters per environmental media, and surrounding land use and social conditions are used to investigate and proposed feasible options for the use of such buffer zone land. Responsible for project management, master planning and reporting of findings. Involved for 6 person-months. (Cape Gate (Pty) Ltd/The Waste Group).

End land use plans for mine closure (Mpumalanga/Northern Cape Provinces, South Africa) 06/2008 - 10/2011. *Specialist Landscaper.* The end land use is a critical part of the Anglo Closure Toolbox approach for mine closure. Such a land use plan should take into account the environmental risks determined for closure and the socio-economic context of the mine site; and should identify a number of post-closure land uses, which would also be spatially represented in line with the closure strategy for each part of the mine site. Various end land use plans have been developed for the Mpumalanga coal fields, as well as for Namaqua Mines (De Beers) in the Northern Cape. Responsible for project management, master planning and reporting of findings. Involved for 8 person-months. (Exxaro/De Beers).

Mining end land use investigation for The Oaks Mine (Limpopo Province, South Africa) 06/2008 - 10/2008. *Project Leader.* The project entailed undertaking an investigation and public consultation process in order to identify alternative end land use options for their The Oaks Mine in Limpopo. This included advertisements in the prominent newspapers, and a detailed stakeholder engagement and tender process in order to determine suitable candidates/communities with which to partner for end land use. Responsible for project management, identification of land use alternatives, stakeholder consultation, tender adjudication and recommendations. Involved for 4 person-months. (De Beers).

Environmental impact assessment (EIA) for Noordheuwel, Extension 20 (Gauteng Province, South Africa) 2007 - 2011. *Project Manager.* The project entailed an environmental impact assessment (EIA) for a proposed urban development in Noordheuwel, Extension 20. Responsible for conducting the EIA and compiling an environmental management plan (EMP). Involved for 2 person-months. (Private Property Developer).

Regional coordination for the National Microbial Monitoring Programme (NMMP) for Crocodile West

Marico and Vaal Water Management Areas (WMAs) on behalf of the Department of Water Affairs (DWA) (Various provinces, South Africa) 2007 - 2008. *Project Manager.* The National Microbial Monitoring Programme (NMMP) provides information on the status and trends of the extent of faecal pollution, in terms of the microbial quality of surface water resources in priority areas; and provides information to help assess the potential health risk to humans associated with the possible use of faecally polluted water resources. Responsible for the regional coordination function between the Department of Water Affairs (DWA), local governments and other stakeholders regarding sample collection and distribution of the bi-monthly report for each water management area (WMA). Involved for 6 person-months. (Department of Water Affairs (DWA)).

Rehabilitation framework for the Pienaars River (Gauteng Province, South Africa) 06/2007 - 11/2007. *Project Leader.* The project was concerned with a rehabilitation framework for the Pienaars River in Mamelodi. This included site assessments with specialists, obtaining inputs from stakeholders from various communities and the City of Tshwane, status quo reporting, development of open space management, land-use and in-stream interventions and identification of pilot projects for further phases, and geographic information systems (GIS) mapping of all proposals. Responsible for project management and open space plan component. Involved for 4 person-months. (City of Tshwane Metropolitan Municipality (CTMM)).

Full planning and engineering services for a new Sasko bakery in Woodmead (Western Cape Province, South Africa) 04/2007 - 07/2015. *Environmental Task Leader.* Aurecon provided architectural, project management, civil, structural, electrical, mechanical, fire and wet services engineering for the new bakery complex, inclusive of an ancillary administration block, washbay and workshop. Responsible as the environmental task leader. (Pioneer Food Group).

Development initiative for Bloemhof Dam (North West Province, South Africa) 11/2006 - 05/2007. *Landscape Architect and Environmental Planner.* The project involved the development of a master plan and environmental impact assessment (EIA) plan for the Bloemhof Dam Nature Reserve. This included baseline studies, public participation, feasibility analysis, development of a master plan, architectural layouts for different use areas and the full EIA application process. Responsible for geographic information systems (GIS) mapping, project management and master planning. Involved for 3 person-months. (North West Provincial Government (NWPG)).

Environmental impact assessment (EIA) for River Falls Office Park (Gauteng Province, South Africa) 2006 - 2010. *Project Manager.* The project entailed an environmental impact assessment (EIA) and environmental management plan (EMP) for River Falls Office Park. Responsible for conducting the EIA and compiling the EMP. Involved for 8 person-months. (Private Property Developer).

