

EMERITUS PROFESSOR COLIN J. APELT

Colin Apelt is Emeritus Professor and Honorary Research Consultant in the department of Civil Engineering at The University of Queensland. He was appointed Professor of Civil Engineering in 1979 and served as Head of Department from 1982 to 1994. After retirement from full time academic staff in 1996, he was appointed Professorial Research Fellow until the end of 1999.

His research fields are in Computational Hydraulics applied to tidal and flood flows, to sediment transport and water quality in estuaries and marinas, to waves and to transients in pipelines; Computational Fluid Mechanics applied to bluff body flows and to flows in open channels; Experimental Fluid Mechanics applied to flows past bluff bodies with relevance for flood and debris loads on bridges and for wind engineering, to efficient passage of flood flows through waterways, to turbulence and energy losses in natural streams and engineered waterways, and to wave forces on berthing structures. He has substantial interests in all aspects of dredging and arranged four specialist courses on dredging in Brisbane since 1987.

He has acted as specialist consultant on hydraulic design of many major projects involving spillways, energy dissipators, bridges, culverts and flood mitigation works; and on computer modelling of flood and tidal flows in design and/or flood plain planning studies associated with many river and estuary systems in Queensland and New South Wales.

Since 1995 he has acted as specialist consultant in several major flood plain planning studies for the Brisbane River system and the Nerang River System. Those most relevant to the proposed work are;

- Review of Hydrodynamic Modelling for Tamar River & North Esk River Flood Study for Launceston City Council. (2008)
- Lord Mayor's Taskforce on Suburban Flooding (Chairman) for BCC. 2005
- Review of Brisbane River Flood Study for BCC as member of Independent Review Panel (R. Mein, C.J. Apelt, J Macintosh, E Weinmann) 2003
- Review of Floodplain Hydraulic Modelling Methodology for Gold Coast City Council (with R Tomlinson). 2001
- Review of Safety Analysis of Wivenhoe, Somerset and North Pine Dams (with Eric Lesleighter (SMEC)). 1992-1995

The details of these and of other recent consultancies are given below.

Academic Qualifications

1952 BE(HonsI) in Civil Engineering, The University of Queensland.
1957 DPhil (Oxon), Fluid Dynamics and Numerical Analysis, Oxford University.

Professional Affiliations

Fellow of The Institution of Engineers Australia
Chartered Professional Engineer (retd)

Prizes and Awards

1952 University of Queensland Medal.
1954 Rhodes Scholar for Queensland.
1965 R.W.Chapman Medal of The IEAust.
1966 Fulbright Fellow, Senior Research Fellow Category.
1969 National Science Foundation Senior Foreign Scientist Fellowship Award.
1985 The Hawken Address, Queensland Division of The IEAust.
2001 Second Henderson Orator.

Professional Experience

1951(Dec)-1954(Jul) Design Engineer, Queensland Irrigation Commission.
1957(Jun)-1958(Nov) Postdoctoral Research Fellow in Engineering Science, Oxford Univ.

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1958(Dec)-1964(Dec) Senior Lecturer in Civil Engineering, University of Queensland.
 1965(Jan)-1979(Sep) Reader in Civil Engineering, University of Queensland.
 1966(Feb)-1966(Sep) Research Associate, Maths Department, MIT.
 1969(Feb)-1970(Jan) Visiting Professor, Dept of Civil Engineering, Colorado State Univ.
 and Visiting Scientist, Nat. Centre for Atmos. Res., Boulder, Colorado.
 1977(Jan)-1977(Dec) Visiting Prof., Civil Engineering, Univ. Canterbury, Christchurch.
 1979(Sep)-1996(Jul) Professor of Civil Engineering, University of Queensland.
 1982(Jan)-1994(Apr) Head of Department of Civil Engineering, Univ. of Queensland.
 1996(Jul)- 1999(Oct) Emeritus Professor and Professorial Research Fellow, Dept of Civil
 Engineering, Univ. of Queensland.
 1999(Oct)-Present Emeritus Professor and Honorary Research Consultant, Dept of Civil
 Engineering, University of Queensland.

