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## ROBERT ELLISON

Engineer & Environmental Scientist

BE (Hons), University of Wollongong, 1990

MEnSC, University of Wollongong, 2000

### AREAS OF EXPERTISE:

I have 25 years of experience in planning, design and construction management across a broad range of mining, industrial and civil infrastructure. My experience includes broad project and environmental planning, project design and project management involving co-ordination of multi-disciplinary investigation and design, QA management of the design and planning process, detailed feasibility studies, construction cost estimates, construction and environmental risk analysis, construction management and contract supervision, environmental management and monitoring, erosion reduction design, risk management for natural hazards such as storm surge and flooding, detailed stormwater design for quality and flooding, urban water supply design, sewerage design, waterways engineering and preparation of State and Commonwealth approvals. I have an interest in state of the art technology for stormwater, water supply and for sewerage treatment and effluent disposal. Practical technologies range from using appropriate technology to match systems to disposal techniques for cost effective total treatment and reuse to working with the world's most advanced technologies for highly sensitive environments such as the Great Barrier Reef.

I have major project experience in project planning, risk assessment and construction supervision – along with very substantial specialist expertise is in the area of water quality and hydrology and 'integrated water cycle management'. A recent project at the Brisbane City Council - Willawong Bus Depot for which I was the lead water designer - won several prestigious industry awards. I can use a range of relevant software packages – MUSIC, WBNM, HEC-RAS, MEDLI, etc.

I am a Registered Professional Engineer of Queensland - RPEQ 6040.

### SELECTED PROJECT EXPERIENCE:

#### Environment

**Xstrata Mine Collinsville** – water management, design of detention basins, spoil heap flow paths and erosion control, water management at coal wash facilities.

**GLNG Project Curtis Island Gladstone** – erosion prevention design, environmental monitoring of dust, stormwater, water, sewage, environmental compliance and acid sulphate soils for a Central Queensland LNG export hub. Database management for environmental monitoring. QA systems management.

Staff training for sample collection protocols. Development of Safety and Environment assessments for activities in the field.

**Queensland Government DERM** – management of the coastal zone, coastal development and tidal dredging. The work involved management of sand and gravel dredging in the tidal zone, port dredging, environmental management, ensuring appropriate coastal setbacks were maintained, erosion management, managing coastal rehabilitation and acid sulfate soils. I issued engineering approvals and audited construction for boat ramps, marinas, aquaculture, resorts, wharves, jetties, pipelines, ports and other engineering infrastructure.

**Queensland Beach Protection Authority** – assessment of fluvial and coastal sedimentology and erosion. I have a detailed understanding of Australian east coast sedimentology and a wide ranging knowledge of hydrologic, fluvial, hydrogeological, estuarine and coastal processes in Queensland.

### Urban Growth

**Whitsunday Shores Estate** – \$500 million mixed use urban development on a sensitive coastal site. Team leader for project planning and design. Design of sewerage, effluent reuse and stormwater systems. Preparation of State Government applications and of environmental documentation for Commonwealth approval. E

**Cabbage Tree Creek Integrated Water Cycle Management** – catchment scale analysis of a large, urbanized Brisbane catchment for water cycle options. The study considered the cost effectiveness of rainwater tanks, stormwater capture and reuse and dual pipe sewage recycling.

**Willawong Bus Depot** - planning, modelling and design of water and sewerage, rainwater capture and stormwater treatment and reuse for the \$57 million Willawong Bus Depot.

