



James Carley

Principal Coastal Engineer

James holds a Master of Engineering Science degree in Coastal and Water Engineering and has over 30 years of experience in coastal and water engineering. James has served on Engineers Australia's NSW Coasts Oceans and Port Engineering Panel (COPEP) since 2000 and is Chair of the National Committee on Coastal and Ocean Engineering (NCCOE). Prior to WRL, James worked in the construction industry, including construction and estimating experience for a civil/marine contractor. He is a long term surfer, surf life saver and open water swimmer.

In his time at WRL, James has specialised in coastal processes, coastal hazards and management, and coastal structures. He has undertaken research and provided specialist consulting advice on projects ranging from simple boatsheds to billion dollar ports. His coastal structure experience ranges from conventional rock and concrete structures such as seawalls and breakwaters, to surfing reefs and offshore breakwaters, and structures made from car tyres and geotextiles. Geographically, James has undertaken coastal projects in all states and territories of Australia, New Zealand, the South Pacific, Middle East and South-East Asia.

Applied research led by James in the areas of geotextile coastal structures and beach erosion has been widely used by practising coastal engineers in Australia and New Zealand. Pioneering work on coastal hazard and climate assessment led by James has been used as a template for other sites in Australia. James is frequently engaged as a fair and balanced peer reviewer; and is regularly consulted by government for policy advice on coastal hazard identification and management. He has acted as an expert witness in numerous legal and expert panel proceedings, and regularly presents complex technical information in community and government forums.

Qualifications and affiliations

BBuild, UNSW

MEngSc (Water and Coastal Engineering), UNSW

MIEAust (Member of the Institution of Engineers Australia)

Member of Maritime Panel/NSW Coasts Ocean and Port Engineering Panel (COPEP), Engineers Australia

Member and Chair of National Committee on Coastal and Ocean Engineering (NCCOE), Engineers Australia

Professional history

2014-Current: Principal Coastal Engineer - UNSW WRL

1992-2013: Project Engineer/Senior Project Engineer - UNSW WRL

1991-1992: Builder & MEngSc Student

1990: Travel & Foreman - Whiteway Group

1988-1989: Estimator/Engineer - Costain Aust. Ltd

1987: Estimator - Cordell Estimating

1981-1986: Student & Duty Manager - Manly Waterworks

Expertise

- Coastal processes
- Coastal structures
- Coastal adaptation
- Estimating and feasibility
- Project management
- Physical modelling
- Ocean pools
- Ocean outfalls

Summary of relevant experience (abbreviated)

Coastal and estuarine studies

1992-2014: Gold Coast QLD
1993: Mauritius sand dredging
1993: Lake Conjola entrance NSW
1994: Port Hacking boat ramps NSW
1994-1995: Lady Robinsons Beach NSW
1995: Point Lillias coastal processes VIC
1995: Point Wilson processes VIC
1995, 2005: Coffs Harbour NSW
1995: Al Mamzar Dubai
1995: Sarawak Malaysia
1995: Map ta Phut Thailand
1995: North Entrance NSW
1995: Oakajee Geraldton WA
1995: Sunset Beach Saudi Arabia
1996: Mine tailings beach profiles
1996: Santubong Malaysia
1997-2000: Bondi Olympic Volleyball NSW
1999-2001: Pindimar, Port Stephens NSW
1999-2001: Brooms Head NSW
1999-2019: Pittwater inundation (>50 sites)
2001-07: Semaphore Park SA
2003: Noosa Beach options QLD
2005: Cook Islands inundation
2005: ANZAC Cove Gallipoli
2005: Coffs Harbour processes NSW
2007: Lakes Beach desalination NSW
2007: Hobart hospital inundation TAS
2007: Yamba coastal monitoring NSW
2007: Clarence Hobart climate change TAS
2007: Turners Beach TAS
2007-08: Byron Bay coastline plan NSW
2007: Port Kembla wave runup, NSW
2008: South Arm highway TAS
2008: New Brighton beach scraping
2008: Wilkinsons Pt climate change TAS
2008: Design setbacks for coastal land VIC
2008: Stanley coastal climate change TAS
2009-10: Coastal processes, Brunei
2009: Beach scraping Roches Beach TAS
2009: St Helens inundation TAS
2009: Byron Shire coastal hazard lines NSW
2010: Tweed Shire coastal hazard lines NSW
2010: NSW wave climate and extremes
2010: Taree & Old Bar coastal hazards NSW
2010: Batemans Bay wave climate NSW
2010: North Palm Beach SLSC hazards NSW
2010: Roches Beach hazard lines TAS
2011: Coastal hazard risk Manly LGA NSW
2011: Beach scraping data New Brighton
2011: Port Fairy wave power VIC
2011: Extreme water levels and waves NSW
2012-13: Port Fairy coastal hazards VIC
2012-13: Probabilistic coastal hazards
2014-16: Byron Bay coastal management
2014: Wave climate Lake Macquarie NSW
2014: Coastal hazards review Kapiti NZ
2015: Lake Macquarie mine subsidence
2016: Freshwater Beach dunes NSW
2018: Eurobodalla NSW
2018: Sandy Beach and Station Beach
2019-21: Fairy Bower overtopping
2019: Okines Beach TAS
2019: Kangaroo Island hazard lines

