

Rory van Niekerk

B. Sci Eng (Agric), M.Sci Eng (Agric)

CAREER SUMMARY

Rory commenced work with FSA Consulting in January 2010.

Since starting full-time work, Rory's focus has been mainly in the irrigation industry establishing client requirements, maintaining client relationships, performing GPS surveys, irrigation designs, costings and quotes, as well as total project management. Most of his work focused on the dairy industry with some exposure to sugarcane, citrus, stone fruit, nuts and bananas. Water and irrigation are his key areas of focus and he is always willing to broaden his technical horizons.



At FSA Consulting, Rory has worked on several coal seam gas projects (beneficial use irrigation developments and design of low hazard aggregation dams), a catchment sustainability project, ring tank designs, low hazard aggregation dam designs and hazard assessments, dam failure impact assessments, RTK-GPS survey work, feedlot designs, specification reports, report writing, literature reviews, preparing project budgets and proposals as well as performing complete project management.

After making the move to Australia in October 2008, Rory joined Water Dynamics based in Shepparton, Victoria. His role was to maintain client relationships, perform GPS surveys, complete irrigation designs, costings and quotes, mark out irrigation systems as well as manage the irrigation projects from conception to manufacture to installation through to commissioning.

During the period 2001 to 2008, Rory was part of Irrigation & Drainage Services CC. His roles were identical to those above for Water Dynamics. Rory was also involved in soil moisture monitoring and automatic weather stations. Most of his irrigation experience was obtained working for Irrigation & Drainage Services CC.

From 2000 to 2001, Rory worked for UniTrans Sugar, a sugar cane hauling and agricultural machinery company where he was involved in their research and development activities in a few of the Southern African countries. In-field haulage, field to mill haulage, time and motion studies, agricultural machine life-cycle costings (harvesting, loading, haulage and laser levelling) were his main areas of focus.

He spent his first three years (1997 to 2000) of work with the Agricultural Research Council where he completed his M.Sci Eng (Agric) degree. His main role after completing his degree was the team leader for the Mobile Irrigation Evaluation Unit. Rory spent a lot of time evaluating a broad variety of irrigation systems and writing reports on the findings. Research report writing was also part of his role at the Agricultural Research Council.

He matriculated in 1992 from Westville Boy's High School and went on to study his Bachelor and Master of Science Degrees in Agricultural Engineering through the University of Kwa-Zulu Natal (KZN), South Africa.

QUALIFICATIONS, PROFESSIONAL MEMBERSHIPS & TRAINING

Tertiary Qualifications

Master of Science in Engineering (Agricultural)

University of Kwa-Zulu Natal (Completed in 1998)
“Dynamic Measurement System for Tyre Rolling Resistance“

Bachelor of Science in Engineering (Agricultural)

University of Kwa-Zulu Natal (Completed in 1996)

Certified Irrigation Designer

South African Irrigation Institute (Completed in 2001)
Irrigation Australia Ltd (Step 3 complete, Step 4 to be completed in Micro/Drip)

Training

- St John Ambulance First Aid Course
- Qld Government White Card – Construction Induction
- GI Safety Induction for the Industry Workplace – Coal and Core
- Arrow Energy Southern Regional Induction – Theten, Wilkie Creek and Tipton
- Arrow Energy Coal Seam Gas Induction
- Bow Energy Safety Induction
- ATV Training Course
- AutoCAD Training Course

PROFESSIONAL AFFILIATIONS

Member of the Institution of Engineers Australia

EMPLOYMENT DETAILS

Extensive experience and depth of expertise in:

- GPS surveys for irrigation projects,
- Irrigation design using IrriCAD and Model Maker software – Drip, micro, centre pivot, lateral move, overhead sprinkler and pod systems,
- Preparing costings and quotations for irrigation designs,
- Total project management of irrigation systems and other projects including GPS surveys, design, costing, manufacture, installation, commissioning,
- Excellent writing and communication skills. Well versed with Microsoft Word, Excel, Powerpoint and Outlook.

