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5 June, 2004

TERRY LUSTIG

ACADEMIC QUALIFICATIONS:

Bachelor of Science (Maths), Sydney University, 1963
Bachelor of Engineering (Hons 1) (Civil), Sydney University, 1965
Master of Engineering Science (Water Engineering), University of N.S.W., 1970
Doctor of Philosophy (Ecological Economics), University of N.S.W., 1984

PROFESSIONAL AFFILIATIONS:

Fellow, Institution of Engineers, Australia
Member, Australian Water Association.
Member, International Society for Ecological Economics
Research Associate, University of Sydney

CAREER & SPECIALISED COMPETENCE:

Thirty-nine years' experience in consulting, government and academic work in Australia, N.Z., Asia, Oceania and Africa: particular experience in economics of total watercycle management and natural disasters, environmental economics, on-site wastewater management, water engineering, environmental management and archaeology of water engineering.

PROFESSIONAL ACTIVITIES:

Institution of Engineers, Australia: Founding Chairman, Environmental Engineering Panel, Sydney Division 1984-6; member sub-committee on environmental education, 1985-1989; Convenor, Seminar on Environmental Impact Assessment, 1987; publicity officer, 1987-89; Convenor Environmental Ethics Sub-Committee, 1989.

Australian Water Association: Representative on Standards Australia/Standards New Zealand Committees WS/13/1 On-Site Domestic Wastewater Management 1995-2000; WS/13/15 Waterless Composting Toilets 1995-2001 (Acting Chairman, 2001); WS/13/4 Aerated Wastewater Treatment Systems 2001; WS/13 Septic Tanks 1995-1998; Committee Member, National On-site Systems Interest Group (NOSSIG) 1997-present.

NSW Department of Health: Member, Composting Toilet Performance Criteria Working Group 1995.

RedR Australia: Registered Engineer for Disaster Relief.

Department of Local Government: Representative on Technical Advisory Panel for On-site Sewage Management representing the Nature Conservation Council 1999-present.

LANGUAGES:

German - Good; French – Good; Indonesian, Vietnamese, Khmer - Conversational.

PROFESSIONAL EXPERIENCE:**1982-Present:** ENVIRONMENTAL MANAGEMENT PTY. LTD.

Managing Director

Economic, Environmental & Water Studies

- Wadi Wadi Coomaditchie Aboriginal Corporation – Advice and representation on legal objection to development of land claimed as of aboriginal and ecological significance, 2004 – present.
- South Eastern Junior Cricket Association – Preparation of Environmental Plan of Management, 2003.
- Beachcomber Holiday Park – Advising on formulation of environmental plan of management for holiday park within a National Park, 2003.
- Caravan and Camping Industry Association of NSW – Advising on aims, objectives, criteria and appropriate techniques for the Gumnut Awards rating scheme for environmental improvement for caravan parks, 2002-2004.
- Basell Polyolefins, Rosehill – Development of Total Watercycle Management Plan, 2002-2003.
- South Brighton Spit, Christchurch – advice on stability of tidal inlet and risk of coastal erosion (NZ Cashflow Control), 2002-2003.
- Fry Street, Chatswood Residential Subdivision – Advice on total watercycle management. (Project won Local Government Excellence in the Environment Awards for the Built Environment Award category for division C population greater than 60,000.) 2002.
- Coastal Council of NSW – Submission on Draft Coastal Design Guidelines (on behalf of Caravan and Camping Industry Association of NSW), 2002.
- Bobbin Head Road Turrumurra – Advice on strategies for mitigating adverse environmental effects, and where feasible enhancing environmental benefits of a development for a retirement village, 2001-2002.
- Watkins Road Baulkham Hills - Advice on requirements for providing riparian ecosystems for potential subdivision, 2001-2002.
- Krown Paint Watercycle Management Plan – (2001) Preparing a plan to minimise stormwater runoff from the site and assess options for reuse, 2001.
- Banksia Green Environmental Management Plan (NPWS) – Preparing an EMP for the proposed Hybrid toilet system to be installed at the Banksia Green camp site, Myall Lakes National Park, 2001.
- Total Watercycle Management Plan, Darling Mills Farm & Polyculture Centre. Developing a plan and a storage model for managing the storage and use of rainwater, stormwater, and wastewater reuse, 2000.
- Jemby-Rinjah Eco-tourist Resort Environmental Management Plan – Preparing an EMP covering all operational aspects of the resort in the Blue Mountains, 2000.
- Team Leader - Water, Greater Angkor Project (Archaeology, University of Sydney and Ecole Française d' Extrême Orient) Advising on the causes for the failure of Central Angkor's water system and its contribution to the collapse of this empire, 1999-present.
- Environmental Management Plan, Scanline Preparing an EMP for the operation of the Scanline cooking oil recycling site located near Blacktown, 1999.
- Environmental Specialist, Refugee Camps, Albania (United Nations High Commissioner for Refugees) Developing Environmental Guidelines for and rehabilitating tented refugee camps and refugee-affected areas, 1999.
- Christian Camp, South Maroota (Trevor and Lorna Garlick) Preparing Environmental Management Plan covering all operational aspects for camp adjacent to environmentally sensitive area, 1999.
- Papamoa Coastal Hazard Zones, New Zealand, Advice on economic and technical adequacy of procedures used for zoning coastal hazards, 1998-2002.