Environmental impact assessment (EIA) for the widening of Simon Vermooten Road (Gauteng Province, South Africa) 03/2006 - 02/2007. *Project Leader.* The project entailed the widening of Simon Vermooten Road in Pretoria East. A scoping process in terms of the Environment Conservation Act (ECA) was followed in order to widen this arterial road, which was eventually approved by the provincial authority. Subsequent work included the environmental authorisation for a main bulk water supply line adjacent to the road. An environmental management plan (EMP) was also drafted, and monitoring conducted during the construction process. Responsible for the environmental impact assessment (EIA) and EMP monitoring during construction. Involved for 7 person-months. (City of Tshwane Metropolitan Municipality (CTMM)).

Environmental impact assessment (EIA) for President Park Extension 44 (Gauteng Province, South Africa) 2006. *Project Manager.* The project involved an environmental impact assessment (EIA) for President Park, Extension 44, which is a medium-density housing development. Responsible for conducting the EIA and compiling an environmental management plan (EMP). Involved for 2 person-months. (Private Property Developer).

Environmental impact assessment (EIA) for Randjesfontein, Extension 1 (Gauteng Province, South Africa) 2005 - 2008. *Project Manager.* The project consisted of an environmental impact assessment (EIA) for Randjesfontein Extension 1, a residential estate. Responsible for conducting the EIA and compiling an environmental management plan (EMP). Involved for 8 person-months. (Private Property Developer).

Environmental impact assessment (EIA) for Provincial Road D419 (North West Province, South Africa) 2004 - 2011. *Project Manager.* The project entailed an environmental impact assessment (EIA) and environmental management plan (EMP) for a new 30 km section of road. Responsible for conducting an EIA and compiling an EMP. Involved for 5 person-months. (North West Provincial Government (NWPG)).

Environmental impact assessment (EIA) for various wildlife estates in the Hoedspruit and Bela-Bela

areas (Limpopo Province, South Africa) 2004 - 2007. *Project Manager.* The project entailed an environmental impact assessment (EIA) environmental management plan (EMP) for various wildlife estates in the Hoedspruit and Bela-Bela areas. Responsible for conducting the EIA and compiling the EMP. Involved for 24 person-months. (Private Property Developer).

Ga-Rankuwa Extension 21 (Gauteng Province, South Africa) 2004 - 2006. *Project Leader.* The project involved an environmental impact assessment (EIA), environmental management plan (EMP), open space master plan and EMP auditing during construction for underprivileged community in the North of Tshwane Metro. The entire life-cycle of the project was overseen. Responsible for conducting the EIA, compiling the EMP, master planning and landscape architecture. Involved for 12 person-months. (City of Tshwane Metropolitan Municipality (CTMM)).

Galeshewe open space and landscape plan (Northern Cape Province, South Africa) 03/2004 - 08/2004. *Geographic Information System (GIS) Specialist.* The project entailed an open space assessment of Galeshewe Township in Kimberley, including on-foot surveys of each open space, detailed planning proposals for improvement, newspaper articles and geographic information system (GIS) databases. Responsible for project management and GIS. Involved for 3 person-months. (Sol Plaatje Local Municipality).

Frances Baard integrated environmental management programme (IEMP) (Northern Cape Province, South Africa) 02/2004 - 09/2004. *Geographic Information System (GIS) Specialist.* The project entailed the development of an integrated environmental management programme (IEMP) for the Frances Baard District Municipality (FBDM). The programme includes the status quo report, legal matrix of responsibilities, and an environmental issues and threats report for each local municipality. The end product was an interactive tool to officials with decision-making parameters and strategies for sustainable development. Responsible for project management and geographic information systems (GIS) mapping. Involved for 5 person-months. (Frances Baard District Municipality (FBDM)).

Environmental geographic information system (GIS) for Dr Ruth Segomotsi Mompati District Municipality (North West Province, South Africa) 01/2004 - 03/2004. *Geographic Information System (GIS) Specialist.* The project involved a strategic environmental analysis (SEAN) and guidelines for the Dr Ruth Segomotsi Mompati District Municipality in North West Province, as a specialist environmental study feeding into the integrated development plan (IDP) for the area. Responsible for project management, geographic information systems (GIS) environmental analysis and strategic guideline document. Involved for 2 person-months. (VISI Africa Town Planners).

Geographic information systems (GIS) digital terrain model (DTM) for Tshwane (Gauteng Province, South Africa) 08/2003 - 12/2003. *Geographic Information System (GIS) Specialist.* The project involved electronic 3D model for the City of Tshwane Metropolitan Municipality (CTMM) to be used in the integrated development planning process, with specific reference to strategic spatial planning and analyses and decision making, as well as presentation purposes for the executive mayoral office. Responsible for project management, data gathering and analysis of current meta-database, presentation mapping and 3D analysis. Involved for 2 person-months. (City of Tshwane Metropolitan Municipality (CTMM)).