Well versed in preparing project budgets, proposals, project management and report writing in a consulting environment; daily time-step hydrological modeling; AutoCAD drafting; RTK-GPS survey and survey reduction using CivilCAD; data acquisition and interpretation using capacitance soil moisture monitoring probes; automatic weather stations and irrigation system evaluations. This includes:

- Preparing proposals using Microsoft Excel and Word. Project management ensuring that milestones are met and projects are completed within budget. Report writing for various types of projects in a consulting environment.
- Catchment scale hydrological modelling using the BRUCE (FSA Consulting in-house model) and ACRU models. This modelling includes simulation for water supply, balancing storage sizing, evaporation, seepage, runoff, irrigation, irrigation demand (Penman-Monteith & FAO56 approach), deficit scheduling, irrigation efficiencies, soil water interaction and crop yield inter alia.
- AutoCAD drafting work preparing masterplans for projects.
- RTK-GPS survey and survey reduction using CivilCAD. Experience in design of storages and aggregation dams using CivilCad.
- Supply and installation of capacitance probes for measuring relative soil moisture levels and interpreting data.
- Experience in supply and installation of automatic weather stations for collecting climate data.
- Experience in performing irrigation system evaluations for centre pivot and lateral move irrigators, drip and micro irrigation, overhead sprinkler irrigation and flood irrigation.

Professional Experience

January 2010 to date

Agricultural Engineer, Feedlot Services Australia Pty Ltd (trading as FSA Consulting)

FSA Consulting provides agricultural, environmental and engineering services to intensive livestock industries, grain, cotton and sugar growers, abattoirs and industry. It is Australia's predominant environmental consultancy for intensive livestock industries and also designs irrigation systems, ring tanks, channels and drains, prepares irrigation scheme plans and specifications and undertakes hydrological modelling. The FSA Consulting website is: <http://www.fsaconsulting.net/index.htm>

Responsible for a key level of involvement in the coal seam gas (CSG) industry, irrigation and catchment sustainability reporting projects, including:

- FSA Consulting 2010: Land and Water Environmental Management Plan (L&WEMP) for beneficial use of CSG water with irrigation – Dalby 700 ha, CSG Company, FSA Consulting Report 7394/1.
- FSA Consulting 2011: Land and Water Environmental Management Plan for beneficial use of CSG water with irrigation – Dalby 400 ha, CSG Company.
- FSA Consulting 2011: Land and Water Environmental Management Plan for beneficial use of CSG water with irrigation – Dalby 150 ha, CSG Company.

These CSG L&WEMP projects required the following skills and tasks: RTK GPS survey and survey; farm layout and preliminary irrigation design; daily time-step water balance modelling to size balancing storage; overall mass transfer water balance; overall mass transfer salt balance; calculation of deep drainage past the root zone using "HowLeaky" software; interpretation of soils and EM38 data for incorporation into irrigation management strategy of distinct management zones; calculation of preliminary gypsum injection rates; understanding of threshold

electrolyte concentration curves and how the SAR influences the soil structure; understanding of the monitoring requirements; report writing skills for the development of a L&WEMP on Good Quality Agricultural Land (GQAL) in the CSG sector. These projects required an understanding of the DERM “Approval of Coal Seam Gas Water for Beneficial Use” and “Conducting Soil Surveys and Agricultural Land Suitability Assessments for Coal Seam Gas Irrigation Development” guidelines.

- FSA Consulting 2011: Investigation and design of 10 ML low hazard aggregation dams for associated CSG water storage – Central Queensland, CSG Company.

The design of low hazard aggregation dams for associated CSG water required an understanding of the DERM “CSG Water Management Policy”, “Manual for Assessing Hazard Categories and Hydraulic Performance of Dams” and “Guidelines for Failure Impact Assessment of Water Dams” documents.

- FSA Consulting 2010, State of the Catchment Report, Macintyre Brook, Macintyre Brook Sustainability Initiative, FSA Consulting Report 7208
- Job captain representing FSA Consulting for the “Review of Centre Pivot and Lateral Move Irrigation Machines in South-Eastern Queensland”.

Also responsible for:

- Proposal preparation,
- Total project management - Ensuring projects are completed within the timeframe, according to terms of reference and within budget,
- RTK-GPS survey and survey reduction in CivilCAD,
- Drafting of masterplans using AutoCAD,
- Design of ring tanks,
- Earthworks calculations for storage design using CivilCAD and drafting of specification documents,
- Hydrological modelling (daily time-step) using in-house spreadsheet,
- Design of small feedlots (< 2,000 SCU),
- Basic ArcView GIS work for incorporation into master plans,
- Understanding of Water Policy Issues
- Managing relationships between clients, government regulatory bodies and professional staff.

November 2008 to December 2009

Irrigation Design Engineer, Water Dynamics.

Water dynamics is an irrigation design, supply and installation business and is part of the TYCO International group. Water Dynamics has branches throughout Australia and in New Zealand.