- NSW Floodplain Management Manual (Department of Land and Water Conservation, NSW) Incorporating the concept of ecologically sustainable development into the revised manual, 1996-7.
- Opotiki Healthcare Centre, New Zealand (in association with the Grafton Group, Auckland) Economic and social benefits of a controversial replacement of a flood-free hospital with a flood-prone healthcare centre, 1996.
- Manual for Enhancing the Amenity of a Coastal Area (NSW Department of Land and Water Conservation) Preparing manual for enhancing the amenity of coastal areas and ranking proposals submitted for funding under the Coastal Management Program, 1995-7.
- Jenolan Caves Access Economic Analysis (in association with Colston Budd Hunt & Twiney Pty Ltd) Economic and environmental evaluation of feasibility of restricting vehicular access to Jenolan Caves for self-financing government recreation authority, 1993-4.
- Lake Illawarra Environmental Economics (Lake Illawarra Authority) Environmental economics of the proposed modifications to the Lake Illawarra entrance (in association with Sloane Cook and King), 1993-5.
- Irrigation Projects, Vietnam (Asian Development Bank) Economic, social and environmental evaluation of Song Chu and North Nghe An irrigation schemes, 1992-3.
- Ourimbah Creek Salinity Intrusion (FAI Insurance) Investigation of cause of intrusion of salt water over weir in Ourimbah Creek, 1992-4.
- Duck Creek Flood Mitigation (Water Board) Review of Environmental Factors for pruning of mangroves, 1992-3.
- Kogarah Bay Waterway Enhancement (Public Works Department) Preliminary evaluation of environmental economics of benefits of dredging, 1992-3.
- Sanitation, Drainage and Flood Mitigation Study for the Kaleerwe-Kavule Area, Kampala, Uganda (Church of Uganda and Auckland Diocese of Anglican Church). Advice on sustainably improving the living environment of a slum area, 1990-1.
- Lower Tweed Estuary Development Project (Public Works Department) Development of scope and program for Plan of Management, 1990-1.
- Project Management, Environmental Design & Planning for Crocodile Skin Tanning Factory, Wallerawang. (Wild Leathers Australia Ltd.), 1990-1.
- Victoria Road By-pass (Roads and Traffic Authority) Preparation of Environmental Impact Statement (in association with Wargon Chapman & Partners), 1990.
- Elsie St. Development, Burwood (Elsie Street Residents' Action Group) Advice and representations on environmental deficiencies of proposed development, 1990.
- Local Government and Resource Management Law Reform Program (New Zealand Local Government Association) Advice on feasibility of limitations on liability of local government for flood losses, 1990.
- Lower Tweed Estuary Development Project (Public Works Department) Project Management of environmental component of feasibility studies, 1989.
- Nepean Dredging (Nepean Dredging Pty. Ltd.) Preparation of submission on Hawkesbury-Nepean Regional Environmental Plan, 1987.
- Corporate Plan of Management. (Public Works Department, NSW) Preparation of Corporate Plan for the Department's Coastal Section, 1987.
- Waste Disposal Area, Mt. Ku-ring-gai, NSW (Hornsby Shire Council) Project management of ecological study for proposed solid waste disposal site (in association with T.J. Fatchen & Associates), 1986.
- Property Development, Leura, NSW Advice on means of maintaining desirable hydrological characteristics of a site in an environmentally sensitive area, 1986.
- Fish River Water Supply (Public Works Department, NSW) Preparation of environmental impact statement for augmentation of water supply system. A new proposal was developed to reduce the significance of the environmental impacts, so that an EIS was no longer required, 1986-7.