Environmental impact assessment (EIA) for Blue Crane Country Estate (Gauteng Province, South Africa) 2001 - 2011. *Project Manager.* The project entailed conducting an environmental impact assessment (EIA) for a proposed development for Blue Crane Country Estate. Responsible for conducting an EIA and compiling an environmental management plan (EMP). Involved for 24 person-months. (Private Property Developer).

Environmental impact assessment (EIA) for Wapadrand, Extension 36 (Gauteng Province, South Africa) 2001 - 2009. *Project Manager.* The project entailed an environmental impact assessment (EIA) and environmental management plan (EMP) for an urban development bordering the Bronberg protected area. Responsible for conducting an EIA and compiling the EMP. Involved for 20 person-months. (Private Property Developer).

Gauteng Open Space Study (GOSS), Phase 1 (Gauteng Province, South Africa) 03/2001 - 07/2001. *Specialist Landscape Architect.* The first phase of the Gauteng Open Space Study (GOSS) was a geographic information system (GIS) based strategic open space planning project for the entire Gauteng Province. The project was completed for the Gauteng Department of Agriculture, Conservation, Environment and Land Affairs (DACEL). Responsible for information gathering and GIS database information input, including assigning land use categories for land parcels. Involved for 4 person-months. (Gauteng Province).

Bronberg strategic environmental assessment (SEA) (Gauteng Province, South Africa) 2001. *Geographic Information System (GIS) Specialist.* The project involved a strategic environmental assessment (SEA) of the Bronberg Ridge in Pretoria East. The work included assessing the state of the environment to set up land use and conservation management guidelines for the effective conservation of sensitive natural and cultural habitats and management of developable areas. Responsible for all geographic information system (GIS) related work, including habitat modelling for rare and endangered species and map productions. Involved for 6 person-months. (Gauteng Provincial Government).

Dinokeng integrated environmental management plan (IEMP) (Gauteng Province, South Africa) 2001. *Geographic Information System (GIS) Specialist.* This project comprised the environmental planning component for the Dinokeng initiative, including conducting the environmental planning component for the North-eastern Gauteng Initiative (NEGI), a spatial planning initiative. This included the potential establishment of a big-five game reserve in the north-eastern part of Gauteng, with the Institute of Directors (IOD)/International Union for Conservation of Nature (IUCN) consortium. Responsible for environmental planning, all geographic information system (GIS) related work and map productions for the environmental team. Involved for 5 person-months. (International Union for Conservation of Nature (IUCN)/Gauteng Provincial Government).

Extension of Borakalalo National Park (North West Province, South Africa) 2001. *Geographic Information System (GIS) Specialist.* The project concerned the proposed extension of Borakalalo National Park. The work included conducting a physical infrastructure inventory and natural resource base and social inventory for the North West Parks and Tourism Board (NWP&TB) to facilitate the planning of the proposed extension of the national park. Responsible for environmental management and geographic information system (GIS). Involved for 1 person-month. (North West Parks and Tourism Board (NWP&TB)).

Bushmans River Game Reserve: Phases 1 and 2 (KwaZulu-Natal Province, South Africa) 2001. *Geographic Information System (GIS) Specialist.* The project entailed the planning and development of a proposed big-five game reserve in the Kwazulu-Natal Midlands, with Roger Collision (Collision Consulting) and Darryl Lombard (Lorton Consulting). Responsible for environmental planning, geographic information system (GIS) related work, including the creation of digital terrain model (DTM) and subsequent slope and aspect analyses. Involved for 5 person-months. (Private).

Tourism plan for the Maluleke area (Mpumalanga Province, South Africa) 05/2000 - 07/2000. *Landscape Architect.* The project involved developing a community-based tourism plan for the Makuleke tribe in conjunction with South African National Parks (SANParks) in the Pafuri area. Responsible for site suitability analysis, lodge site design and graphic presentation drawings. Involved for 2 person-months. (South African National Parks (SANParks)).

Museum Park initiative in Pretoria inner city (Gauteng Province, South Africa) 05/2000 - 08/2000. *Landscape Architect.* The project entailed urban design proposals and street furniture design for the Museum Park initiative in Pretoria inner city. Responsible for site analysis, urban design and graphic presentation drawings. Involved for 2 person-months. (City of Tshwane Metropolitan Municipality (CTMM)).