Competitive Research Grants

1972-1981	ARGC	\$68,300
1981-1987	MST/AMSTAC	\$143,200
1985-1990	ARC	\$106,200
1985-1988	ARRB	\$20,000
1993-1995	NCHRP(USA)	\$60,300
1995	MARINAS	\$53,400
1997-1998	CRC-TOURISM	\$29,000
1998-1999	CRC-TOURISM	\$110,000
1999- 2000	CRC-TOURISM	\$120,000

Consultancies Since 1990 (Current Consultancies not listed for reasons of Privacy)

Tweed River Entrance Sand Bypassing; Re-Assessment of Long Term Average Sand Transport Rate for Tweed River Sand Bypassing. C.J.Apelt as Independent Expert, UniQuest Project No 16066 for BMT WBM Pty Ltd Brisbane, 08/01/09 - 11/03/10.

Flagging of flood hazard areas, *Review of Methodology to Flag Flood Affected Areas in City Plan* 19/12/08 (4 pp) by C.J.Apelt and *Review of Final Methodology to Flag Flood Affected Areas in City Plan* 07/08/09 (5 pp) by C.J.Apelt, UniQuest Project Nos 15790 and 15790.02 for Brisbane City Council, 11/12/08 - 07/08/09.

Review of Hydrodynamic Modelling for Tamar River & North Esk River Flood Study 10/07/08 (47 pp) C.J.Apelt, UniQuest Project 15489 for Launceston City Council, 03/06/08 - 09/07/08.

NORTH BANK Task Force (Chair), *North Bank Flooding and Tidal Impacts Prepared by North Bank Task Force for Brisbane City Council* 2 June 2008 (18 pp), UniQuest Project 15467 for Brisbane City Council, 23/04/08 - 02/06/08.

North South Bypass Tunnel Review of MPB memorandum Title/Jordan of 19 December 2007 16/04/08 (11 pp), UniQuest Project 15304 for Brisbane City Council, 11/03/08 - 15/04/08.

North South Bypass Tunnel *Review of Estimates of Q100 flood levels in Breakfast Creek for pre-NSBT and post-NSBT conditions* 01/11/07 (43 pp), Peer Review by C.J.Apelt, UniQuest Project 15073 for Brisbane City Council, 27/09/07 - 01/11/07.

Peer Review Report: The Lord Mayor's Taskforce on Suburban Flooding 17/01/07 (47 pp), Peer Review of Progress in implementation of recommendations of the LMTF by C.J.Apelt, UniQuest Project 14442.02 for Brisbane City Council, 23/11/06 - 15/01/07.

Independent peer review of Hydrodynamic Modelling for Notional Seaway Project Draft EIS 01/08/06 (8 pp), Peer Review of Hydrodynamic Modelling GC Seaway by C.J.Apelt, UniQuest Project 14453 for GHD, 04/07/06 - 26/07/06.

Appraisal of extra heavy duty drainage grate with performance guidelines linked to AS3996 1992 04/07/06 (19 pp), Appraisal of Heavy Duty Drainage Grates by C.J.Apelt, UniQuest Project 114225 for Gatie Milne, 08/03/06 - 04/07/06.

Lord Mayor's Taskforce on Suburban Flooding (Chair), *Strategies to reduce the effect of significant rain events on areas of Brisbane prone to flooding* August 2005 (61 pp) UniQuest Project for Brisbane City Council, Feb/05 - Sep/05.

Assessment of the relative merits of the Max Q Stormwater Inlet design for use by the Brisbane City Council. Oct/04 (34 pp) C.J.Apelt, UniQuest Project 13384 for Brisbane City Council, Aug /04 – Oct/04.

Expert Peer Review for Gold Coast City Council of planning and design work by the Griffith Centre for Coastal Management (GCCM) in connection with Palm Beach Protection Strategy and the Palm Beach Artificial Reef 20/07/04 (80 pp) C.J.Apelt, UniQuest Project 13158, 19/02/04 – 25/08/04.