- NSW Water Supplies (Public Works Department, NSW) Preparation of Reviews of Environmental Factors for installations of or augmentations to water supply systems for Balranald, Bathurst, Bowning, Bulahdelah, Gundagai, Hay, Narooma-Tuross, Singleton, South-West Tablelands and Wentworth, 1985-6.
- Oil Exploration, Western Australia (Diamond Shamrock Oil Company): Environmental planning and management of oil exploration for a number of offshore sites, 1985.
- Lake Mungo National Park World Heritage Area (National Parks and Wildlife Service, NSW): Advice on geomorphological and archaeological considerations in allowing agricultural activities (in association with T.J. Fatchen & Associates), 1984-5.
- Second Sydney Airport Environmental Impact Study (Wilton Against Runways): Preparation of submission on behalf of residents' action group opposing one of the two short-listed sites for Sydney's Second Airport, 1984.
- Sediment Transport in Hawkesbury River (Public Works Department): Examination of available data for modelling the supply of sediment, suitable for the sand and gravel industry, to the Hawkesbury River, 1983.
- Highmark Village, Katoomba (Milemark Ltd.): Environmental studies of a cultural, resort and sporting complex for a Development Application, 1983-4.
- Fairmont Resort Development, Leura (Leura Preservation Society): Advice on environmental deficiencies in procedures leading to consent to a resort proposed to be sited on the Blue Mountains Escarpment, 1982-3.
- Ecological Reference Areas (National Parks and Wildlife Service, NSW): Study of eastern NSW, to select areas suitable for reserving for scientific purposes against human disturbance (in association with T.J. Fatchen & Associates), 1982-4.
- Coastal Erosion Management (Coastal Council of NSW): Advising on social surveys to evaluate coastal residents' perceptions and apprehensions of the hazards of living very near to the coast, 1983.

Sustainable Water-Disaster Management

- Appletree Street, Wingham (private clients) Representation in Land and Environment Court for Development Applications on flood-prone land, 2003.
- Edgewood Estate, Woonona – advice on flooding nuisance caused by residential developer (MrBugs Pest Control), 2002-present.
- Gateway Island Development Plan – Independent Risk Management Assessment (North East Catchment Management Authority and Wodonga City Council) Investigation of feasibility of residential, commercial and tourist development within the floodplain of the Murray River, 2001.
- Trial Bay Tourist Park Flood Risk Management Study, 2001.
- Macleay River Floods, March 2001 (Fortis, AAMI, CGU) Advice on causes of inundation of property, 2001.
- Wollongong Floods, August 1998 (QBE and Western QBE) Advice on legal causes of flood losses at Wollongong, 2001-2002.
- Namoi Valley Floods, November 2000 (Western QBE, NRMA) Advice on causes of inundation of property, 2000-2001.
- Hampton Court, Lansdowne Advice on legal liability for approving residential development in swampy ground, 2000-present.
- Wollongong Floods, August 1998 (private clients) Advice on legal liability of Wollongong Council for the flood losses at Wollongong, 1998-2000.
- Flood Insurance Pilot study on feasibility of developing a scheme for flood insurance, 1998-1999.
- Wollongong Floods, August 1998 (NRMA Insurance, QBE, WQBE, Australian Alliance, and others) Advice on causes of inundation of property, 1998-2000.
- Townsville Floods, January 1998 (Insurance Enquiries and Complaints, General Insurance Panel) Technical Advisor to Panel at Hearing, 1998.

