

Name	Malcolm John Andrews
Position	Associate Manager Coastal Discipline, Coastal Engineer
Date of Birth	19 June 1954
Nationality	Australian
Languages	English
Qualifications	Graduate Diploma in Hydraulic Engineering (Hydroinformatics), International Institute for Hydraulic and Environmental Engineering, Delft, The Netherlands, 1992 Graduate Diploma in Municipal and Environmental Engineering, Queensland Institute of Technology, Brisbane 1986. Bachelor of Engineering (Civil), Queensland Institute of Technology, Brisbane 1984.
Professional Affiliations	Senior Member, Institution of Engineers, Australia (No. 183644) Registered Professional Engineer Queensland (No. 4281)
Fields of Special Competence	<ul style="list-style-type: none">• Computational hydraulics including numerical modelling of waves, tides and sediment transport processes.• Investigation of estuarine, coastal and oceanic processes.• Development of management options for coastal erosion and inundation.• Data collection in estuarine, coastal and ocean environments.
Employment History	<p>Has been involved in hydraulic design since graduation, initially with irrigation and water supply then with coastal engineering. For the last 18 years has been actively involved in coastal engineering studies in Australia and Southeast Asia.</p> <p>1996 - Present WBM Oceanics Australia Senior Engineer, Hydraulics and Coastal Engineering Section. Work in this group has covered a wide range of specialist and multi-disciplinary engineering services for projects within the coastal zone including:</p> <ul style="list-style-type: none">• Estuary and river hydraulic and sedimentation studies and management plans associated with tidal and flood behaviour;• Coastal and ocean engineering investigations and management plans related to waves, currents, sedimentation and coastal erosion;• Port and harbour hydraulic and siltation studies and development of dredging and dredge spoil disposal management strategies and plans;• Environmental impact assessments and development of Environmental Management Plans. <p>1994-1996 Department of Environment and Heritage, Queensland Principal Engineer Coastal Processes, Coastal Management Branch.</p> <p>1988-1994 Departments of Harbours and Marine and Environment and Heritage Queensland (for the Beach Protection Authority) Engineer, Coastal Management Branch</p>

PROJECT EXPERIENCE

Coastal And Ocean

Dredged Material Placement Strategy in Moreton Bay (2006/7) – Project manager and coastal engineer for detailed morphological modelling on the near field and far field impacts of placement of dredged material at the Mud Island Spoil Ground in Moreton Bay.

St Helens Beach Shoreline Erosion Management Plan (2006/7) – Project manager and coastal engineer for project where a differential in longshore transport has been causing long term recession of the beach. The study developed a shoreline protection strategy which integrated existing erosion protection structures in a context of longer term shoreline management and planning.

Cairns City Shoreline Erosion Management Plan (2005/7) – Project manager and coastal engineer for multi-disciplinary team developing a shoreline erosion strategy to manage severe erosion at several “hotspots” within the City in the context of longer term shoreline management and planning.

Maroochy Shire Shoreline Management Strategy (2004/7) – Project manager and coastal engineer for multi-disciplinary team developing a strategy to enable Council to gain government acceptance of a strategic plan of action to protect property and infrastructure if ongoing shoreline erosion occurs. (In Progress)

Erosion Prone Area Assessment, Mission Beach (2004) - Project manager and coastal engineer for detailed re-assessment of long and short term beach erosion and accretion processes on a beach with a salient behind nearshore reefs. Review of the nominated Erosion Prone Area width.

Moreton Bay Sand Extraction Study - Phase 2 - Wave Penetration (2003/4)

Project manager and coastal engineer for investigation of the possible impacts on the adjacent shorelines of extracting large quantities of sand from the shoals at the northern entrance to Moreton Bay. The assessment involves the development of an appropriate wave propagation model and representative boundary conditions.

Port of Brisbane Expansion Alliance – Seawall Design (2002/5) – Member of design team to determine the bund profile and armouring required for reclamation at the mouth of the Brisbane River. Numerical modelling of storm surge, wave propagation and current speeds as well as a flume model testing on recommended profile slopes and rock sizes.

Surfside Beach Emergency Response Plan (2003) – Project manager for assessment and option development and recommendation to prevent private property loss due to beach erosion near Surfside Beach in Bateman's Bay. The beach was subject to complex coastal process and vulnerable to severe erosion in moderate wave climates when storm surge was present.

Hervey Bay Coastal Protection Strategy (2002/3) – Project manager and coastal engineer for multi-disciplinary team developing a strategy to establish acceptable storm resistance and coastal amenity in an area vulnerable to significant wave attack and inundation by elevated water levels in cyclonic conditions.

Maroochy River Entrance Stabilisation (1996-2003) - Project manager and coastal engineer assessing the forcing mechanisms and historical trends of the cyclical movement of the Maroochy River Entrance and providing designs for the stabilisation of the entrance and protection of urban development, the testing of these designs with a physical model and final implementation of recommended options. Recommended solution used environmentally friendly geofabric containers and beach nourishment initiated in late 2001 and completed early 2003.