Review of Brisbane River Flood Study 03/09/03 (27 pp) R. Mein, C.J.Apelt, J Macintosh, E Weinmann, Independent Review Panel to Brisbane City Council, July/03 – Sep/03.

M.R.Marshall v Department of Transport. Review of Physical Model Studies of Eudlo Creek at Bruce Highway Crossing Taking Account of Matters Raised in Max Winders & Associates Report, 8 July 2002 09/01/03 (46 pp) C.J.Apelt, UniQuest Project 12459 for Crown Law (Qld) Department of Justice & Attorney-General, 18/05/02 – 16/12/02.

A Review of Floodplain Hydraulic Modelling Methodology Aug/01 (37pp) C.J.Apelt and R Tomlinson, prepared for Gold Coast City Council, UniQuest Project 11855 for Griffith University Centre for Coastal Management (GCCM), Oct/00 – Oct/01.

Namibia Tender – Bucket Wheel Design Review 09/05/01 (2 pp), Review of Design of Bucket Wheel for Dredge for extracting Diamonds Namibia by C.J.Apelt for Neumann Equipment Pty Ltd Currumbin, 27/04/01 - 09/05/01.

Cadia Hill Gold Mine NSW Pit Diversion Channel Library Search on Expansions in Open Channels 14/03/01 (8 pp), Library Search on Expansions in Open Channels for Cadia Hill Gold Mine Pit Diversion Channel by C.J.Apelt for Gilbert and Associates Pty Ltd Brisbane, 09/02/01 – 14/03/01.

Barcoo Outlet Project Review of Hydraulic Aspects 21/08/00 (7 pp) C.J.Apelt, Review of Hydraulic Design of Barcoo Outlet Piped System with Venturi for Connell Wagner Pty Ltd Brisbane, 11/08/00 - 21/08/00.

Cadia Hill Gold Mine NSW Cadia Hill Pit Diversion Channel Review of Hydraulics Aspects 09/06/00 (5 pp), Review of Hydraulics Cadia Hill Gold Mine Pit Diversion Channel by C.J.Apelt for Gilbert and Associates Pty Ltd Brisbane, 01/06/00 - 09/06/00.

Technical Review for Queensland Department of Primary Industries of Dredging and Spoil Disposal Report on Dredging of South Channel of Burrum River 29/01/00 (10 pp), Technical Review of Report prepared by Cardno and Davies for Hervey Bay City Council by C.J.Apelt for Queensland Department of Primary Industries, 03/12/99 - 29/01/00.

Bridge over Cattle Creek at Gargett Hydraulic and Sedimentation Issues 1997 (42 pp) C.J.Apelt for Main Roads Dept, Mackay District.

Review with Eric Lesleighter (SMEC) of Safety Analysis of Wivenhoe, Somerset and North Pine Dams presented in six Interim Reports on review of 'Consultancy Work by Queensland Water Resources Commission "Brisbane River and Pine River Flood Studies"' UniQuest Project 320407 for South East Queensland Water Board, 01/12/92 - 08/03/95.

Technical review by C.J.Apelt and M. R. Gourlay of "Waterway Design – A Guide to the Hydraulic Design of Bridges, Culverts and Floodways" by AUSTRROADS, through David Flavell Main Roads WA Project Leader, 25/10/93 - 19/11/93.

Review of WBM Oceanics Australia Report 'Impact Assessment of Sand and Gravel Dredging on Stability of Brisbane River' October 1993 (7pp) by C.J.Apelt and M.R.Gourlay, UniQuest Project 320469 for Port of Brisbane Authority, 22/08/93 - 11/11/93.

Report on Proposed Minimum Energy Loss Structures for Manning River Floodplain Crossing near Taree, NSW 09/02/93 (2 pp) by C.J.Apelt, Review of Revised Design of Proposed Minimum Energy Loss Structures for Manning River Floodplain Crossing near Taree, NSW, UniQuest Project 320390 for WBM Pty Ltd Brisbane, Jan/93 - 09/02/93.

Settlement Shores - The Final Stage - Model Testing (Your Ref.931/20 Jdb:ef) 27/08/92 (5 pp) C.J.Apelt, Supervision of Hydraulic Model Tests at QGHL and UQ Final Stage Development of Settlement Shores - Port Macquarie for Cardno & Davies Australia Pty Ltd, 28/05/90 - 27/08/92.