Key responsibilities over this period included the following:

- Establishing and maintaining relationships with new clients
- Performing thorough design – drip, micro irrigation and centre pivot
- Designing control systems and automation
- Design of frost protection systems
- Design of boreholes and solar pumps
- Costing of systems (Navision & SAP) and presentation of quotations

- Preparing budget costings for small and intermediate irrigation systems
- Technical support for Danfoss VFD drives
- Commissioning systems
- Complete project management – survey, design, installation and commissioning
- Thorough after-sale service
- Site supervision of the final stages of the Macquarie Settlement pipeline – Tasmania

September 2001 to October 2008

Irrigation Design Engineer, Irrigation & Drainage services CC

Irrigation & Drainage Services is a privately owned irrigation design, supply and project management business which services the province of KwaZulu-Natal in South Africa.

Key responsibilities over this period included the following:

- Establishing and maintaining relationships with new clients
- Consulted to large-scale commercial farmers
- Performing detailed GPS surveys
- Performing thorough design – impact sprinklers, drip, micro irrigation, centre pivots and pods
- Designing boreholes – submersible and line shaft
- Costing systems & presenting quotations
- Managing the installation of pump station equipment – workshop
- Sub-contracting in-field installations
- Commissioning systems
- Complete project management – survey, design, installation and commissioning
- Thorough after-sale service

Key achievements over this period included the following:

- Business development by introducing soil moisture monitoring equipment, weather forecasting, disease modelling, catchment runoff studies and slurry management systems
- Equal partner in this business.

February 2000 to August 2001

Agricultural Engineer for R&D Africa, Unitrans Freight Sugar Division (Usug)

Unitrans Freight (Sugar Division) is predominantly a sugar cane haulage company and is also involved in harvesting, loading, in-field wet-weather haulage, field to mill haulage and laser levelling. They have offices in several of the Southern African countries with their head office located in Westville, KwaZulu-Natal, South Africa.

Key responsibilities over this period included the following:

- Evaluating performance of mechanical cane harvesting, loading & haulage systems
- Involved in setting up land prep and laser levelling machine life cycle costings
- Project leader for a side hitch operation – in-field haulage

Other work experience included literature reviews on the following:

- Traction modelling, diesel engine performance modelling, flotation, soil strength measurement, land-prep literature and implement draft determination

During this period I obtained a good understanding of how machinery is cost for a project, including: operating parameters, capital expenditure, depreciation, operator costs, depot costs, insurance, fuel and lubricant consumption, variable and fixed maintenance costs, tyre costs and cash flow statements.

January 1997 to January 2000

Agricultural Engineer, Agricultural Research Council (ARC) – Agricultural Engineering Division

The Agricultural Research Council (ARC) is a parastatal research organisation located in Pretoria, South Africa. The Agricultural Engineering Division focusses on a variety of topics within the engineering sector.

Key responsibilities over this period included the following:

- Employed by the ARC whilst studying for my M.Sci Eng (Agric) degree – Measured rolling resistance of pneumatic tyres
- Project leader for the Mobile Irrigation Laboratory unit and related projects
- Involved in Water Research Commission (WRC) project – evaluation of irrigation systems
- Simulation and evaluations of flood irrigation systems

Key achievements over this period include finalising my Master of Science in Engineering (Agricultural) degree, involvement in evaluation performance of irrigation systems and writing evaluation reports:

- Dynamic Measurement System for Tyre Rolling Resistance – 1998. Thesis submitted in partial fulfilment of the degree M.Sci Eng (Agric).
- Performance of Irrigation Systems in the Lowveld of Zimbabwe. Institute of Agricultural Engineering (ARC), September 1999.
- Field Evaluation of the Glendale Valley Irrigation System, Illovo Sugar Limited. Institute of Agricultural Engineering (ARC), September 1999.

PUBLICATIONS

Conference and workshop papers

Van Niekerk, RD, Design of a Dynamic Measurement System for Tyre Rolling Resistance – Presented at the South African Institute of Agricultural Engineers annual conference, 1997.

Van Niekerk, RD, Results Obtained from a Dynamic Measurement System for Tyre Rolling Resistance – Presented at the South African Institute of Agricultural Engineers annual conference, 1998.

Van Niekerk, RD, Design and Evaluation of a Martinez Drip Irrigation system – Presented at the South African Irrigation Institute's annual conference, 2000.

Reports and Thesis

Van Niekerk, RD, Dynamic Measurement System for Tyre Rolling Resistance – 1998. Thesis submitted in partial fulfilment of the degree M.Sci Eng (Agric).