

# Nathan Heinrich

BE (Agr), 1<sup>ST</sup> Hons, CID, MIEAust

## CAREER SUMMARY

Feedlot Services Australia Pty Ltd (T/A FSA Consulting) is based in Toowoomba. It specialises in two main areas:

- Design and environmental management of facilities producing organic effluents; including intensive livestock industries (cattle feedlots, piggeries, poultry), abattoirs, and similar industries.
- Water engineering; irrigation system design, hydrological modelling, storages, laser levelling, pipelines, channels and drains, and plans and specifications.

Nathan commenced with FSA Consulting under vacation employment as a student of engineering and continued part-time throughout final year of university. After completion of studies Nathan continued employment as a full-time engineer from November 2004 to present.



Nathan works as a water resources engineer for FSA Consulting, leading many individual projects. Nathan also provides skills and advice in water engineering to projects managed by other staff. FSA Consulting is a multi-disciplinary workplace where teamwork amongst staff members is essential to project delivery.

Nathan's responsibilities in managing and completing individual projects include:

- Initial liaisons with potential clients to determine scope
- Preparation of proposal outlining work to be undertaken and associated costs and timeframes
- Resources coordination and scheduling
- On-going financial monitoring
- Client communication
- Management of involved staff
- Reporting, quality assurance and finalisation
- Invoicing, administration and database management.

Individual project budgets have been up to \$150,000 over various timeframes from a few weeks to 18 months.

Nathan's project areas include:

- Irrigation system and farm water supply design, specification and engineering construction supervision
- Irrigation scheme customer consultation, modernisation and rationalisation
- Surface irrigation assessment and optimisation
- Pressurised irrigation system assessment
- Farm water supply assessment
- Farm water supply research (water sources, storage losses)
- Hydrological modelling
- Water storage and feedlot development bulk earthworks calculation

- Referable dam inspections
- Preparation of dam failure impact assessments
- Pump capacity assessments
- Water licensing and regulation (professional and technical advice and reporting)
- Certification of irrigation properties (overland flow)
- Preparation of agricultural viability assessments
- Wastewater evaporation basin modelling and design
- Water budgeting of irrigation water supplies
- Professional advice (water resource engineering)
- Preparation of supporting information for funding applications
- Preparation of various types of water management plans
- Surveys (RTK GPS, EM31 and EM38)
- Metering installations, data management, maintenance and troubleshooting (storage monitoring, automatic weather stations).

Nathan has also been involved in a number of large research projects. These include (client):

- Reduction of Evaporation from Farm Dams – Scoping Study (National Program for Sustainable Irrigation)
- Estimating Land Surface Diversions – Stages 1 & 2 (Murray Darling Basin Commission)
- Audit and Needs Analysis of Public Vehicle Washdown Facilities (Queensland Murray-Darling Commission)
- The development of a 'Ready Reckoner' to evaluate the costs and benefits of using evaporation and seepage control measures in water storages (National Program for Sustainable Irrigation)
- Quantifying Seepage Losses from On-Farm Storages (Condamine Alliance)
- Development of Certification Guidelines for Assessable Works that take Overland Flow Water (Queensland Department of Natural Resources and Water)
- On-farm Water Use Efficiency in the Northern Murray-Darling Basin (Murray-Darling Basin Commission)
- Regional Statistics Collation and Benchmarking – South East Queensland (South-East Queensland Irrigation Futures)
- SEQ Rural Water Strategy Stages 1 & 2 (CRC Irrigation Futures)
- Development of Odour Performance Criteria for the Australian Feedlot Industry (Meat and Livestock Australia).

In addition to formal conference presentations (as referenced), Nathan has presented informally at various conferences, field days and information sessions. More recent examples include:

- Society for Engineering in Agriculture Networking Evening – 'A typical day in the life of...an Ag Engineer' (2008)
- 'Investigating Leaky Storages using Electromagnetic (EM) Surveys' – Australian Cotton Conference Hands On Research Sessions (2008)
- 'Storage Surveys Before and After – Is this costing you money?' Macintyre Valley Cotton Field Day – Diesel, Dirt and Dollars (2008)
- 'Estimating Seepage Losses using the Water Balance Method' – Irrigation Australia-Australian National Committee on Irrigation and Drainage Seepage Symposium and Field Day (2007)

## QUALIFICATIONS

Bachelor of Engineering (Agriculture), 1<sup>st</sup> Class Honours.  
University of Southern Queensland (2004)

Irrigation Australia Ltd Certified Irrigation Designer – Agricultural Sprinkler (ASP4560, 2008)

Irrigation Australia Ltd Certified Irrigation Designer – Agricultural Surface (ASUR4560, 2009)

Currently working towards achieving Chartered Professional Engineer (CPEng) and registration on the National Professional Engineers Register (NPER) and Registered Professional Engineer of Queensland (RPEQ)

Worksafe Construction Induction Card (2009)

Certificate II in Agriculture – ATV Operation (2008)

Class 'HR' Heavy Vehicle Driver's Licence (Victoria)

Marine Motor Vessel Driver's Licence (South Australia)

## EMPLOYMENT DETAILS

### Professional Experience

#### November 2004 to date

Agricultural Engineer, Feedlot Services Australia Pty Ltd (T/A FSA Consulting).