Report to Upper Parramatta River Catchment Trust on Proposed "U Tube" Arrangement for Lennox Bridge at Parramatta August 1991 (4 pp) by C.J.Apelt, Review of Proposed "U Tube" arrangement at Lennox Bridge for Upper Parramatta River Catchment Trust, 02/07/91 - 20/08/91.

Report on Queensland State Government Office Building 111 George Street, Brisbane 05/09/91 (pp 10 +18 Figs), Report on Wind Effects on Proposed New Government Office Building by C.J.Apelt and C.W.Letchford, UniQuest Project 320247 for Qld Govt Administrative Services Dept, 19/07/91 - 05/09/91.

Desk Study of Wind Effects on Proposed New Government Office Building at Corner of George and Charlotte Streets Brisbane 16/07/91 (4pp), Report on Wind Effects on Proposed New Government Office Building on George and Charlotte Streets, UniQuest Project 320247 for Qld Govt Administrative Services Dept, 20/05/91 - 19/07/91.

Report to Upper Parramatta River Catchment Trust on Proposed Minimum Energy Structure for Lennox Bridge at Parramatta June 1991 (10 pp) by C.J.Apelt, Review of Design of Proposed Minimum Energy Structure for Lennox Bridge and Design of Improved Structure for Upper Parramatta River Catchment Trust, 04/04/91 - June/91.

Tweed River Entrance NSW/QLD Sand Transfer Negotiations March 1991 (39 pp), Review, Collation and Presentation in succinct form discussion papers pertaining to an artificial sand bypassing scheme for the Tweed River Entrance by Joint Consultants WBM, Univ of Qld (C.J.Apelt) and AWACS for New South Wales and Queensland Governments, 07/89 - 03/91.

Nerang River Flood Study Validation of 1990 Mathematical Model 09/08/90 (7 pp) C.J.Apelt, Critical evaluation of modelling techniques used in model and evaluation of applicability to lower Nerang River and its Floodplain, UniQuest Project 320147 for Nerang River Flood Study Joint Technical Steering Committee, 20/10/89 - 09/08/90.

Report on Foxlee – v – The Proserpine Shire River Improvement Trust 07/08/90 (13 pp) C.J.Apelt, Technical advice on impacts of flood mitigation works carried out by Proserpine River Improvement Trust in vicinity of Mr Foxlee's land, UniQuest Project 320145 for Feez Ruthning Solicitors & Notaries Brisbane, 07/07/90 - 07/08/90.

Report on Proposed Townsville Commonwealth Offices: Assessment of Ground Level Wind Environment – Contract No. CNC 924 04/09/89 (4 pp), C.J.Apelt, UniQuest Project 3032461 for Australian Construction Services, 23/08/89 - 04/09/89.

Nerang River Flood Study Validation of Mathematical Model 14/07/89 (8 pp) C.J.Apelt, Critical evaluation of modelling methodology for Nerang River Floodplain, UniQuest Project 3032292 for Nerang River Flood Study Joint Technical Steering Committee, 20/01/89 - 14/07/89.

Report on Palmers Island Bank Erosion Study – Stage I 22/06/89 (16 pp) C.J. Apelt, Critical Analysis of findings of NSW Public Works Department 1983 Report on erosion at Palmers Island and of Maclean Shire Council's 1985 submission, UniQuest Project 3032345 for NSW Govt Public Works Dept Lismore, 24/10/88 - 22/06/89.

Report on Environmental -Wind Assessment Riverside Centre Stage I Eagle Street Brisbane 05/05/89 (12 pp) C.W. Letchford, L.T. Isaacs, C.J. Apelt, Assessment of environmental wind conditions at Riverside Centre Stage I, Brisbane (Desk Study), UniQuest Project 3032004 for Civil and Civic Pty Ltd, 14/03/89 - 05/05/89.