Erosion Prone Area Assessment, Garners Beach (2002) - Project manager and coastal engineer for detailed re-assessment of long and short term beach erosion and accretion processes on a beach with a stiff clay layer less than 1m below beach surface. Review of the nominated Erosion Prone Area width.

Gold Coast Seaway Bypassing Efficiency Assessment (2001/2) – Project Manager and Coastal and ocean engineer assessing the leakage seaward of the sand bypassing pump system by investigating the longshore sand transport and its cross-shore distribution at the pump location. This was achieved by using a derived 5 year directional wave time-series and the SWAN (Delft) 2D numerical wave propagation model coupled to the RMA (King) 2D numerical sediment transport model.

Byron Shire Coastal Hazard Study (2000) - Coastal and ocean engineer using analysis and interpretation of survey and photogrammetric data to give shoreline recession rates. Determination of coastal hazard lines in relation to short and long term beach fluctuations, existing structures, inundation levels for low lying areas and entrance stability. Also involved in public consultation process and presentations at public/Council meetings.

Erosion Prone Area Assessment, Port Douglas (2000) - Project manager and coastal engineer for detailed re-assessment of long and short term beach erosion and accretion processes on 4 Mile Beach and review of the nominated Erosion Prone Area width.

Erosion Prone Area Assessment, Notch Point (2000) - Project manager and coastal engineer for detailed re-assessment of long and short term beach erosion and accretion processes on a beach with high dunes and a meandering creek. Review of the nominated Erosion Prone Area width.

Currimundi Lake Study (2000) – Project manager and coastal engineer assessing options for improvement of water quality within the Lake that is intermittently closed by longshore sand transport. This involved the impacts of maintaining the entrance open and mitigating the impacts of extensive urban development around the Lake.

Golden Beach Restoration (1999) - Project manager and coastal engineer using 2D hydrodynamic modelling to assess the optimum arrangement of a groyne field at Golden Beach to retain nourishment sand on the beach in a high current environment.

Marina Bund Beach, Gladstone Harbour (1999) - Project manager and coastal engineer providing design parameters for an artificial beach in the outer bund of the marina to allow recreational access to the harbour.

Newcastle Coastal Hazard Study (1999) - Coastal and ocean engineer developing a 10 year directional wave time series for numerical modelling of sediment transport rates and the analysis and interpretation of survey and photogrammetric data to give shoreline recession rates. Determination of coastal hazard lines in relation to short and long term beach fluctuations and inundation levels for low lying areas.

Canaipa Passage Alternative Navigation Channel (1996-1999) - Project manager and coastal engineer carrying out 2D numerical modelling of hydrodynamic and sediment transport processes for various alternative navigation channel options.

Upgrade of Healy Parade, Port Moresby (1998) - Project manager and coastal engineer assessing coastal impacts of upgrade of Healy Parade involving sand transport and currents.

Pt Lookout Planning Appeal (1998) - Project manager and coastal engineer acting as expert witness regarding coastal impact of a proposed development on Stradbroke Island.

Sunshine Beach (1998) - Project manager and coastal engineer assessing impacts of re-development of Sunshine Caravan Park site with particular emphasis on long and short term erosion potential and the protection afforded by coffee rock.

Tweed River Entrance Sand Bypassing Project (1996/7) - Coastal and ocean engineer developing a 7 year directional wave time series for longshore transport modelling and the assessment of shoreline evolution.

Erosion Prone Area Assessment, Castaway Bay (1997) - Project manager and coastal engineer for detailed re-assessment of long and short term beach erosion and accretion processes and review of the nominated Erosion Prone Area width.

Altona Beach Coastal Management Investigation (1997) - Coastal and ocean engineer for investigation of wave and sediment transport processes, erosion mechanisms and options for restoration and management of the Altona Environmental Park, Melbourne, Victoria.

Extension of Clump Point Groyne (1997) - Project manager and coastal engineer assessing the coastal impacts of the extension of the Clump Point groyne as protection for upgraded boat launching facilities.

Redevelopment of Redcliffe Jetty (1997) - Project manager and coastal engineer assessing impacts on wave, current and sediment transport patterns caused by a proposed offshore breakwater as part of the jetty redevelopment.

Aquaculture Development Feasibility (1996) - Coastal engineer assessing options for intake and discharge pipelines across the beach at Bakers Creek, Queensland.

Dredging and Harbour Works

Moreton Bay Dredged Material Placement Areas Morphological Modelling (2005/7) – Project Manager and coastal engineer for morphological modelling of the dispersion of fine sediments from dredged material placement areas in central Moreton Bay to assist DSDI to refine assessments on the viability of existing spoil grounds.

