

CURRICULUM VITAE: ANTONIA BELCHER

Name:	Antonia (Toni) Belcher (<i>Pr. Sci. Nat</i>)
Profession:	Aquatic scientist
Nationality:	South African
Years experience:	28+ years
PROFESSIONAL REGISTRATION:	Professional Environmental Scientist (Pr. Sci. Nat 400040/10) Professional Ecological Science (Pr. Sci. Nat 400040/10)
ACCREDITATION:	SASS5 (Macro-invertebrate assessment method)
Academic Qualifications:	1998 - M.Sc. in Environmental Management, Potchefstroom University (<i>cum laude</i>) 1989 - B.Sc. (Hons) in Oceanography, University of Port Elizabeth 1987 - B.Sc. – Mathematics, Applied Mathematics, University of Port Elizabeth 1984 – Matriculation, Lawson Brown High School, Port Elizabeth
Areas of specialisation:	<ul style="list-style-type: none"> • Environmental water requirement studies • River maintenance and management plans (MMP) • Aquatic ecosystem monitoring and assessments • Design of water quality and monitoring programmes for aquatic ecosystems • Compilation of State of River reports (aquatic data collection, interpretation, presentation, graphic layout and design and preparation of technical and glossy print ready copies) • Environmental Impact Assessments • River classification and environmental water requirements (Ecological Reserve determinations) • Integrated Water Resource Management • River, Wetlands and Estuary management • Water quality assessment and management reporting • Water resource legislation • Water resource institutions • Water education
Countries of Work Experience:	South Africa, Namibia, Swaziland, Lesotho, Rwanda
Employment Record:	2013 - BlueScience (Pty) Ltd (Principal Specialist Scientist) 2007 – 2012 Self-employed 1999 – 2007 Assistant and Deputy Director, Water Resource Protection, Western Cape Regional Office, Department of Water Affairs, Cape Town 1995 – 1999 Institute for Water Quality Studies, Department of Water Affairs, Pretoria 1991 – 1995 Water Pollution Control Officer, Water Quality Management, Department of Water Affairs, Pretoria 1989 – 1990 Mathematics tutor and administrator, Master maths, Randburg and Braamfontein Colleges, Johannesburg 1987 – 1988 Part-time field researcher, Department of Oceanography, University of Port Elizabeth
Awards and Achievements:	Woman in Water award for Environmental Education (2006) Runner up for the Woman in Water prize for Water Research (2006)
Professional membership and accreditations:	Accreditation: SASS Practitioner and Auditor (2007 – present) Member of the International Association of Impact Assessments (IAIA) Accredited as an Environmental Scientist with the SACNSP (number 400040/10) Accredited as an Ecological Sciences professional with the SACNSP (number 400040/10) Certificate for wetland management and rehabilitation: University of the Free State (November 2015)

Summary of projects undertaken by BlueScience since July 2012	
Type of project	Number of projects undertaken
Dam developments	74
Other freshwater and freshwater impact assessments	364
River reach MMP	5
ESKOM	34
Renewable energy (WEF and Solar)	29
Roads (Provincial and National roads)	47
River monitoring and rehabilitation projects	58
Water resource study	12
Water use authorisation applications (not linked to a freshwater assessment study)	26
Water use authorisation audits and licensing monitoring)	7
Total	656
Summary of experience	<p>2008 –</p> <ul style="list-style-type: none"> Environmental water requirement (EWR) studies for various rivers in South Africa and Lesotho; <ul style="list-style-type: none"> Freshwater Assessment: Mapoteng Water Supply Infrastructure Project Environmental Management Plan, 2011. EWR determination. Freshwater Assessment for Semonkong Phase 2 Water Supply Rehabilitation and Extension Works, Lesotho: Environmental and Social Impact Assessment, 2012. Freshwater Assessment for Proposed Big Bend Spur Railway in Swaziland, 2012. Freshwater Assessment for Aussenkehr Bulk Water Supply System, 2012. Kingna, Konings and Poesjesnel rivers maintenance and management plans (MMP) Baden River - Ecological and freshwater assessment as specialist input into the Maintenance and Management Plan for the river; Berg River Zone 3 – Ecological and freshwater assessment as specialist input into the Maintenance and Management Plan for the river; Berg River Zone 1 and 2 - Ecological and freshwater assessment as specialist input into the Maintenance and Management Plan for the river; Water quality impact assessment of waste water treatment facilities and water quality management reports for the upgrade of more than 15 waste water treatment works in the Western Cape; Freshwater impact assessment and Water use authorisation application for the Coega industrial area WWTW (client Aurecon South Africa); Freshwater impact assessment and Water use authorisation application for the Macassar WWTW (Client City of Cape