Report on Project: Queensland Police Headquarters Subject: Wind Study 18/07/88 (7 pp +3 Figs) L.T. Isaacs, C.W. Letchford, C.J. Apelt, Desk Study of Wind environment at proposed new Police Headquarters in Roma Street Brisbane, UniQuest Project 3032053 for Bligh Jessup Robinson, 29/04/88 - 18/07/88.

Barron River Flood Study Your Ref: CPA10901/NIC/KL 29/03/88 (2pp) and 10/06/88 (2pp)
C. J. Apelt as Review Consultant to Macdonald Wagner Pty Ltd for creation and calibration of mathematical flood model of Barron River for Cairns Port Authority, 10/08/87 - 10/06/88.

Review of processes in Great Sandy Strait contributing to the dynamics of beach zone Fraser Island – Great Sandy Strait Appraisal of Beach and Near Shore Processes in Vicinity of North White Cliffs 15/03/89 (4pp) C.J. Apelt and M. R. Gourlay for Philip G Breene & Associates, 15/12/87 - 15/03/88.

Review of EIS Flooding and Drainage Report Settlement Shores Final Stage EIS Flooding and Drainage Report – Your Ref. 931/9 23/04/86 (6 pp) C.J. Apelt for Cardno & Davies Australia Pty Ltd, 07/12/85 - 29/04/86.

Supervision of Postgraduate Research

PhD: 15 completed; MEngSc: 17 completed.

Publications Summary

2 Books; 90 refereed papers; 24 Commissioned Technical Reports; 2 Technical Movies; 1 Technical Video; 31 unrefereed papers and research reports.

Books

Thom, A & APELT, C.J. 1961, "Field Computations in Engineering and Physics", D Van Nostrand, London and N.Y.

APELT, C.J. 1963, "Some Studies in Fluid Flow at Low Reynolds Numbers", Micromethods Ltd, East Yardley Yorkshire.

Publication Details Since 1985

Papers in refereed Journals

Jempson, M.A. & APELT, C.J. 2005, Discussion of "Hydrodynamic loading on river bridges" by Stefano Malavasi and Alberto Guadagnini, *Journal of Hydraulic Engineering ASCE*, 131, pp 621-622.

Nielsen, C & APELT, C.J. 2003, "The application of wave induced forces to a two-dimensional finite element long wave hydrodynamic model", *Ocean Engineering*, 30, pp 1233-1251.

Nielsen, C & APELT, C.J. 2003, "Parameters affecting the performance of wetting and drying in a two-dimensional finite element long wave hydrodynamic model", *Journal of Hydraulic Engineering ASCE*, 129(8), pp 628-636.