- Sea-Dyke Upgrading North Viet Nam (United Nations Development Program and World Food Programme) Evaluating the sustainability of the maintenance program for sea and estuarine dykes and developing a manual for estimating the average annual maintenance, 1998.
- Sydney Floods April 1998 (NRMA Insurance, GIO Insurance) Advice on causes of inundation of property, 1998.
- Townsville Floods January 1998 (Insurance Council of Australia, NRMA Insurance, CIC Insurance, Commercial Union, Munich Reinsurance) Advice on causes of inundation of property, 1998.
- Pegasus Bay New Town Development New Zealand (Pegasus Bay Coastal Estates) Economic, planning and technical oversight of water-disaster planning and environmental risk management, 1997-1999.
- Coffs Harbour Flood November 23 1996 (NRMA Insurance) Reports on flooding of clients' houses, 1997.
- Lismore Flood Mitigation (Lismore City Council) Evaluation of social and economic effects of preferred floodplain management options (in association with Sinclair Knight and Partners), 1997-present.
- NSW Floodplain Management Manual (Department of Land and Water Conservation, NSW) Incorporating the concept of ecologically sustainable development into the revised manual, 1996-7.
- Waikanae Floodplain Management Plan (Wellington Regional Council, NZ) Advice on developing a sustainable floodplain management plan, 1996-97.
- Pakistan Assessment of Performance of Flood-Restoration Works (Asian Development Bank) Assistance with Project Evaluation Review of works following large floods in the Indus Basin, 1996.
- Ourimbah Creek Floodplain Management Plan (for Wyong Shire Council in association with ACER Wargon Chapman), 1994.
- Sea-Dyke Upgrading Central Viet Nam (United Nations Development Program) Development of a sustainable scheme for local asset management of sea and estuarine dykes, 1994-96.
- Water-disaster mitigation in Viet Nam (United Nations Development Program) Chief Technical Writer for International Consultation on Viet Nam's Strategy and Action Plan, and Technical Writer of Update and Policy on Sustainable Water-Disaster Mitigation, 1994-5.
- Flood-Warning Services for Northeast Victoria (Flood Warning Consultative Committee, Victoria) Review of effectiveness during floods of October 1993, and sustainable improvement of warning system, 1994-5.
- Woronora River Floodplain Management Plan (for Sutherland Shire Council in association with ACER Wargon Chapman), 1994-5.
- Coastal Flash-Flood Warning Study (NSW Public Works) Assessment of wider benefits of system studied earlier, 1994-96.
- Waimakariri River South Arm (Canterbury Golf International) Advice on locating a golf course in a floodway, 1994-98.
- Handbook for preparing emergency loans (Asian Development Bank) Preparing handbook for rapid assessments of emergency rehabilitation projects after disasters, 1994-96.
- Sanctuary Point Floodplain Management Study (Shoalhaven City Council) Preparation of Floodplain Management Plan, 1992.
- Water-disaster mitigation in Vietnam (United Nations Department of Humanitarian Affairs) Team leader of international consultants and national experts preparing a Strategy and Action Plan, 1992-4.
- Darling Mills Retarding Basin (Upper-Parramatta River Catchment Trust) Re-evaluation of benefits of proposed retarding basin, 1992-3.
- Hanoi Dyke (Asian Development Bank) Economic, social and environmental evaluation of feasibility of upgrading, 1992-3.
- Song Chu and North Nghe An Irrigation Projects Viet Nam (Asian Development Bank) Economic evaluation of benefits of upgrading irrigation structures which were at risk of failure, 1992-3.