2020: Great Mackerel Beach NSW
2020-21: Clarkes Beach Byron Bay
2021: Newport SLSC overtopping

Coastal structures/physical modelling

1993-2005: Parallel runway seawall NSW
1994-96: Lady Robinsons groynes NSW
1994: Artificial headlands Brunei
1995: Warrina Harbour SA
1995-96, 2004-05: Shell Cove NSW
1995-2010: Wave power generators (>10)
1997: Wamberal seawall NSW
1998: Narrownneck reef, Gold Coast QLD
1999-2000: Wave dissipation by wind
1999: Brooms Head revetment NSW
2001: Wave pool feasibility QLD
2001: Semaphore Park sand trap SA
2002-03: Manly seawall NSW
2003-04: Lake Burley Griffin ACT
2004: 'Eua Tonga breakwaters
2004: Martha Cove breakwaters, VIC
2005: Coffs Harbour expansion, NSW
2005-08: Gorgon Barrow Island, WA
2005: Dalrymple Bay reclamation, QLD
2006: Cook Islands breakwaters
2006: Port Kembla breakwaters, NSW
2006-10: Geotextile walls and groynes
2007: Tyre breakwaters
2007: Scott Reef wave transmission, WA
2007: LNG caisson overtopping
2007: Wyndham Cove VIC
2007-08: Pitcairn Island breakwater
2008: Sir Bani Yas offshore breakwater
2009: Desal intake wave forces VIC
2009: Mornington Pier wave forces VIC
2010: Tutong training walls Brunei
2010: Temporary coastal protection NSW
2010: Detention River geotextile TAS
2010-12: Seawall impacts on beaches
2010: St Kilda breakwater VIC
2010: Portsea geotextile seawall review
2011: Trial groyne for Roches Beach
2011: Abbot Point breakwater QLD
2011: Kingscliff seawall options NSW
2012: Manly LGA seawall risk
2012-13: Artificial reefs for protection review
2012: Review of Roches Beach protection
2012: Groyne options for Kingscliff NSW
2013-15: Interim seawalls Byron Bay
2013: Port Phillip Bay seawalls VIC
2013: Trial groyne design Bambra Reef
2013: Toogoom rock seawall testing QLD
2013: Nambucca Heads SLSC seawall
2013: Scotts Head caravan park NSW
2013: Wonboyn geobag wall NSW
2014: Enhanced surf break Blacksmiths
2014: World Bank Pacific seawalls
2015: Offshore reefs feasibility TAS
2015: Brophys Beach geobags NZ
2015: Kingscliff seawalls NSW
2015: Chatham Islands breakwaters NZ
2015: Ettalong geobag seawall NSW
2016: Bird Island geobags Taren Point
2016: Bruny Island TAS
2016: Low cost Pacific Island structures