Mooloolaba Entrance (2004/6) – Project manager and morphological modeller assessing the mechanism for sand to shoal in the entrance and developing possible mitigation strategies. (in progress)

Port of Gladstone Berth Extensions (2004/5) – Project manager and 2D hydraulic modeller for determining impacts of berth extensions and associated channel deepening as well as provision of data to AMC for ship simulations at the RG Tanna Coal Terminal in the Port of Gladstone.

Gold Coast Harbour (2001/3) – Project manager and hydraulic/coastal engineer for multi-disciplinary team establishing baseline physical and environmental conditions to allow integrated future planning of the heavily used and popular Broadwater on the Gold Coast. Included assessments of the feasibility and implications of berthing cruise liner terminals in the area.

Mourilyan Bed Levelling Monitoring (1998/2000) - Project manager and hydraulic engineer modelling predicted sediment plume dispersal and subsequently monitoring of subsequent bed levelling programs in the swing basin of Mourilyan Harbour.

Cairns Esplanade Development (1999) - Assessment of impacts of sand extraction from Ellie point and placement by the 'pancake' construction method at the southern end of the esplanade. Included assessment of the impacts of storm erosion on the material before completion of protective works.

Broadwater Dredging Impacts (1998) - Project manager and coastal engineer assessing tidal and sediment transport impacts of dredging sand from the Nerang River Entrance and The Broadwater by the use of numerical models. Also included predicted dispersion of dredge plumes.

Upgrade of Southport Yacht Club (1998) - Project manager and hydraulic engineer determining the design velocity through the moorings by the use of a 2D hydrodynamic model.

Manning River Dredging (1998) - Hydraulic engineer assessing tidal and sediment transport impacts of dredging sand from the Manning River for use as fill on a nearby development by the use of a 2D hydrodynamic model.

Cityport Marina (1998) - Hydraulic engineer assessing sedimentation potential in a proposed marina in Trinity inlet.

Wave Analysis Lihir Island (1997) - Advanced analysis of pressure recorded wave data to determine operational restrictions on cargo loading at Lihir Island, New Ireland.

Pulau Belitung Marina (1996) - Project manager and coastal engineer for site inspection and concept design of small craft marina included in a resort development on Pulau Belitung, Indonesia.

PUBLICATIONS

Andrews M. J. "Reconnaissance of the Economics of Beach Usage: A Case Study". Australasian Conference on Coastal and Engineering, Christchurch, New Zealand, 1985.

Andrews M. J. and Blair R.J., 'Coastal Observation Program Engineering - Update' Beach Protection Authority Beach Conservation No. 69, June 1990.

Allen M. S., Robinson D. A., Andrews M. J., Kleverlaan E. J. A. and Murray R. J. "Real Time Hydrodynamic Data Systems for Port Management". 4th Ports and Harbours Conference, Sydney, Australia, 1992.

Andrews M. J., Zwar M. and Irwin C. "Monitoring of the Southern Gold Coast Beach Nourishment Project - 1995 Update Report". 12th Australasian Conference in Coastal and Ocean Engineering, Melbourne, 1995.

Allen M. S. and Andrews M. J. "Assessment of Directional Wave Climate for a Sand Bypassing Project". 13th Australasian Coastal and Ocean Engineering Conference, Christchurch, New Zealand, 1997.

Andrews M. J. and Witt C.L. "Maroochy River Entrance Study - Opportunities and Constraints". 14th Australasian Coastal and Ocean Engineering Conference, Perth, 1999

Andrews, M. J., Chalmers, R. and Schwartz, R. "Maroochy River Entrance Natural Pressures and Anthropogenic Responses". The 15th Australasian Coastal and Ocean Engineering Conference / The 8th Australasian Port and Harbour Conference - 25 to 28 September 2001, Marriott Resort, Gold Coast Queensland Australia.

Andrews, M. J. and Nielsen, C. "Numerical Modelling of the Gold Coast Seaway". The 15th Australasian Coastal and Ocean Engineering Conference / The 8th Australasian Port and Harbour Conference - 25 to 28 September 2001, Marriott Resort, Gold Coast Queensland Australia.

Andrews M. J. "Coastal Management and the Implications of the Longshore Sand Transport Differential on the Northern NSW Beaches". Poster Paper Coast to Coast 2002, Tweed Heads, 4 to 8 November 2002.
Andrews M.J. "Maroochy River Entrance Breakthrough Studies and Shoreline Erosion Management Plan" Queensland Coastal Forum, Mooloolaba August 2004.

Andrews M.J., Ameratunga J., Boyle P.J. and Jordan K. "Sophisticated and Interactive Design Process Delivers Success for Brisbane's Seawall Project" 2005 Coasts and Ports Australasian Conference, Adelaide September 2005.

Andrews M.J. "Cairns City Shoreline Erosion Management Plan" Queensland Coastal Forum, Cairns City Council September 2005.

Andrews M.J., Teakle I.A. and Wood P.J. "Shoaling Indicator and Morphodynamic Modelling of Shoal Development at Mooloolah River Entrance" 2006 NSW Coastal Conference, Coffs Harbour November 2006.