- Sheas Creek Catchment Management Study (The Water Board) Economic and social evaluation of flood-mitigation strategies, 1992-3.
- Red River Delta and Central Coast Vietnam (United Nations Development Program) Economic and social evaluations of flood-mitigation strategies, 1992.
- Darling Mills Creek (Upper Parramatta River Catchment Trust) Economic and social evaluation of flood-mitigation strategies. (in association with Bewsher Consulting), 1991-2.
- St. Georges Basin Flooding Survey (Shoalhaven City Council) Survey of effects of floods of 1991, 1991-2.
- Rose Bay Catchment Management Study (The Water Board) Evaluation of social and economic effects of floodplain management options (in association with Patterson Britton.), 1991
- Lismore Flood Mitigation (Lismore City Council) Evaluation of social and economic effects of a range of floodplain management options (in association with Sinclair Knight and Partners), 1991-5.
- Flood Mitigation Nowra (Shoalhaven City Council) Formulation of criteria for development on floodplain, 1992.
- Social and economic evaluation of floodplain management strategies (The Water Board) In-house workshop for senior stormwater engineers, 1992.
- Coastal Flash Flood Warning Study (Public Works Department) Evaluation of social and economic benefits of a flash flood warning system for the Wollongong - Newcastle - Sydney region (in association with ISMES), 1991-2.
- Cup and Saucer Creek Catchment Management Study (The Water Board) Evaluation of social and economic effects of flooding (in association with the Water Board's Stormwater Drainage Section), 1991.
- Cooks River Catchment Management Study (The Water Board) Evaluation of social and economic effects of flooding (in association with Binnie & Partners.), 1991.
- Burns Creek Catchment Management Study (The Water Board) Evaluation of social and economic effects of flooding (in association with Kinhill Engineers Pty. Ltd.), 1991.
- Sanitation Drainage and Flood Mitigation Study for the Kaleerwe-Kavule Area Kampala Uganda (Church of Uganda and Auckland Diocese of Anglican Church), 1990.
- Parramatta Floodplain Management (Upper Parramatta River Catchment Trust) Evaluation of economic effects of flooding of CBD, 1990.
- Floodplain Development Nowra (Theo Mavromattes) Advice on flood-resistant designs for housing, 1990.
- Penkivil Street Waverley Catchment Management Plan (The Water Board) Evaluation of social and economic effects of flooding (in association with Dames & Moore), 1990.
- Raglan St. Manly Catchment Management Plan (The Water Board) Evaluation of social and economic effects of flooding and environmental planning (in association with Binnie & Partners), 1990.
- Whites Creek Leichhardt Catchment Management Plan (The Water Board) Evaluation of social and economic effects of flooding (in association with Gutteridge Haskins & Davey), 1990.
- Shoalhaven River Bank Protection (Shoalhaven City Council) Vegetative stabilisation of river bank adjacent to Australian Pulp and Paper Mill's factory, 1990.
- Ettymalong Creek Flood Damages (Gosford City Council) Estimation of flood damages caused by development on a swamp, 1990-1.
- Waimakariri River Floodplain Management Plan (Canterbury Regional Council, New Zealand) Technical Adviser, 1989-90.
- Hutt River Flood Control Scheme Review (Wellington Regional Council, New Zealand) Technical Adviser, 1989.
- Lismore Floodplain Management (Lismore City Council) Survey of economic effects of flooding on commercial establishments in Lismore in April 1989.