2016: Fairy Bower seawall options, Manly
2016: Collaroy-Narrabeen seawalls
2016: Grassy breakwaters King Island
2019: Maroochy geobag groynes
2020: Saltwater Pt indigenous artefacts
2021: Lake Illawarra NSW
2021: Opotiki NZ
2021: Kyowa rock bags
2021: Wamberal seawall NSW
2021: King Island wave scour

Ocean pools

2016: North Curl Curl NSW
2018: Ballina NSW
2019: Hallett Cove SA
2020: Port Macquarie NSW

Ocean outfalls and plumes

1993: Belmont ocean outfall
1993: Bate Bay pollution study
1995: Moa Point STP Wellington NZ
1999: Cronulla ocean outfall NSW
2001: Mangere Manukau pumps NZ
2002: Wollongong ocean outfall NSW
2006: Newport stormwater NSW
2007: Yamba outfall NSW
2017: South Steyne stormwater NSW

Hydraulic physical modelling

1993-99: Prospect water plant NSW
1993-94: Harrington Park lakes NSW
1994: Parrearra development weir QLD
1995: Darling Mills Creek dam NSW
1996: Pilot water filtration plants
1996-2008: Power station filtration (>10)
1997: Trash racks Bankstown NSW
1997: Oil-water separators
1997: Pipe grout pressure testing
1998: Potts Hill reservoir NSW
2000: Tyco flow valves
2002: Kelian pipe plug
2003-04: Eidsvold Weir and fishway QLD
2006: William Slim basin ACT
2007: Springfield Lakes, QLD
2009: Atlantis drainage cells

Estimating and feasibility studies

1988: Gibbergunyah bridges NSW
1988: Manly pier & cove development
1989: Kings Cross tunnel tower NSW

Expert witness

2004: Narrabeen Beach erosion NSW
2005: Parallel Runway seawall NSW
2008: Port Fairy coastal planning VIC
2009-10: Belongil Byron Bay, NSW
2009: Ralphs Bay inundation TAS
2010: Boating accident Farm Cove NSW
2010: Macleay River breakwater, NSW
2013: Beachport breakwater SA
2013-14: Coastal Expert Panel, Kapiti NZ
2014: Port Fairy coastal planning VIC
2015: Belongil interim seawall NSW
2017: Wamberal seawalls
2019: Belongil seawalls NSW
2021: Port Phillip Bay VIC

Publications

Journals

- Splinter, KD, Carley, JT, Golshani, A & Tomlinson, R 2014, 'A relationship to describe the cumulative impact of storm clusters on beach erosion', *Coastal Engineering*, 83, 49-55, doi:10.1016/j.coastaleng.2013.10.001.
- Hornsey, WP, Carley, JT, Coghlan, IR & Cox, RJ 2011, 'Geotextile sand container shoreline protection systems: Design and application', *Geotextiles and Geomembranes*, 29(4), 425-439, doi:10.1016/j.geotexmem.2011.01.009.
- Mariani, A, Blacka, MJ, Cox, RJ, Coghlan, IR & Carley, JT 2009, 'Wave overtopping of coastal structures: Physical model versus desktop predictions' *Journal of Coastal Research*, SI 56(SI 56), 534-538.