This consultancy specialises in two main areas - environmental management and assessment of industries producing organic effluents (particularly intensive livestock facilities); and water engineering. Nathan has been involved with a range of work and activities as described above.

#### November 2003 to November 2004

Agricultural Engineering Student, Feedlot Services Australia Pty Ltd (T/A FSA Consulting).

This consultancy specialises in two main areas - environmental management and assessment of industries producing organic effluents (particularly intensive livestock facilities); and water engineering. Nathan's work has involved:

- Feedlot Odour – measurement and modelling
- Formulation of air quality guidelines for Local Governments (NSW)

#### April 2003 to November 2003

During this time Nathan worked part time as a draftsman for Janke Australia, whilst studying at University. This work involved the use of CADKEY drafting software to design machinery parts, and to convert hand renderings to electronic format, for use in the factory. Nathan also spent some days assembling machinery.

Nathan has also been involved in a number of other shorter term jobs in the Darling Downs area whilst studying at University, including shelf filling at a large supermarket, shed construction, hay baling and concrete tank construction.

#### January 1999 to February 2001, Summer break of 2001/2 and 2002/3

Immediately after leaving school Nathan commenced work with a local earthmoving firm. He was involved primarily with scraper operation, and the majority of his work was spent clay spreading. A lesser amount of time was spent building roads, banks, drains and dams. During the busy times of year Nathan was also involved in broad acre cropping work for the same employer.

Nathan was also involved with a number of other shorter term jobs during this time, in and around his home district. These include some work at a vineyard (pruning and irrigation installation), rouseabout during shearing times, and also work during two harvest seasons at the local silos, receiving and despatching grain. In addition, Nathan worked for his father on the family property, performing a wide range of tasks from machinery operation to livestock management.

Nathan grew up on a progressive broad acre cropping property on the border of South Australia and Victoria, hence his keen interest for all things agricultural.

#### **PUBLICATIONS**

Watts, P., Barker, S., **Heinrich, N.**, & Fairfull, A. 2008, 'Overland flow – What is it?' *Proceedings of Irrigation Australia Conference 2008*, Irrigation Australia Ltd, Melbourne, Vic, Australia.

Watts, P., Baker, K., Barker, S., **Heinrich, N.**, Nielsen, W., Schmidt, E. & McKeering, L. 2008, *Regional Statistics Collation and Benchmarking South East Queensland*, National Centre for Engineering in Agriculture, Publication 1002541/1, Queensland, Australia.

Watts, P., Barker, S., **Heinrich, N.**, & Fairfull, A. 2008 *Estimating Land Surface Diversions*, Stage 1 Final Report for Murray-Darling Basin Commission, FSA Consulting, Queensland, Australia.

Baillie, J., Baillie, C., **Heinrich, N.** & Murray, A. 2007 *On-farm Water Use Efficiency in the Northern Murray-Darling Basin*, Murray-Darling Basin Commission – Northern Basin Program, Canberra, Australia.

**Heinrich, N.** 2007 Estimating Seepage Losses using the Water Balance Method, *Proceedings of Society for Engineering in Agriculture Biannual Conference 2007*, Society for Engineering in Agriculture, Adelaide, SA, Australia.

**Heinrich, N.** & Schmidt, E. 2006 *Economic Ready Reckoner for Evaporation Mitigation Systems*, Reference Manual, NPSI Final Report USQ11, Canberra, Australia.

Nicholas, P., **Heinrich, N.**, Watts, P. & Bell, K. 2005 *Development of Odour Performance Criteria for the Australian Feedlot Industry, Part F: Feedlot Odour Emissions Model*, Final Report for Meat & Livestock Australia, Project FLOT.323, North Sydney, NSW, Australia.

Watts, P., Smith, A. & **Heinrich, N.** 2005 *Scoping study - Reduction of Evaporation from Farm Dams*, Final report to the National Program for Sustainable Irrigation, NPSI Final Report FSA1, Canberra, Australia.

**Heinrich, N. & Davis, R.** 2005 *Quantifying Seepage Losses from On-Farm Storages*, Final Report for Condamine Alliance, FSA Consulting, Queensland, Australia.