- Winner of the National Stormwater Industry Association Award for Excellence in Stormwater Management & Initiatives (2009)
- Winner of the Southern Pacific Sands Water Sensitive Urban Design Award at the Healthy Waterways Awards (2009)
- Winner of the Stormwater Industry Association of Queensland Award for Excellence in Integrated Water Cycle Management (2009)
- Brisbane Regional Commendation at the Australian Institute of Architects Queensland Chapter, 2010 Queensland Architecture Awards
- Winner of the National Stormwater Industry Association Award for Excellence in Stormwater Management & Initiatives (2009)
- Winner of the Southern Pacific Sands Water Sensitive Urban Design Award at the Healthy Waterways Awards (2009)
- Winner of the Stormwater Industry Association of Queensland Award for Excellence in Integrated

<http://waterbydesign.com.au/willawong-bus-depot/>

**Great Keppel Island Water Supply** - design of inlet/outlet for desalination plant and plume modelling for a hypersaline discharge.

**Gatton Correctional Precinct** – \$300 million prison project. Water, stormwater and sewage planning and design. The project integrated sewage treatment and effluent reuse with stormwater treatment and reuse to develop an extremely efficient integrated urban water cycle system.

### Infrastructure

**Abel Point Marina Expansion, Airlie Beach, Queensland** - construction and environmental management of a \$12M marina project. Resident engineer for earthworks for a 6 hectare urban site, construction of seawalls, dredging, reclamation, piling and berths.

**Planning and management of coastal and estuarine zones for the NSW Publics Works**

**Department** – Lake Illawarra rehabilitation management - management of land reclamations, dredging, dredge ponds and discharge quality - design and construction of parks, jetties, wetlands and trash racks.

**Cape Gloucester Eco Resort** – modelling, planning and design for integrated water and sewage management at a coastal resort.

**NSW South Coast Dams** - demographic and environmental analysis for maintenance and augmentation of water supplies and dams on the South Coast of NSW.

**Jindabyne Sewage Treatment Plant** - feasibility report for effluent reuse. The study considered sewage treatment, climate, soils and cost for a proposed effluent irrigation system.

**Mt Morgan Water Supply** – development of an innovative acid mine drainage treatment system for an urban water supply consisting of lime precipitation, an ion exchange process for sulfate reduction and reverse osmosis.

**PREVIOUS EXPERIENCE:****Engineer/Scientist****1990 to 2014**

I have worked from project to project since 2002. The work ranged from project, environmental and occupational safety management of construction of a sewage effluent reuse pond and pipelines at Queensland Alumina, Gladstone and of water treatment sludge settling ponds for Fitzroy River Water - to environmental documentation and design and management of water quality monitoring systems for large developments and for civil and energy infrastructure, dredging, etc. Work centres on the hydrological cycle – how water, nutrients, sediments and contaminants move through soils, groundwater and surface water. There are applications in most construction projects ranging from stormwater and erosion control to water supply and sewage effluent reuse.

With a long experience in sewerage, water supply and stormwater - I can specify innovative solutions such as the Mt Morgan water supply augmentation. I can specify innovative, latest generation sewerage treatment systems that will work and match it to irrigation areas, irrigation methods and soils – saving up to 40% of capital cost, 50% of running costs and 75% of greenhouse gas emissions over typical installations. I can design cost effective stormwater treatment and monitor and validate your project – big or small - for 100% compliance.

Prior to that I worked for 5 years for the then Queensland EPA in coastal management. This followed one year of contract work on the NSW South Coast railway upgrade and 2 years in Papua New Guinea working on bridges, roads, airports and hospitals. My engineering career commenced with 3 years at the South Coast Office of the NSW Public Works working on sewage, water, catchment analysis and coastal protection.

**ACHIEVEMENTS:**

I have published in recent years on the regulatory environment in Queensland, on a long term interest in decadal drought dominated (DDR) and flood dominated (FDR) rainfall regimes in north eastern Australia and on 'seamless' climate modelling. DDR and FDR are caused by decadal changes in the frequency and intensity of events in the El Niño – Southern Oscillation (ENSO).

A climate computing revolution (2010), Quadrant Online.

Decadal ENSO Variability (2009), Energy and Environment.

ENSO Variation and Global Warming (2007), American Thinker.

Changing our approach to the environment (2005), The Environmental Engineer, Engineers Australia.