Conferences

- Carley, JT, Mariani, A, Cox, RJ, Shand, TD & Pells, S 2013, 'History and future of seawalls in the Manly Local Government Area', *Australasian Coasts and Ports Conference 2013*, Engineers Australia, Manly, NSW.
- Shand, TD, Shand, R, Reinen-Hamill, R, Carley, JT & Cox, RJ 2013, 'A review of shoreline response models to changes in sea level', *Australasian Coasts and Ports Conference 2013*, Engineers Australia, Manly, NSW.
- Cox, RJ, Peirson, WL & Carley, JT 2013, 'Transient effects of storm-induced water levels and consequences for coastal vulnerability', *Australasian Coasts and Ports Conference 2013*, Engineers Australia, Manly, NSW.
- Coghlan, IR, Carley, JT, Cox, RJ, Davey, EK, Blacka, MJ & Lofthouse, J 2013, 'Concept designs for a groyne field on the far north NSW coast', *NSW Coastal Conference 2013*, Port Macquarie, NSW.
<http://www.coastalconference.com/2013/papers2013/lan%20Coghlan.pdf>
- Bettington, SH, Klabbers, M & Carley, JT 2011, 'Australian experience with randomly orientated single layer concrete armour for breakwaters and revetments', *Australasian Coasts and Ports Conference 2011*, (pp. 515-520), Engineers Australia, Perth, WA.
- Coghlan, IR, Carley, JT, Blacka, MJ, Rayner, DS & Cox, RJ 2012, 'Coastal engineering options for adaptation to climate change', *Australasian Coasts and Ports Conference 2011*, (pp. 307-314), Engineers Australia, Perth, WA.
- Coghlan, IR, Mole, MA, Shand, TD, Carley, JT, Peirson, WL, Miller, BM & You, ZJ 2011, 'High resolution wave modelling (HI-WAM) for Batemans Bay detailed wave study', *Australasian Coasts and Ports Conference 2011*, (pp. 215-220), Engineers Australia, Perth, WA.
- Carley, JT, Coghlan, IR, Blacka, MJ, Cox, RJ & Hornsey, W 2011, 'Performance of sand filled geotextile container (geocontainer) structures in North Queensland during Tropical Cyclone Yasi' *Australasian Coasts and Ports Conference 2011*, (pp. 751-756), Engineers Australia, Perth, WA.
- Shand, TD, Cox, RJ, Mole, MA, Carley, JT & Peirson, WL 2011, 'Coastal storm data analysis: Provision of extreme wave data for adaptation planning', *Australasian Coasts and Ports Conference 2011*, (pp. 119-125), Engineers Australia, Perth, WA.
- Shand, TD, Wasko, CD, Goodwin, I, Carley, JT, You, ZJ, Kulmar, M & Cox, RJ 2011, 'Long term trends in NSW coastal wave climate and derivation of extreme design storms', *29th NSW Coastal Conference*, Tweed Heads, NSW,
<http://www.coastalconference.com/2011>
- Mariani, A, Carley, JT, Rayner, DS, Miller, BM, Cox, RJ, Kok, KC & Yusof, G 2011, 'Stabilisation of the Tutong River Entrance, Brunei: A comprehensive coastal engineering project', *Coastal Engineering Practice - Proceedings of the 2011 Conference on Coastal Engineering Practice*, (pp. 29-41), Reston, VA, United States: American Society of Civil Engineers (ASCE), doi:10.1061/41190(422)4.
- Couriel, E & Carley, JT 2010, 'Surfing reefs - dollars and sense', *7th International Surfing Reef Symposium*, Bondi Beach, NSW.