- APELT, C.J. 2002, "Recent dredging projects in sensitive areas in Queensland", *PIANC Bulletin* 111.
- APELT, C.J. 2002, "What has Fluid Mechanics got to do with it?", *Australian Journal of Water Resources*, 5(2), pp 123-136.
- Morris, P.H., Lockington, D.A. & APELT, C.J. 2000, "Correlations for mine tailings consolidation parameters", *International Journal of Surface Mining, Reclamation and Environment*, 14, pp 171-182.
- Skotner, C & APELT, C.J. 1999, "Internal wave generation in an improved two-dimensional Boussinesq model", *Ocean Engineering*, 26(4), pp. 287-324.
- Skotner, C & APELT, C.J. 1999, "Application of a Boussinesq model for the computation of breaking waves Part 1: Development and verification", *Ocean Engineering*, 26(10), pp. 905-925.
- Skotner, C & APELT, C.J. 1999, "Application of a Boussinesq model for the computation of breaking waves Part 2: Wave-induced setdown and setup on a submerged coral reef", *Ocean Engineering*, 26(10), pp. 927-947.
- West, G.S. & APELT, C.J. 1997, "Fluctuating lift and drag forces on finite lengths of a circular cylinder in the subcritical Reynolds number range", *Journal of Fluids and Structures*, 11(2), pp 135-158.
- APELT, C.J. & West, G.S. 1996, "Comparison of two methods for direct measurement of sectional fluctuating lift on a circular cylinder", *Experiments in Fluids*, 20(3), pp 232-233.
- APELT, C.J. 1995, Discussion of "Design procedure and performance of minimum energy designed culvert", *Australian Civil Engineering Transactions*, CE 37, 3, p.266.
- Fox, T.A., APELT, C.J. & West, G.S. 1993, "The aerodynamic disturbance caused by free ends of a circular cylinder immersed in a uniform flow", *Journal of Wind Engineering and Industrial Aerodynamics* 49, pp 389-400.
- Fox, T.A. & APELT, C.J. 1993, "Flow-induced loading of cantilevered circular cylinders in a low-turbulence uniform flow. Part 3: Fluctuating loads with aspect ratios 4 to 25", *Journal of Fluids and Structures*, 7(4), pp 375-386.
- West, G.S. & APELT, C.J. 1993, "Measurements of fluctuating pressures and forces on circular cylinders in the Reynolds number range 10^4 to 2.5×10^5 ", *Journal of Fluids and Structures*, 7(3), pp 227-244.
- APELT, C.J. & Ryall, G.L. 1992, "Modelling the sedimentary processes in real estuaries", *Transactions of IEAust*, CE34(1), pp 1-7.
- Paterson, D.A. & APELT, C.J. 1990, "Simulation of flow past a cube in a turbulent boundary layer", *Journal of Wind Engineering and Industrial Aerodynamics*, 35, pp 149-176.
- Johnson, T. & APELT, C.J. 1990, "Performance of minimum energy structure outlets near maximum expansion rates", *Transactions of IEAust*, CE31(4), pp 163-168.
- Paterson, D.A. & APELT, C.J. 1989, "Simulation of wind flow around three-dimensional buildings", *Building Environment*, 24, pp 39-50.
- APELT, C.J. & Piorewicz, J. 1987, "Laboratory studies of breaking wave forces acting on vertical cylinders in shallow water", *Coastal Engineering*, 11, pp 263-282.
- Paterson, D.A. & APELT, C.J. 1986, "Computation of wind flows over three-dimensional buildings", *Journal of Wind Engineering and Industrial Aerodynamics*, 24, pp 193-213.

APELT, C.J. & Richter, N.J. 1985, "Modelling Barrier Reef tides in the Mackay region" *Transactions IEAust*, CE27, pp 166-173.

Papers in refereed Conference Proceedings

APELT, C.J. & Xie Qi 2011, "Measurements of the Turbulent Velocity Field in a Non-Uniform Open Channel" Proceedings of the 34th IAHR World Congress, Brisbane, 26 June–1 July 2011 (in print).

Jempson, M.A., Maxwell, N. & APELT, C.J. 2004, "Application of CFC modelling to free surface flow around bluff bodies – a case study using a bridge superstructure" Proceedings, 8th National Conference on Hydraulics in Water Engineering, Surfers Paradise, 13 – 16 July 2004, Engineers Australia, Canberra.

APELT, C.J. 2001, "What has Fluid Mechanics got to do with it?", *the Second Henderson Oration*, in *The State of Hydraulics* (6th Conference on Hydraulics in Civil Engineering, "The State of Hydraulics", Hobart, 28 - 30 Nov 2001), ed Michael Wallis, The Institution of Engineers, Australia, 11 National Circuit, Barton A.C.T., pp 25 -38.

APELT, C.J. & Voisey, C.J. 2001, "Recent Dredging Projects in Sensitive Areas in Queensland" in *Coasts & Ports 2001* (Proceedings of the 15th Australasian Coastal and Ocean Engineering Conference and The 8th Australasian Port and Harbour Conference, Gold Coast Qld, 25 -28 Sept 2001), ed Rodger Tomlinson, The Institution of Engineers, Australia, 11 National Circuit, Barton A.C.T., pp 32 -37.

Nielsen, C. & APELT, C.J. 2001, "The Application of Wave Induced Forces to a Two Dimensional Finite Element Long Wave Hydrodynamic Model" in *Coasts & Ports 2001* (Proceedings of the 15th Australasian Coastal and Ocean Engineering Conference and The 8th Australasian Port and Harbour Conference, Gold Coast Qld, 25 -28 Sept 2001), ed Rodger Tomlinson, The Institution of Engineers, Australia, 11 National Circuit, Barton A.C.T., pp 296- 303.

