

18 November, 2003.

FIRAS NAJI

ACADEMIC QUALIFICATIONS:

- Bachelor of Engineering (Civil), University of Baghdad, Iraq 1984
- Master of Engineering Science (Environmental Engineering), University of Baghdad, Iraq 1989
- Master of Engineering Studies (Environmental Engineering), University of Sydney, Australia 1996

CAREER & SPECIALISED COMPETENCE:

Summary

Over 17 years experience related to civil engineering and environmental management focused on water cycle management, flood analysis and natural resource management:

- Managed water systems during the Olympic Games 2000 and established management framework for the complex and interactive water-cycle systems of Homebush Bay.
- Prepared management plans, implemented strategies and reviewed progress using milestones and performance indicators.
- Won \$2,200,000 of grants for implementation of innovative projects such as wetlands, creek restoration and research studies.
- Introduced new standard by preparing leading edge stormwater and wastewater design guidelines, developing assessment tools and managing demonstrating projects.
- Performed hydrological, hydraulic and water quality analysis for water systems, catchments and waterways including wetlands and natural systems.
- Coordinated the Georges River Symposium that involved extensive negotiation and lobbying process to bring together different stakeholders to better manage the Georges River south of Sydney.

Professional Experience

2001- present: Director, Aqua Consulting Pty Ltd

2000-01: Manager Water Systems, Olympic Coordination Authority, Homebush Bay Site.

1995-2000: Catchment & Waterways Coordinator, Kogarah Council.

1993-95: Research Officer, Australian Conservation Foundation and Nature Conservation Council of NSW.

1989-93: self employed contractor of civil engineering works, Iraq.

1987-89: Research Assistant, University of Baghdad, Iraq.

1984-87: Representative of Resident Engineer, Directorate of Military Services, Baladruz site in charge of water management works, Iraq.

RELEVANT CONSULTANCIES & PROFESSIONAL DEVELOPMENT EXPERIENCE

- *Basix- Building Sustainability Index for NSW*
Initiative of the NSW Sustainability Council in conjunction with Department of Planning, Sydney Water and NSW EPA 2002-03. Responsible for the water related aspects of *BASIX* that uses building design information to calculate environmental performance in relation to water conservation, flood control, stormwater quality and natural resource management.
- *Wastewater Treatment Systems – Australia*
Various designs of domestic and non-domestic on-site wastewater treatment systems, particularly in environmentally sensitive sites. 2001-03
- *Environmental Impact Specialist, Sydney Drinking Water Catchment*
Sydney Catchment Authority 2001-2002.
Preparing environmental guidelines that incorporated collating new research information and developing guidelines focused on delivering water quality objectives for the Sydney drinking water catchment via development control. Such guidelines included:
 - Groundwater assessment guidelines
 - Medium-scale wastewater management guidelines
 - Constructed wetland guidelinesAssessing significant development proposals to meet water quality standards using pollutant export, assimilation and water quality models to demonstrate resulting in a neutral or beneficial effect on water quality in the Sydney drinking water catchment such as:
 - Exeter residential subdivision that involved water quality control measures of rainwater tanks, grass swales, infiltration trenches and wetlands.
 - Effluent reuse scheme for the proposed upgrade of Southern Meats Abattoir in Goulburn, NSW.
 - Sooley Dam expansion for water supply and flood control in Goulburn, NSW.
 - Constructed wetlands and urban creeks, wastewater treatment plants and sewerage works.
- *Operational Management for the Total Watercycle System at Homebush Bay Olympic Site*
Olympic Coordination Authority 2000. Managing the site's water infrastructure in an integrated and ecologically sustainable way. The site's infrastructure included potable water, sewerage, recycled water, stormwater and irrigation systems. Sewage was mined and treated onsite using combination of biological treatment (SBR), Reverse

Osmosis and Microfiltration to be used as recycled water for irrigation, toilet flushing and washdown.

As the Manager for Water Systems, operational data were collated and system audit was undertaken to assess performance against operational targets and design objectives using a variety of evaluation tools. The main achievements were:

- Ensuring that quality of the recycled water meets the stringent water quality and public health standards.
- Managing the competing water demands for water supply, irrigation, flood control and environmental considerations in a sustainable and cost-effective way via an operational system based on GIS, modelling and monitoring.
- *Fry Street ESD Project*
Project water management designer, Willoughby Council 2002. The project involved water cycle analysis and evaluation of different Water Sensitive Urban Design options for a 10-villa residential complex in Chatswood. The project development process included an options-analysis stage to identify the interface between the various watercycle systems and quantify the performance of possible management options in meeting the sought outcomes. Adopted measures included storages for stormwater reuse and flood control, bio-retention for stormwater treatment and water conservation devices.
- *Lower Georges River Catchment Management Plan*
Catchment Committee for Kogarah, Hurstville, Rockdale and Sutherland Councils 1999. Development of a framework for sustainable management of the Lower Georges River catchment with emphasis on water quality impacts from runoff and sewage overflows. The plan included data compilation, pollutant export and waterway water quality modelling and analysis, community consultation, action planning and establishing a framework for implementation and monitoring.
- *Georges River & Botany Bay Symposium*
Joint initiative of the Southern Sydney Regional Organisation of Councils 1999. Symposium Coordinator involved in planning and running the event that brought together technical experts, managers and representatives of other major stakeholders to exchange information and formulate an integrated action plan for the sustainable management of this significant Sydney waterway. Preparation and presentation of technical paper and facilitating the preparation of a formal submission to the Independent Inquiry into the Georges River and Botany Bay by the Healthy Rivers Commission.
- *Kogarah's Housing Strategy and redevelopment capability*
Kogarah Council 1999. Incorporating ESD principles into urban planning by considering environmental, social and economical issues in an integrated way. Multi-layers of different types of information were consolidated in GIS including social (population, age, ethnicity), environmental (drainage, habitat, waterways), recreational (open space, facilities) and physical (contours, roads, services) data to determine areas of proper redevelopment capability within Kogarah Municipality. This baseline information helped to assess impacts of development proposals and to prepare developers' contribution plan.
- *Kogarah Council watercycle Development Control Plan and demonstration projects*
Kogarah Council 1998. Developing the watercycle management section of the Residential DCP for Kogarah Council: Better Home Design Guide. This document was