- Carley, JT, Shand, TD, Coghlan, IR, Blacka, MJ, Cox, RJ, Littman, A & Watson, P 2010, 'Beach scraping as a coastal management option', *19th NSW Coastal Conference 2010*, Batemans Bay, NSW.
- Shand, TD, Goodwin, I, Carley, JT, Mole, MA, Coghlan, IR & Peirson, WL 2010, 'Coastal storms and extreme waves', *19th NSW Coastal Conference 2010*, Batemans Bay, NSW.
- Mariani, A, Carley, JT & Miller, BM 2010, 'Infilling and sand bypassing of coastal structures and headlands by littoral drift', *19th NSW Coastal Conference 2010*, Batemans Bay, NSW.
- Hornsey, W, Sheldrick, S & Carley, JT 2009, 'Geotextile sand containers: Innovative shoreline protection systems', *1st African Geosynthetics Conference & Exhibition*, Cape Town, South Africa.
- Carley, JT, Blacka, MJ, Mariani, A, Cox, RJ, Attwater, C & Watson, P 2009, 'Integrated assessment of coastal hazards and climate change for Clarence City, Tasmania', *Australasian Coasts and Ports Conference 2009*, Wellington, NZ.
- Carley, JT, Blacka, MJ, Cox, RJ & Attwater, C 2009, 'Social and economic considerations for coastal adaptation to extreme events and climate change', *18th NSW Coastal Conference*, Ballina, NSW.
- Blacka, MJ, Carley, JT, Corbett, B & Jackson, LA 2009, 'Wave transmission over low crested geotextile breakwater structures', *Australasian Coasts and Ports Conference 2009*, Wellington, NZ.
- Coghlan, IR, Carley, JT, Cox, RJ, Blacka, MJ, Mariani, A, Restall, S & Sheldrick, S 2009, 'Two-dimensional physical modelling of sand filled geocontainers for coastal protection', *Australasian Coasts and Ports Conference 2009*, Wellington, NZ.
- Mariani, A, Blacka, MJ & Carley, JT 2009, 'Extreme wave overtopping of a vertical breakwater: A physical model and desktop investigation', *Australasian Coasts and Ports Conference 2009*, Wellington, NZ.
- Carley, JT, Blacka, MJ, Cox, RJ, McIntosh, J & Macarthur, J 2008, 'Sea level rise and climate change impacts for planning a new hospital', *IPWEA National Conference on Climate Change*, (pp. 1-12), Coffs Harbour, NSW.
- Blacka, MJ, Carley, JT, Cox, RJ, Lester, D & Williams, B 2008, 'Sea level rise implications and adaptation for South Arm Secondary Road, Hobart', *IPWEA National Conference on Climate Change*, (pp. 1-10), Coffs Harbour, NSW.
- Carley, JT, Blacka, MJ, Cox, RJ, Attwater, C & Watson, P 2008, 'Modelling coastal processes and hazards to assess sea level rise impacts for integratin into a planning scheme', *IPWEA National Conference on Climate Change*, (pp. 1-11), Coffs Harbour, NSW.
- Sharples, C, Attwater, C & Carley, JT 2008, 'Three pass approach to coastal risk assessment', *IPWEA National Conference on Climate Change*, (pp. 1-9), Coffs Harbour, NSW.
- Attwater, C, Carley, JT & Witte, E 2008, 'Establishing triggers for adaptive response to climate change', *Coast to Coast Collaboration: Crossing Boundaries*, (pp. 1-30), Darwin, NT.
- Attwater, C, Carley, JT & Witte, E 2008, 'Choosing from adaptation options', *Coast to Coast Collaboration: Crossing Boundaries*, (pp. 1-15), Darwin, NT.
- Timms, WA, Carley, JT, & Andersen, MS 2008, 'Fresh-saline groundwater boundaries below coastlines - potential impacts of climate change', *Coast to Coast Collaboration: Crossing Boundaries*, (pp. 1-35), Darwin, NT.
- Carley, JT, Blacka, MJ, Timms, WA & Cox, RJ 2008, 'A template for modelling and managing sea level rise and climate change', *17th NSW Coastal Conference*, (pp. 1-20), Wollongong, NSW.
- Carley, JT, Blacka, MJ, Cox, RJ & Attwater, R 2008, 'Modelling coastal processes and hazards to assess sea level rise', *IPWEA National Conference on Climate Change*, (pp. 1-5), Coffs Harbour, NSW.
- Blacka, MJ, Carley, JT & Cox, RJ 2007, 'Stability and design of rubble toe protection for vertical seawalls', *Australasian Coasts and Ports Conference 2007*, Melbourne, VIC.
- Blacka, MJ, Carley, JT, Cox, RJ, Hornsey, W & Restall, S 2007, 'Field measurements of full sized geocontainers', *Australasian Coasts and Ports Conference 2007*, Melbourne, VIC.

