

CHRIS NIELSEN

Date of birth	██████████
Nationality	Australian
Education	Bachelor of Engineering (Civil), Hons 1A, James Cook University of North Queensland, 1990 Master of Engineering Science (Research), University of Queensland, 2000
Memberships	Registered Professional Engineer of Queensland RPEQ (Civil) Chartered Professional Engineer (CPEng) NER Fellow Institution of Engineers Australia (FIEAust) Engineering Executive of the Institution of Engineers Australia (EngExec)

Abstract

I am a civil engineer with a diverse career in the water sector spanning 28 years, several organisations, multiple countries and a range of roles and responsibilities. I have technical specialization in the fields of hydrology, hydraulics, water resources and coastal and ocean engineering. I graduated as a civil engineer from James Cook University and have a Research Masters Degree from the University of Queensland.

For 25 years I was an engineering consultant working globally on projects associated with urban drainage, floodplain management, dams, ports and offshore infrastructure and the environment. I took part in capacity building projects and have conducted R&D, developed commercial software products and have academic publications.

In 2017 I transitioned to the public sector as Director of the team responsible for state regulation of Dam Safety in Queensland.

I am an Engineering Executive and Fellow of Engineers Australia. I am a member of Queensland Division Committee, served as Queensland President in 2017 and was Queensland representative of Engineers Australia National Congress in 2018 and 2019.

Employment record

Year	Organisation	Position and responsibilities
2017-	Department of Natural Resources, Mines and Energy, Queensland	Director, Dam Safety
2014-2017	DHI Water and Environment, Australia	Head of Department, Water Resources and Mining (2016-2017) Head of Department, Decision Support Systems (2015-2016) Brisbane Operations Manager (2015-2017)
2009-2014	BMT WBM (Australia)	International Business Development Manager (2009-2014) Technical Director (2009-2014) Software Products Manager (2010-2014) Operations Manager, Brisbane Office (2009-2010)
2003–2009	DHI Water and Environment (Malaysia)	Manager, Water Resources and Software for Malaysia, Brunei and Philippines (2003-2009) Operations Manager (2005-2009)
2001-2003	DHI Water and Environment (Denmark)	Hydraulic Engineer – Projects, software development, R&D, support and training
1994-2001	WBM Oceanics Australia (Australia)	Senior Engineer – Projects, software development, R&D
1998-2000	University of Queensland (Australia)	Masters Student, MEngSc(Res). External research degree
1994	Rust PPK (Australia)	Contract Engineer
1991-1993	WS Atkins Water (UK)	Project Engineer
1991	Soil Mechanics Associates (UK)	Engineer
1990–1991	James Cook University (Australia)	Research Officer

Highlights of Professional Experience

Reservoirs and Dams

- **Director, Dam Safety (2017-)**
- Hela Hydropower ESIA, PNG (2013-2014)
- Kota Kinabalu Water Supply Phase 3 Dam, Special EIA, Sabah, Malaysia (2012-2014)
- Lawas HEP EIA, Sarawak, Malaysia (2008-2009)
- Limbang HEP EIA, Sarawak, Malaysia (2008-2009)
- Bakun Flow Regime and Hydropower Assessment, Sarawak, Malaysia (2008)
- Hydropower and Dam Hydraulics Training, TNB and UNITEN, Malaysia (2008)
- EIA for Murum Hydroelectric Project, Sarawak, Malaysia (2007-2008)
- Special EIA for Upper Padas Hydroelectric Project, Sabah, Malaysia (2007-2009)

The dam safety regulation team regulates referable dams in Queensland. Regulatory responsibilities include consequence analyses, approval of emergency action plans, compliance auditing, advisory during emergency response and contributing to dam related matters on behalf of Queensland government.