Town). More than 350 freshwater impact assessments studies as input into EIA decision making processes. Toni has conducted more than 150 water use authorisation applications. Completed more than 35 roads, power line and substation and alternative/renewable energy projects. Development of RDM (Resource Directed Measures) curriculum for a Master degree programme at University of science institutions in South Africa. Free State river health monitoring programme (monitoring for 3 year period). Classification of the water resources of the Olifants Doorn Water Management Area. Graphic design, layout, technical compilation and preparation of print ready glossy publications for the State-of-River reports for the Breede and Berg Rivers South Africa Adopt-a-River: Eerste River Stellenbosch: training of staff members in river awareness of 50 unemployed people from the Stellenbosch Local Municipality

	<ul style="list-style-type: none"> • Development and piloting of a National Strategy to Improve Gender Representation in Water Management Institutions, where the focus is on improving the capacity (specifically amongst women) to participate in water related decision making. • Compilation of a background document as well as a framework management plan towards the development of an integrated water resources management plan for the Sandveld; • Aquatic specialist to the City of Cape Town project: Determination of additional resources to manage pollution in stormwater and river systems; • Prepare and supply ecological flow requirements to the Department of Water Affairs project: Development of reconciliation strategies for selected towns in the Southern sub-region; • Framework for Education and Training in Water (FETWATER), Resource Directed Measures Network partner which has undertaken training initiatives on environmental water requirements in the SADC region; • Resource Directed Management of Water Quality: Development of training materials, Department of Water Affairs and Forestry; and • More than 200 aquatic ecosystem assessments as input into the environmental impact assessment and water use authorisation processes and providing recommendations on water resource impact mitigation measures primarily in the Western and Northern Cape. <p>2000 –2007:</p> <p>In the Western Cape Regional Office, Ms Belcher was the manager responsible for the implementation of the Reserve Directed Measures component of the National Water Act. This entailed facilitating the determination of the Ecological Reserves for water use licensing purposes, as well as giving effect to Reserves in licenses and addressing the monitoring and auditing requirements for Reserves. She was involved in, or managed a number of Reserve determination studies for various license applications. She also provided technical support to a number of Intermediate and Comprehensive Reserve determinations. In addition, Ms Belcher was a task team member of a number of projects regarding capacity building and the development of Reserve determination methods. She also lectured to a number of Water Forums, universities (UWC, UCT and Stellenbosch University), schools, and other organisations and institutions on water resource protection.</p> <p>Added to this, Ms Belcher was the Provincial Champion for the River Health Programme in the Western Cape and has initiated a number of activities and partnerships within the region towards ensuring that the programme was implemented in the province on a sustainable basis. Ms Belcher managed a multi disciplinary and multi organisational team consisting of various scientists from Universities, Nature conservation agencies, National provincial and Local Government and research organisations in the Western Cape. On the completion of the sampling and data collection phases of the monitoring programmes Ms Belcher designed, implemented and compiled State-of-River reports for 7 catchment areas in the Western Cape.</p> <p>Ms Belcher has been involved in the Cape Action for People and the Environment Programme for the last 6 years, where she was the task team leader for the Ecological Reserve Implementation task and a member of the Estuary Management Planning, Catchment Management, Fine-scale Planning and Alien Fish Control task teams. She has been a network partner for the FETWATER RDM component since its inception. She was also a member of various Water Research Steering Committees.</p> <p>1995 - 2000:</p> <p>During this period Ms Belcher worked at the Institute for Water Quality Studies and had the following responsibilities or was involved in the following activities:</p> <ul style="list-style-type: none"> • Project manager and coordinator for the freshwater water quality guidelines for South Africa. • Project leader for the following projects: <ul style="list-style-type: none"> ➢ Water Quality in the Buffelsdoornspruit Catchment: A Situation Assessment; ➢ Monitoring the Impact of Saline Water from the Grootvlei Mine of the Water Quality and Functioning of the Blesbokspruit Wetland System; ➢ Zwartkops River Water Resources Management Plan: Situation Assessment and Development of a Catchment Water Resources Management Plan; ➢ Roodeplaat Dam water quality assessment,