- Carley, JT, Blacka, MJ, Mariani, A, Bettington, SH, Dimock, J & Prior, G 2007, 'Physical modelling of coastal structures for Gorgon project, Barrow Island Western Australia', *Australasian Coasts and Ports Conference 2007*, Melbourne, VIC.
- Carley, JT, Mariani, A & Dorrell, D 2007, 'Physical modelling of innovative solutions to wave impacts and inundation, Rarotonga, Cook Islands', *Australasian Coasts and Ports Conference 2007*, Melbourne, VIC.
- Carley, JT, Wyllie, S & Cox, RJ 2006, 'Coastal processes in the Coffs Harbour region', *15th NSW Coastal Conference*, (pp. 1-10), Coffs Harbour, NSW.
- Blacka, MJ, Carley, JT, Miller, BM & Cox, RJ 2006, 'The current use of physical and numerical models for coastal applications', *15th NSW Coastal Conference*, (pp. 1-15), Coffs Harbour, NSW.
- Carley, JT, Blacka, MJ, Cox, RJ & Phillips, AB 2005, 'Toe protection and remedial options for historical seawalls', *Australasian Coasts and Ports Conference 2005*, Adelaide, SA.
- Carley, JT, Blacka, MJ, Stone, PB, Cox, RJ & Pulini, IF 2005, 'Physical modelling of breakwater damage and redesign, Nafanua Harbour, 'Eua Island, Tonga', *Australasian Coasts and Ports Conference 2005*, Adelaide, SA.
- Blacka, MJ, Carley, JT, Cox, RJ & Jayewardene, I 2005, 'Assessment of the use of concrete hanbar armour units on NSW breakwaters', *Australasian Coasts and Ports Conference 2005*, Adelaide, SA.
- Carley, JT, Cox, RJ & Horton, PR 2005, 'Is the NSW coast eroding and is it likely to get worse?', *14th NSW Coastal Conference*, (pp. 1-16), Narooma, NSW.
- Carley, JT, Blacka, MJ, Cox, RJ & Phillips, AB 2005, 'Toe protection and remedial options for historical seawalls', *Australasian Coasts and Ports Conference 2005*, Adelaide, SA.
- Carley, JT, Blacka, MJ & Cox, RJ 2004, 'Management and remedial options for historical seawalls', *13th NSW Coastal Conference*, (pp. 204-210), Lake Macquarie, NSW.
- Carley, JT, Walker, JW, Ball, JE & McIntosh, J 2004, 'Physical modelling of preliminary design for Eidsvold Weir spillway and fishway', *8th National Conference on Hydraulics in Water Engineering*, Surfers Paradise, QLD.
- Carley, JT & Cox, RJ 2003, 'A methodology for utilising time-dependent beach erosion models for design events', *Australasian Coasts and Ports Conference 2003*, Auckland, NZ.
- Carley, JT 2001, 'Predicting and modelling beach erosion during major storms - why the underwater profile and storm duration matter', *11th NSW Coastal Conference*, (pp. 1-12), Newcastle, NSW.
- Carley, JT 2001, 'Validation and application of storm erosion models in Australia', *Australasian Coasts and Ports Conference 2001*, Gold Coast, QLD.
- Carley, JT & Denniss, T 2001, 'Electrical energy from ocean waves - history and state of the art in Australia', *International Conference on Coastal Engineering (ICCE)*, Sydney, NSW.
- Carley, JT, Turner, IL, Couriel, ED, Jackson, A & McGrath, J 1999, 'The practical application of four commercially available numerical beach morphology models on a high energy coastline', *Australasian Coasts and Ports Conference 1999*, Perth, WA.
- Couriel, ED, Cox, RJ & Carley, JT 1992, 'Methods for storm cut estimation - a review', *2nd NSW Coastal Management Conference*, Kiama, NSW.