Visual impact assessment (VIA) for the Samancor chrome smelter in North West (North West Province, South Africa) 12/1999 - 03/2000. *Specialist Landscape Architect.* The project included specialist tourism, land use and visual impact assessment (VIA) of a proposed chrome smelter in Mooi-nooi as part of the Council for Scientific and Industrial Research (CSIR) consortium for Samancor. Responsible for the VIA and information gathering. Involved for 3 person-months. (Samancor).

Implementation of Spiegelhaus Garden (Magdeburg, Germany) 04/1999 - 05/1999. *Landscape Contractor Staff.* The project involved the implementation of the Spiegelhaus Garden - BUGA 2000 Landscape Expo, Magdeburg - a R750 million landscape project hosted every two years in a different city in Germany. Responsible for landscape installation. Involved for 1 person-month. (BUGA 2000 Landscape Expo, Germany).

Academic experience

Institute for International Research

- Delivered a presentation named "Key Land Use Planning Considerations for Mine Closure" at the 5th Annual IIR Mine Closure and Rehabilitation Conference 2011, Johannesburg

Institute for Landscape Architects of South Africa (ILASA)

- Served on the adjudication panel of the two-yearly ILASA Merit Awards in 2011, which included assessing all Northern Province projects and providing feedback to the adjudication convener.
- Delivered a presentation named "Waste Site Buffer Zones: Alternative Land Uses" at the Institute for Landscape Architects of South Africa (ILASA) National Conference on 13, 14 May 2010.

International Federation of Landscape Architects

- Chaired session and discussion "Dealing with Mining Landscapes" at the 49th IFLA World Congress 2012 in Cape Town, South Africa.

South African Council for the Landscape Architecture Profession (SACLAP)

- Co-writer of the environmental section of the professional exam from 2009 to 2013, as well as co-examiner of this section of the exam for the same period.

University of Pretoria, South Africa

- External examiner for the 3rd year BSc (Landscape Architecture) students, First and Second Semester exams 2012.
- External examiner for the 3rd year BSc Landscape Architecture Students, 28-29 November, 2009

University of the Witwatersrand (Wits), South Africa

- Co-presenter of a lecture on "Food Gardens & Urban Agriculture" at the WITS Modernx Conference (2009) in celebration of the 50 year existence of the JB Moffat Building.

Education

- 2014 : Dip Environmental Engineering, University of the Witwatersrand (Wits), South Africa
- 1998 : Bachelors in Landscape Architecture, University of Pretoria, South Africa

Career enhancing courses

- 2014 : Level 2 SUSOP® Training Course, SUSOP (Pty) Ltd
- 2014 : Post-graduate short course in Environmental Management, University of the Witwatersrand (Wits), South Africa
- 2014 : Post-graduate short course in Mining and the Environment, University of the Witwatersrand (Wits), South Africa
- 2013 : Post-graduate short course in Coal and the Environment, University of the Witwatersrand (Wits), South Africa
- 2013 : Post-graduate short course in Wastewater Engineering, University of the Witwatersrand (Wits), South Africa
- 2013 : Level 1 SUSOP® Training Course, SUSOP (Pty) Ltd
- 2012 : Project Management Course (passed with distinction), Aurecon in-house training, South Africa
- 2009 : 2-Day Technical Writing Course, Golder Associates Paste Engineering and Design, Canada
- 2009 : 2-Day Level 1: First Aid Course, National Occupational Safety and Health Consultancy (NOSHC)
- 2009 : 2-Day Grass Identification Course, Bushveld Eco Services - Frits van Oudshoorn
- 2008 : 3-Day Project Management Course, Golder Associates Paste Engineering and Design, Canada
- 2008 : 1-Day Health and Safety Representative Course, National Occupational Safety and Health Consultancy (NOSHC)
- 2001 : 1-week Introduction to GIS Course, Environmental Systems Research Institute (ESRI)

Professional affiliations

Member, International Association of Impact Assessment (IAIA)
Registered Professional Landscape Architect, South African Council for Landscape Architectural Professionals (SACLAP)
Member, Institute for Landscape Architecture in South Africa (ILASA)

Languages

	Reading	Writing	Speaking
English	Excellent	Excellent	Excellent
Afrikaans	Excellent	Excellent	Excellent
German	Poor	Poor	Fair

Publications

Bower J, 2010. "Technically Speaking". Contributor of an article on "Technically Speaking", the quarterly newsletter for Golder Associates worldwide - article on "Galeshewe Urban Renewal Project: Green Belt Project".

Referees

Company	Contact Person	Telephone nr.
Golder Associates	Nico Bezuidenhout	012 364 4000/nbezuidenhout@golder.co.za

By my signature below I certify the correctness of the information above and my availability to undertake this assignment.

Signature of Staff Member

Date