Rivers and Floodplain Management

- **CARM Murrumbidgee ongoing support, NSW (2016-2017)**
- Gurra lakes environmental flow investigations, SA (2016-2017)
- Gunbower Guttrum Benwell wetlands environmental flow investigations, VIC (2016-2017)
- Longreach Flood Mitigation Study, QLD (2015)
- Mossman Creek Flood Study (Charters Towers, QLD) (2015)
- Kingsford Smith Drive Upgrade Detailed Design, Brisbane River (2016)
- Kingsford Smith Drive Sedimentation Assessment, Brisbane River (2014)
- Muda Irrigation Scheme Detailed Design (2013-2014)
- Sg Kedah Floodplain Masterplan, Malaysia (2011-2014)
- Technical Review and RPEQ authorisation for hydrologist reports, Queensland and NSW (2012-2013)
- Yuba River Technical Review, California USA (2012)
- Brunei Rivers sedimentation study (2011-2012)
- Provision of hydraulic parameters for structural design, Brisbane River, Australia (2011-2013)
- Technical advisor, implementation of a flood information system, Brisbane City Council, Australia (2011)
- Assessment of flood management systems, Brisbane City Council (2011)
- Moyog Floodplain Management Plan, Malaysia (2010-2012)
- Pitas Floodplain Management Plan, Malaysia (2010-2012)
- Kuching Flood Bypass EIA, Sarawak, Malaysia (2008-2009)
- Mindoro Conveyor Corridor Assessment, Philippines (2008-2009)
- Sg Kerian/Kerau River Basin Study, Perak, Malaysia (2008-2009)
- Punggol Waterway Hydraulic Assessment, Singapore (2007-2008)
- Batang Sadong Weir Impact Assessment, Sarawak, Malaysia (2006)
- Kuala Lumpur Flood Forecasting Model Maintenance, Malaysia (2006)
- Kuching Barrage Flood Forecast Model Maintenance, Malaysia (2005 – 2006)
- Sg Kelantan Development Impact Assessment, Malaysia (2005-2006)
- Goat Canyon Creek Sediment Detention Basin Modelling, USA (2002)
- Trinity Inlet MIKE FLOOD Study, QLD (2002-2003)
- Lower Senegal River Model (2001-2002)
- Eudlo Creek Bruce Highway Flood Hydraulic Investigations, QLD (1998-2000)
- Linkfield Connection Road Hydraulic Analysis, QLD (1998-1999)
- Maroochydore Road Hydraulic Investigations, QLD (1998-2000)
- **Road Design Cooktown Development Road, QLD (1998-2001)**
- Tallebudgera and Currumbin Creeks Flood Assessment and Flood Mapping, QLD (1997-1998)
- Lawrence Floodplain Management, NSW (1997-1998)
- Ballina Floodplain Management Study, NSW (1995-1997)

Computer Aided River Management (CARM) System incorporates realtime data acquisition with usage forecasts, numerical modelling, data assimilation and optimization to manage water allocations for the 1600km Murrumbidgee River. Award winning project.

One of the first 1D/2D flood models in Australia and the first implementation of TUFLOW to overland application.

Urban Drainage

- Canterbury Bankstown Urban Drainage Analysis, NSW (2016-)
- Brunei Airport Drainage Study, Brunei (2014)
- Belait District Plan, Brunei (2008-2009)
- **Brunei Drainage Masterplan (2003-2006)**
- Improvement of Lido Drainage Basin at Penampang, Sabah, Malaysia (2004-2006)
- Provision of hydraulic model for SMART Tunnel, Malaysia (2004)
- Kuala Lumpur Flood Mapping, Malaysia (2003)

Project manager for Brunei Masterplan (2003-2006), which developed a 20-year strategy for drainage management in Brunei. Included integration with the National Plan, providing drainage design, future strategies, policy and legislative considerations leading to a proposed "Resources Act" for implementation in law.

Water Supply

- Kota Kinabalu Water Supply Phase 3 Dam, Special EIA, Sabah, Malaysia (2012-2014)
- Hartford weir design and rating curve analysis, UK (2013)
- Pulau Gaya EIA and Groundwater Source Sustainability Assessment, Sabah, Malaysia (2006-2007)
- Pulau Banggi Water Supply and Treatment Assessment, Sabah, Malaysia (2006-2007)
- Apas Balung Assessment of Raw Water Supply and Water Treatment Plant Design, Sabah, Malaysia (2006-2007)
- Sipitang Water Supply Assessment and EIA, Sabah, Malaysia (2006)
- Kota Belud Water Supply, Sabah, Malaysia (2005-2006)
- Telupid Raw Water Intake Assessment, Sabah, Malaysia (2004)