WRL reports

Research reports

- Peirson, WL & Carley, JT 1999, 'A laboratory study of low-frequency wave dissipation due to an opposing wind', *WRL Research Report No 203*, UNSW Water Research Laboratory.
- Shand, TD, Mole, MA, Carley, JT, Peirson, WL & Cox, RJ 2011, 'Coastal storm data analysis: Provision of extreme wave data for adaptation planning', *WRL Research Report 242*, ISBN 0 85824 085 8, UNSW Water Research Laboratory.
- Mariani, A, Shand, TD, Carley, JT, Goodwin, ID, Splinter, KD, Davey, EK, Flocard, F & Turner, IL 2012, 'Generic design coastal erosion volumes and setbacks for Australia', *WRL Research Report 253*, UNSW Water Research Laboratory.
- Mariani, A, Flocard, F, Carley, JT, Drummond, CD, Guerry, N, Gordon, AD, Cox, RJ & Turner, IL 2013, 'East coast study project - National geomorphic framework for the management and prediction of coastal erosion', *WRL Research Report 253*, ISBN: 978-0-85824-092-6, UNSW Water Research Laboratory.

Technical reports

- Hranisavljevic, D, Carley, JT, Nittim, R & Cox, RJ 1993, 'Prospect water filtration plant hydraulic model study', *WRL Technical Report 93/07*, for Prospect Water Group, UNSW Water Research Laboratory.
- Hranisavljevic, D, Carley, JT, Nittim, R & Cox, RJ 1993, 'Prospect water filtration plant hydraulic model study supplementary report', *WRL Technical Report 93/09*, for Prospect Water Group, UNSW Water Research Laboratory.
- Carley, JT, Hranisavljevic, D & Cox, RJ 1994, 'Prospect water filtration plant clear water tanks hydraulic model study: Additional testing', *WRL Technical Report 94/13*, for Australian Water Services, UNSW Water Research Laboratory.
- Carley, JT & Nittim, R 1994, 'Parrearra development structure Y model testing - Stage 2', *WRL Technical Report 94/19*, for Cardno & Davies Queensland Pty Ltd, UNSW Water Research Laboratory.
- Carley, JT, Hranisavljevic, D & Cox, RJ 1994, 'Prospect water filtration plant: Clear water tanks hydraulic model study', *WRL Technical Report 94/20*, for Civil & Civic Pty Limited, UNSW Water Research Laboratory.
- Nittim, R & Carley, JT 1996, 'Prospect water filtration plant - Flow distribution trials', *WRL Technical Report 96/07*, for Australian Water Services, UNSW Water Research Laboratory.
- Carley, JT, Adamantidis, CA & Cox, RJ 1996, 'Swanbank "B" power station fabric filter model testing', *WRL Technical Report 96/09*, for Lurgi Australia Pty Ltd, UNSW Water Research Laboratory.
- Couriel, ED, Bettington, SH, Carley, JT, Cox, RJ, Chong, T, Murtedza, M, Lim, YH & Gabriel, TN 1996, 'Coastal protection works at Santubong Peninsular, Kuching, Sarawak, Malaysia. Part 1 - feasibility study, coastal engineering interim report', *WRL Technical Report 96/31*, for P S Konsultant Malaysia, UNSW Water Research Laboratory.
- Carley, JT, Adamantidis, CA & Couriel, ED 1997, 'Flume testing of parabolic wave power generator', *WRL Technical Report 97/13*, for Energetech Pty Ltd, UNSW Water Research Laboratory.
- Carley, JT 1997, 'Model testing of trash racks', *WRL Technical Report 97/14*, for Bankstown City Council, UNSW Water Research Laboratory.
- Couriel, ED, Bettington, SH, Horton, PR, Carley, JT, Cox, RJ, Chong, T, Murtedza, M, Lim, YH & Gabriel, TN 1997, 'Coastal protection works at Santubong Peninsular, Kuching, Sarawak, Malaysia. Part I - Feasibility study coastal engineering report', *WRL Technical Report 97/16*, for P S Konsultant Malaysia, UNSW Water Research Laboratory.
- Couriel, ED, Carley, JT, Cox, RJ, Adamantidis, CA & Turner, IL 1998, 'Design study for Wamberal Beach terminal protective structure final design report', *WRL Technical Report 97/22*, for Gosford City Council, UNSW Water Research Laboratory.