considered one of the pilot DCPs that addressed and encouraged integrated watercycle management at the building design and subdivision level. It included well defined objectives, outcome-based performance measures and design guidance for various management measures involving stormwater quality controls, rainwater reuse, greywater reuse and flood control measures. Design development of many lead-by-example demonstration projects that implemented the pilot DCP such as:

- the Kogarah Town Square development. This project is one of the first pilot projects that served to demonstrate implementation of ESD in relation to watercycle management so as to reduce stormwater pollution and minimise water consumption. The project involved Water Sensitive Urban Design for a 8,250 m² 6-story site commercial/ residential development incorporating 193 units. Measures included 1500 m³ of two separate stormwater reuse storages. Dual reticulated recycled water was used for toilet flushing, irrigation, washdown and for water feature. Stormwater treatment involved pollutant traps, filtration and bio-filtration.
- Designed water cycle system for Green Square development for Allan Jack & Cottier. The project involved sustainable water design for a 7500 m² commercial/residential development incorporating 170 units. Measures included stormwater treatment and reuse for irrigation and for a water feature.
- *Integrated Stormwater Management for Clear Paddock Creek Catchment*
Research part of the MES degree in Environmental Engineering, University of Sydney in collaboration with Fairfield City Council 1995-96. This research involved developing an integrated management plan for Clear Paddock Creek catchment using water quality and hydrological modelling as a decision support system to help evaluating trade-offs and alternative management options. The developed plan considered the possibility of retrofitting stormwater treatment measures into existing flood detention basins in the catchment.
- *Moore Reserve Plan of Management*
Project Manager for Kogarah Council 1998. Developing an environmental management plan for the former garbage tip. The plan tackled issues such as stormwater pollution, leachate and gas management in an integrated way. Incorporating stormwater issues into open space planning that included constructed wetlands, creek rehabilitation and habitat enhancement. Assessing leachate management options and recommending appropriate treatment systems. Effectively participating in the community consultation process.
- *Moore Reserve Wetland Project*
Managing a design team of five multi-disciplinary consultants covering engineering, ecological, landscape and vegetation design as well as environmental impact assessment. This \$2M project was part funded by the EPA's stormwater grant. The project's innovation was through its design that incorporated in-depth ecological and water quality modeling to ensure that the wetland's design reflects a sustainable balance of its multiple competing objectives of water quality control, flood control, irrigation supply and passive recreation.
- *Flood assessment catchment studies- Australia*
Various projects involving catchment drainage network and detention basin analysis using a variety of hydrologic and hydraulic modelling tools. The analysis and assessment results were utilised for developing a prioritised management plan for amplification works.
- *Integrated Water Resource Management for the Diyala River Basin- Iraq, 1995-97*

This research was part of an MSC degree in Environmental Engineering, University of Baghdad in collaboration with the Iraqi Ministry of Irrigation, Environment Protection Council and the Centre for Water Resources and Agricultural Research 1987-1989. The research involved integrated qualitative/quantitative assessment of water resource management for the Diyala River basin that included the following:

- Estimation of basin water demands for urban use, irrigation and power generation and determining flood control requirements for reservoirs.
 - Assessing the water quality conditions for the river, identifying sources of pollution and modelling the relationship between river flow and water quality.
 - Developing a decision support system based on optimisation techniques (Discrete Differential Dynamic Programming) to understand the tradeoffs between the competing water resource system objectives and determine the optimal water budget and operational policy.
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- *The Sydney Region Water Sensitive Urban Design Project: Member, Industry Advisory Panel 2002-03.*
 - *Chartered Member of the Institution of Engineers, Australia- Civil and Environmental Engineering Colleges, Member of the Stormwater Industry Association, Member of the Australian Water Association.*
 - *Excellent native Arabic language skills including speaking, translating and technical writing.*
 - *Formal training courses included water, wastewater and stormwater modelling, Autocad, GIS (Mapinfo), advanced communication skills, media training, OH&S and project management.*

Selected Publications

Optimal operation of Derbendi-khan and Hemreen Reservoirs with Environmental Consideration”, a thesis submitted to the Ministry of Irrigation, Iraq as part of the degree of MSc in Environmental Engineering, University of Baghdad.

“Integrated Stormwater Management- A Case Study”, Proceedings of the Second International Conference on Environmental Management (ICEM2), ELSEVIER 1998.

“Existing Management Framework of the Georges River and Botany Bay System”, Proceedings of the Georges River and Botany Bay Symposium, Southern Sydney Regional Organisation of Councils 1999.

“The Health of the Georges River/Botany Bay System- a Question Unanswered”, Paper submitted to the Brisbane International Symposium on Ecosystem Health 2000.

“Water Management at Homebush Bay- Developing an Operational Model to Ensure Sustainability”, Proceedings of the Australian Water Association’s 19th Federal Convention a Water Odyssey 2001.

“Towards Ecologically Sustainable Urban Water Systems”, The New Zealand Water & Wastes Association Annual Conference 2003- not published yet.