Oil and Gas / Mining

- **UWOP and QGC operational support (2014-2016)**
- Badik drill cuttings study, Indonesia (2013)
- Bawang drill cuttings study, Indonesia (2013)
- Myanmar oil spill assessment (2013)
- Toliara Metocean data provision, Madagascar (2012)
- Development of metocean guidelines for Petronas, Malaysia (2012)
- Metocean data analysis for Kerupang, Petronas, Malaysia (2011)
- Prefeasibility Study for coal mine expansion, Kalimantan Indonesia (2009-2011)
- ENI Jangkrik analysis of currents, Makassar Straits, Indonesia (2011)
- VLFS environmental impact assessment, Singapore (2011)
- Design study of LNG Terminal in Pipavav, India (2010-2011)
- Coastal Impact Assessment, LNG Terminal in Dahej, India (2009-2010)
- Development of regional hydrodynamic model of Java Sea and Makassar Straits (2010-2011)
- Sabah Oil and Gas Terminal (SOGT) EIA, Malaysia (2006-2007)
- NRA Integrity Study, North West Shelf, WA (1994)

Project Manager, delivery of QGC's "Unified Water Operating Platform" (UWOP) to manage associated water from CSG operations in the Surat Basin, Queensland. Provides hydraulics, pond water quality and well forecasting, commercial volume and brine reporting, advanced spatial visualisations, brine disposal management and enhanced analyses. Award winning project delivery.

Coastal and Estuarine

- Coastal hazard and climate change vulnerability, Choiseul Province, Solomon Islands (2012-2014)
- Baroque on Lamma "virtual wave flume", Hong Kong (2012)
- Sg Bongon dredging assessment, Malaysia (2010)
- Current prediction for DLB Launching, Indonesia (2009)
- Water Quality Assessment of Singapore Beaches (2008-2009)
- Sg Perai Rivermouth Project, Penang, Malaysia (2007-2009)
- Sg Salut Dredging and Hydraulic Study, Sabah, Malaysia (2006-2008)
- Kota Kinabalu International Airport EIA and Reclamation Studies, Sabah, Malaysia (2006-2007)
- **Sabah Shoreline Management Plan, Malaysia (2003-2006)**
- Tuas View Extension and Pulau Tekong Land Reclamation Study, Singapore (2004)
- Review of Gold Coast Seaway Sand Bypassing System, QLD (2000-2001)
- Manning River Entrance, NSW (1999-2001)
- Port of Brisbane Extension, QLD (1999-2000)
- CityPort Water Quality Study, Cairns (1998-1999)
- Tanjung Priok Port Model, Indonesia (1995-1997)
- Karumba Dredging Studies, QLD (1994-1998)
- Buran Darat Development, Sentosa Island, Singapore (1994-1997)
- Tweed River Sand Bypass Studies, QLD (1997)
- Ely Bauxite Project EIS at Weipa, Gulf of Carpentaria, QLD (1996)
- Sellafeld Marine Study, UK (1992-1993)

Sabah Shoreline Management Plan (2004-2006) was a major study incorporating all aspects that influence the coastal zone in the state of Sabah, Malaysia. Investigations into coastal processes, growth, infrastructure and budgetary requirements were implemented into legislation, with associated policy paper preparations, stakeholder engagement and public promotion.

Water Quality and Environment

- Screening level receiving water assessment Palembang and Makassar, Indonesia (2013-2014)
- Semporna Road Impact Assessment, Sabah, Malaysia (2008)
- Environmental Impact Assessment of Integrated Pulp and Paper Mill at Tawau, Malaysia (2005)
- Batang Rajang Water Quality Study, Sarawak, Malaysia (2003-2005)
- Beroga Sanitary Landfill, Selangor, Malaysia (2003)
- Hells Canyon MIKE11 Temperature and TDG Modelling, Idaho, USA (2001-2003)
- Broadwater Mill Cogeneration Project Thermal Modelling, Richmond, River, NSW (2000)
- Maryborough Sugar Factory Thermal Modelling, Mary River, QLD (2000)
- Pulau Carey Water Quality Assessment, Malaysia (1996)