- Carley, JT & Walker, JW 1997, 'Preliminary coastal engineering advice for Olympic Beach Volleyball Stadium at Bondi', *WRL Technical Report 97/30*, for Ove Arup & Partners, UNSW Water Research Laboratory.
- Carley, JT, Cox, RJ & Couriel, ED 1998, 'Numerical modelling of sand nourishment profiles/quantities and beach erosion due to storms and sea level rise', *WRL Technical Report 98/04*, for Gold Coast City Council, UNSW Water Research Laboratory.
- Walker, JW, Nielsen, AF, Carley, JT, Leyden, VM & Adamantidis, CA 1998, 'Bondi Beach Olympic Volleyball Venue coastal hazards and assessment of time loss from rainfall', *WRL Technical Report 98/31*, for Ove Arup, UNSW Water Research Laboratory.
- Turner, IL, Leyden, VM, Carley, JT & Cox, RJ 1998, 'Physical model study of Gold Coast reef', *WRL Technical Report 98/34*, for Gold Coast City Council, UNSW Water Research Laboratory.
- Horton, PR, Carley, JT, Peirson, WL & Cox, RJ 1998, 'Sydney Airport parallel runway physical model testing of Millstream Channel seawall', *WRL Technical Report 98/57*, for Boulderstone Hornibrook Engineering Pty Ltd, UNSW Water Research Laboratory.
- Cox, RJ & Carley, JT 1999, 'Velocity and sediment testing of Prospect water filtration plant clearwater tanks', *WRL Technical Report 98/58*, for Australian Water Services Pty Ltd, UNSW Water Research Laboratory.
- Carley, JT 1999, 'Callide power station fabric filter physical model testing', *WRL Technical Report 99/27*, for Lurgi (Aust) Pty Ltd, UNSW Water Research Laboratory.
- Nielsen, AF, Carley, JT & Cox, RJ 2001, 'Brooms Head Beach - Coastal study', *WRL Technical Report 99/43*, for Maclean Shire Council, UNSW Water Research Laboratory.
- Carley, JT & Nielsen, AF 1999, 'Pittwater coastal inundation assessment 118 Prince Alfred Parade, Newport', *WRL Technical Report 99/47*, for Rikard-Bell and Bull, UNSW Water Research Laboratory.
- Carley, JT & Nielsen, AF 1999, 'Pittwater coastal inundation assessment 1736 Pittwater Road, Bayview', *WRL Technical Report 99/48*, for Rikard-Bell and Bull, UNSW Water Research Laboratory.
- Carley, JT & Cox, RJ 2000, 'Analysis of plant flow and ocean tailwater level for Cronulla sewage treatment plant', *WRL Technical Report 99/55*, for Lend Lease/Civil & Civic, UNSW Water Research Laboratory.
- Carley, JT 2000, 'Pittwater coastal inundation assessment 1806 Pittwater Road, Bayview', *WRL Technical Report 00/39*, for Mr P Fallon, UNSW Water Research Laboratory.
- Carley, JT & Stone, PB 2000, 'Coastal engineering report Lot 1 DP 12749, 99 Richard Road, Scotland Island', *WRL Technical Report 00/44*, for Mr G Mottle, UNSW Water Research Laboratory.
- Carley, JT & Cox, RJ 2000, 'Flume testing of SWEC floating power generator', *WRL Technical Report 00/37*, for SWEC Power Pty Ltd, UNSW Water Research Laboratory.
- Carley, JT 2000, 'Equivalent length testing of Tyco fire protection valves and fittings', *WRL Technical Report 00/45*, for Tyco Services Singapore Pty Ltd, UNSW Water Research Laboratory.
- Carley, JT & Davies, JL 2001, 'Hohhot power station fabric filter physical model testing', *WRL Technical Report 01/17*, for Lurgi Australia, UNSW Water Research Laboratory.
- Carley, JT, Cox, RJ & Jackson, LA 2001, 'Semaphore Park offshore breakwater optimisation and detailed design', *WRL Technical Report 01/24*, for Office of Coast and Marine (SA), UNSW Water Research Laboratory.
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