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	<ul style="list-style-type: none"> ➤ The National Water Quality Assessment, and ➤ Diep River Situation Assessment. <ul style="list-style-type: none"> • Member of Organising Committee for Vic Falls Conference on Aquatic Systems and International Symposium on Exploring the Great Lakes of the World, Victoria Hills, Zimbabwe, 15-19 July 1996. • Provided specialist input into various aspects of the new National Water Act and its implementation: <ul style="list-style-type: none"> ➤ Development of a classification system for South Africa's water resources ➤ Development of regulations, general authorisations and guidelines to support implementation of Chapters 2-4 of the National Water Act ➤ Task team member for Resource Protection and Assessment Policy Implementation and Resource Planning and Catchment Management Teams, as well as involvement in development of a reserve determination methodology and risk based objectives. • Steering committee member on a number of WRC projects, e.g. the non-point sources assessment guide development project as well as Departmental projects, e.g. Amatola, Mhlathuze and Vaal studies • Member of technical committee for SABS Environmental Management standards • Personnel management for the project team: Management Support Services and Strategic Business Unit leader for Monitoring Programme Development and Assessments which involves personnel and administrative management of a group of 10 personnel and the provision of scientific/technical guidance and/or the involvement in a number of Monitoring Programme Development and Assessment related projects. <p>1991 -1995: During this period Ms Belcher worked in the Directorate Water Quality Management and was involved in the following projects or tasks:</p> <ul style="list-style-type: none"> • Compiled and maintained a Contingency Plan for Pollution Incidents for the Department of Water Affairs and Forestry. • Administrated exemptions from the Water Act for effluent discharges. • Managed and was involved in the following projects: <ul style="list-style-type: none"> ○ Reappraisal of the Richard's Bay Pipelines; ○ Impact of Fish Factory Effluents; ○ Marine Water Quality Management Information System; ○ Marine Water Quality Guidelines; South African Water Quality Guidelines (Phase II and Aquatic Ecosystems); and ○ Quantifying the economic effect of salinisation of South Africa's Water Resources. ○ Development of information systems for the administration of permits and for catchment management. • Water quality catchment studies for Wilderness Lakes, and Knysna catchments. • Project manager and coordinator for the development and implementation of marine water quality policy for South Africa. • Development of a water quality management strategy for the Hartenbos estuary <p>Training courses given or contributed to:</p> <p>2009 Water module and mentoring for Gender Representivity in Water Management Institutions – Training in Limpopo, Eastern Cape and KwaZulu Natal Provinces</p> <p>2008 and 2009 Transboundary Water Management SIDA course held in Swaziland and Rwanda- lecturer on environmental water requirements and river health monitoring</p> <p>2008/9 Integrated Water Resources Management Masters programme, UWC (lecturer)</p> <p>2008 Orange Senqu Fish River Integrated flow Management and Environmental Water Requirements Training course - A Fetwater RDM Network Initiative (lecturer) for Master degree students of Namibia, South Africa, Lesotho and Botswana. The course also included students from Belgium</p> <p>2008 IWRM Short Course, University of the Western Cape, 29 September to 2 October 2008 (lecturer)</p> <p>2007 Integrated Water Resources Management Masters programme (lecturer)</p> <p>2007 Environmental Water Requirements Training: Olifants/Doring Catchment, University of the Western Cape (lecturer)</p> <p>2005/7/9 Water Resources Management, University of Stellenbosch (lecturer)</p> <p>2003/4 Ecological Assessment Master Programme, University of Stellenbosch (lecturer)</p>
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	Invited Presenter for a number of <i>ad hoc</i> events or for organisations such as the Water Institute of South Africa, at the University of Cape Town's Summer School
Publications:	More than 150 publications, papers, presentations and posters relating mostly to water resource quality and river health assessments in Southern African rivers and its management.