Heape, D. & APELT, C.J. 2001, "Pollution Estimation in Harbours - a Case Study" in *Coasts & Ports 2001* (Proceedings of the 15th Australasian Coastal and Ocean Engineering Conference and The 8th Australasian Port and Harbour Conference, Gold Coast Qld, 25 -28 Sept 2001), ed Rodger Tomlinson, The Institution of Engineers, Australia, 11 National Circuit, Barton A.C.T., pp 423 - 428.

Morris, P.H., APELT, C.J. & Lockington, D.A. 2001, "Modelling Ocean Disposal of Dredged Sediments Using ADDAMS" in *Coasts & Ports 2001* (Proceedings of the 15th Australasian Coastal and Ocean Engineering Conference and The 8th Australasian Port and Harbour Conference, Gold Coast Qld, 25 -28 Sept 2001), ed Rodger Tomlinson, The Institution of Engineers, Australia, 11 National Circuit, Barton A.C.T., pp 435 - 440.

Jempson, M.A. & APELT, C.J. 1997, "Debris loads on bridge superstructures and piers" in *Bridging the Millenia* (Austroads 1997 Bridge Conference, "Bridging the Millenia", Sydney, 3-5 Dec 1997), ed G.J.Chirgwin, Austroads Inc., Sydney, pp 2: 3-17.

Jempson, M.A. & APELT, C.J. 1997, "Flood loads on submerged and semi-submerged bridge superstructures" in *Bridging the Millenia* (Austroads 1997 Bridge Conference, "Bridging the Millenia", Sydney, 3-5 Dec 1997), ed G.J.Chirgwin, Austroads Inc., Sydney, pp 2: 19-33.

Uhlmann, A.S. & APELT, C.J. 1997, "Wind loads on small craft for marina design" in *Pacific Coasts and Ports '97* (Pacific Coasts and Ports '97 : 13th Australasian Coastal and Ocean Engineering Conference and 6th Australasian Port and Harbour Conference, Christchurch, NZ, 7-11 Sept 1997), ed J. Lumsden, Centre for Advanced Engineering, Univ. Canterbury, Christchurch, NZ. pp 791-796.

Uhlmann, A.S. & APELT, C.J. & Letchford C.W. 1997, "Wind loads on powerboats in a turbulent boundary layer" in Volume of Abstracts The Fourth Asia-Pacific Symposium on Wind Engineering, Surfers Paradise Australia, 14-16 July 1997, The University of Queensland, Brisbane, Australia, pp 327-330.

Fenske, T.E., APELT, C.J. & Parola, A.C. 1995, "Debris forces and impact on highway bridges" in Extending the Lifespan of Structures (IABSE Symposium San Francisco 1995, "Extending the Lifespan of Structures", San Francisco USA 23-25 Aug 1995), IABSE-AIPC-IVBH, Zurich, Switzerland, pp 1017-1022.

APELT, C.J. & Xie, Q. 1995, "Turbulent flow in irregular channels" in Proceedings 12th Australasian Fluid Mechanics Conference, The University of Sydney, 10-15 Dec 1995, ed R.W. Bilger, The University of Sydney, pp 179-182.

Jempson, M.A. & APELT, C.J. 1995, "Flood loads on bridge superstructures" in Bridges into the 21st Century, Hong Kong, 2-5 Oct 1995, the Hong Kong Institution of Engineers, Hong Kong, pp 1025-1032.

APELT, C.J. 1994, "Physical and numerical hydraulic modelling - past, present and future: An Australian perspective" *Keynote Address*. Proceedings of 1994 International Conference on Hydraulics in Civil Engineering, University of Queensland, Brisbane, 15-17 Feb 1994, National Conference Publication No 94/1, IEAust, Canberra, pp 247-254.

McMahon, G & APELT, C.J. 1994, "Training programs in engineering management based on the functional leadership concept" 1994 Annual National Convention of The Institution of Engineers Australia: Preprints of Papers, Melbourne, 13-16 Apr 1994. IEAust, Canberra.