Planning, Strategic and Policy, Capacity Building

- Preparation and editing of dam safety guidelines for Queensland (2017-)
- Water Management Policy Paper, Engineers Australia Queensland (2017)
- MP3EI SEA national strategic catchment assessment, Indonesia (2014)
- Scoping Study for climate change vulnerability, Choiseul Province, Solomon Islands (2011)
- Assessment of flood management systems, Brisbane City Council (2011)
- Preparation of Draft Floodplain Management Guidelines for Malaysia (2011)
- Preparation of operational guidelines for metocean activities for Petronas, Malaysia (2011)
- Hydropower and Dam Hydraulics Training, TNB and UNITEN, Malaysia (2008)
- Hydrology and Hydrodynamics Training, National Remote Sensing Agency, Hyderabad, India (2007)
- Best Practices in Disaster Management: Disaster Risk Assessment and Early Warning Systems, Vietnam (2007)
- Development of Shoreline Management Policy for State of Sabah, Malaysia (2006)
- River Morphology Training, River Research Institute, Faridpur, Bangladesh (2006)
- Integrated Coastal Zone Management Plan, Sabah, Malaysia (2004-2006)
- Development of National Drainage Management Policy and preparation of Position Paper on Legislative Aspects of National Drainage Management, Brunei (2005)
- Batang Rajang Water Quality Study and Catchment Management Policy, Sarawak, Malaysia (2003-2005)
- Gumti River MIKE FLOOD Development and Training, Bangladesh (2003)
- North Vam Nao Water Control Project II, Vietnam (2002)
- Lower Senegal River Model (2001-2002)
- Pre-Appraisal of WaterSPS Component in Vietnam (2001)
- Samut Prakarn Wastewater Outfall Water Quality Modelling Study, Thailand (1999)
- Water Quality Action Plan in the Central River Basin, Thailand (1995-1997)

Software and R&D

- ARR 2016 modelling application tools (2017)
- MUMT (Pipe flow mass transport and water quality) design and implementation (2015-2016)
- TUFLOW FV Business Development Manager (2010-2014)
- TUFLOW FLIKE Business Development Manager (2012-2014)
- BMT Software Practice Community Chairman (2010-2012)
- Developer of floodplain related features for TUFLOW FV; structures, GIS links, etc (2012-2014)
- Software Manager, responsible for DHI software business (administration, marketing, sales, etc) in Malaysia, Brunei and Philippines (2005–2009)
- Research into the applicability of local x-band radar for urban flood forecasting (2006–2007)
- **MIKE FLOOD Development (2002-2004)**
- MIKE11 Supercritical Flow (2002)
- MIKE21C Development (2002)
- MIKE SHE Pesticide Module (2002)
- 2D Software Development (MIKE 21FM and MIKE SHE, 2001-2003)
- MIKE11 Software Support and Development (2001-2003)
- Database Design (2000-2001)
- 2D Flood Modelling Advances (TUFLOW, 1997-2001)
- MapInfo GIS Hydraulic Modelling Interfaces (1997-2001)
- Data analytics and gap filling of time series data (1993)

Key developer of MIKE FLOOD (DHI software product), establishing the lateral and implicit structure links, designing the user interface and writing the User Manual. MIKE FLOOD has since become a widely used software tool globally (industry standard in many countries for floodplain management).

Academic and Training

- Guest Lecturer (Malaysia and Singapore) (2003-2009)
- External Supervisor (Malaysia, France) (2003-2009)
- **Hydropower and Dam Hydraulics Training, TNB and UNITEN, Malaysia (2008)**
- International Workshop on Best Practices in Disaster Management: Disaster Risk Assessment and Early Warning Systems (2007)
- Hydrology and Hydrodynamics Training, National Remote Sensing Agency, Hyderabad, India (2007)
- River Morphology Training, River Research Institute, Faridpur, Bangladesh (2006)
- Gumti River MIKE FLOOD Development and Training, Bangladesh (2003)

Widely published in journals, conferences and other publications.

Coordinating training and support activities for a global software distribution, providing training courses, webinars and support. Includes hands-on course delivery in several countries

Professional / volunteer contributions

- Engineers Australia Board Nominations Committee (2018 – 2019)
- National Congress Representative, Engineers Australia (2018-2019)
- Immediate Past President, Engineers Australia Queensland Division (2018)
- President, Engineers Australia Queensland Division (2017)
- Deputy President, Engineers Australia Queensland Division (2015-2016)
- Division Committee, Engineers Australia Queensland Division (2012-2021)
- Committee Member / Sponsorship Manager, Coasts and Ports Conference (2014-2017)
- Founding Director, Borneo International Marathon (2008-2010)
- Treasurer, state school P&C (2009-2010)

Awards

- DG Forum Participant, DNRME (2018)
- High Commendation, Engineers Australia Excellence Awards (2016)
- Gerald McCalden Award, AURISA (2000)
- PIANC Secretariat Prize for Best Thesis (1990)
- Local Government Engineering Prize (1990)
- Post Graduate/Honours HECS Scholarship (1990)