Nielsen, P., Hanslow, D.J. & APELT, C.J. 1993, "A new type of nearshore wave gauge" in Proceedings of 11th Australasian Conference on Coastal and Ocean Engineering, Townsville, 23-27 Aug 1993, National Conference Publication No: 93/4, IEAust, Canberra, pp 247-251.

Fox, T.A., APELT, C.J. & West, G.S. 1993, "The aerodynamic disturbance caused by free ends of a circular cylinder immersed in a uniform flow" in Preprints, Second International Colloquium on Bluff Body Flow Aerodynamics and Applications, Melbourne, Australia, 7-10 December 1992, CSIRO Division of Building, Construction and Engineering.

APELT, C.J. & Fox, T.A. 1992, "Fluctuating loads on cantilevered cylinders in uniform flow", in Davis, M.R. & Walker, G.J. eds, Proceedings of 11th Australasian Fluid Mechanics Conference, Hobart, 1992, Univ Tasmania, Hobart, pp 523-526.

Jempson, M.A. & APELT, C.J. 1992, "Hydrodynamic forces on partially and fully submerged bridge superstructures", Proceedings of 16th Australian Road Research Conference, Perth 1992. Aust Road Res Board, Melbourne, part 3 pp 67-80.

APELT, C.J. & Ryall, G.L. 1991, "Representation of cross -stream variations in a model of sedimentary processes in estuaries", in Bell, R.G., Hume, T.M. & Healy, T.R., eds, Proceedings of 10th Australasian Conference on Coastal and Ocean Engineering, Auckland, 1991. Water Quality Centre, Hamilton NZ, pp 109-114.

APELT, C.J. & Piorewicz, J. 1991, "Impact force as apart of the total breaking wave force on a vertical cylinder", in Bell, R.G., Hume, T.M. & Healy, T.R., eds, Proceedings of 10th Australasian Conference on Coastal and Ocean Engineering, Auckland, 1991. Water Quality Centre, Hamilton NZ, pp 429-434.

Syme, W.J. & APELT, C.J. 1990, "Linked two-dimensional/one-dimensional flow modelling using the shallow water equations", Proceedings of Conference Hydraulics in Civil Engineering, Sydney, July, 1990, National Conference Publication No: 90/4, IEAust, Canberra, pp 28-32.

APELT, C.J. & Shaw, D.J. 1990, "An institutional initiative in Australia/China co-operation in higher education. Proceedings International Symposium on Higher Engineering Education, Hangzhou, China, Apr 1990, Beijing Intl Acad. Publ. pp 223-228.

APELT, C.J. 1989, "Hydraulic jumps on steep slopes and at small Froude numbers", in Perry, A.E. et al eds. Proceedings 10th Australasian Fluid Mechanics Conference, Melbourne, Dec, 1989, A.E. Perry, Melbourne, pp

14.9-14.12.

APELT, C.J. & Ryall, G.L. 1989, "Modelling the sedimentary processes in real estuaries", Proceedings 9th Australasian Conference on Coastal and Ocean Engineering, Adelaide, Dec 1989, National Conference Publication No: 89/20 IEAust Canberra, pp337-341.

Paterson, D.A. & APELT, C.J. 1988, "Wind flow around buildings", in de Vahl Davis, G. & Fletcher, C.A. eds, Proceedings, International Symposium on Computational Fluid Dynamics, Sydney, 1988, North Holland, Amsterdam, pp 589-598.

APELT, C.J. & Piorewicz, J. 1987, "Modelling the morphological dynamics of tidal inlets", Proceedings 8th Australasian Conference on Coastal and Ocean Engineering, Launceston, Dec 1987, National Conference Publication No: 87/17 IEAust Canberra, pp 307-311.

Johnson, T. & APELT, C.J. 1987, "Maximum expansion rates for minimum energy structure outlets", Proceedings of Conference on Hydraulics in Civil Engineering, Melbourne, Oct 1987, National Conference Publication No:87/14, IEAust Canberra, pp77-81.

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