- Floodplain Management Bankstown (GEC Projects) Advice on means of mitigating losses from flooding, 1989.
- Floodplain Management Nowra (Shoalhaven Milling Company) Advice on future development to mitigate flood losses, 1988.
- Flood Mitigation Nowra (Shoalhaven City Council) Report on potential for flood damage and means of mitigating losses for new urban development, 1988.
- Sydney Floods 1988 (Public Works Department) Reevaluation of losses in Georges River along the same lines as for the study following the flood of August, 1986 (1988-9).
- Sydney-Newcastle Floods 1988 & 1989 (NRMA Insurance) Report on flooding of clients' houses, 1988-9.
- Lismore Floodplain Management (Lismore City Council) Advice on strategies for staged programme of flood mitigation for Lismore, 1988.
- Blacktown Creek Flooding (NRMA Insurance) Report on flood damage in Blacktown Creek and means of mitigating losses, 1988.
- Floodplain Management (Ministry of Works and Development, N.Z.) Advice on formulation of new practices and procedures for floodplain management in New Zealand, 1988-9.
- Flood Insurance (National Roads and Motorists' Association) Advice on appropriate policies and practices for assessing flood damage. Advice on the feasibility of flood insurance. Assessment of flood damage claims, 1988-9.
- Sydney Floods Study (Public Works Department and Department of Water Resources) Evaluation of economic losses, social impacts, efficacy of warning and emergency systems in floods of August, 1986 and assessment of losses in other floods. Derivation of empirical relationships for assessing future losses elsewhere in Australia, 1986-8.
- Bankstown Square Shopping Centre (Civil and Civic): Advice on preparing submission to Council to vary its flood policy for this shopping centre, 1983.
- Grafton Flooding (Clarence River County Council): Redetermination of appropriate flood-frequency distribution for Grafton, 1982-3.
- Grafton Flood Mitigation (Clarence River County Council): Social and economic effects of an augmented levee system to protect South Grafton, 1982-4.

Sustainable Watercycle Management

Wastewater Treatment Systems Various designs of domestic on-site wastewater treatment systems, particularly in environmentally sensitive sites in urban and rural areas, 1989-present.

Sanitation:

- Period contract, sanitation specialist, AusAID, 2001-2004.
- Technical Advisor to Gough Plastics, manufacturer of Hybrid Toilets: 2001
- Technical Advisor to Pryme Wastewater, manufacturer of the Biological Aquatic System: 2001.
- Kiritimati Island, Republic of Kiribati 1997 – 2002.
- Sanitation, Drainage and Flood Mitigation Study for the Kaleerwe-Kavule Area, Kampala, Uganda, 1990.
- Technical Advisor to Environment Equipment, manufacturer of Rotaloo Composting Toilets: 1989-present
- Advice on institutional causes and compliance with accepted standards concerning the Wallis Lake Oyster Poisoning Incident (for Slater and Gordon, solicitors), 1997

Water-cycle Plan of Management:

- Clovelly - Total watercycle management for a terrace house, 2003.

- Bondi - Total watercycle management for a proposed townhouse development, 2002-present.
- Paddington - Total watercycle management for a terrace house, 2003.
- Willoughby City Council – Total watercycle management for a proposed housing development to demonstrate ESD principles (in association with Kennedy Associates, Architects), 2002
- Warrah School (Provider of Disability Services) 1999-2000
- Bundeena-Maianbar, 1996-1997

Residential Development:

- Fraser Road, Cowan, 1997-2001
- Great Mackerel Beach, Pittwater, 1996-1998
- Laureldale, 1995.

Residential Development for on-site systems in sewerred areas:

- Randwick, Sydney, 2001-2002
- Fairlight, Sydney, 2000-present
- Epping, Sydney, 2000-present
- Newtown, Sydney, 2000
- Kellyville, Sydney, 2000
- Hepburn Springs, Victoria, 1997
- Bundeena, Sydney, 1994-2003

Recreational Development:

- Gosling Creek toilet facilities, Orange city Council, 2002-2003
- Lake Canobolas toilet facilities, Orange City Council, 2002
- Milson Island Sport and Recreational Centre, 2001-present
- North Arm Cove, acting for group of property owners in Land and Environment Court, 2001
- Eastlake Golf Club, 2001
- Sefton Cottage, Mount Wilson, 2000-2001
- Trial Bay Caravan Park, 2000
- Myall Lakes Toilet Strategy, 2000-present
- Warrumbungle National Park, 1999-2000
- The Grove, Wisemans Ferry, 1997-2000
- Christian Camp, South Maroota, 1998-1999
- North Arm Cove Holiday Retreat, 1996-1998
- Revival Centres International Camp, Moruya, 1995-1998

ESD Demonstration Buildings

- SCRAP Communal Centre, Holsworthy, 2001
- Eco-Living Centre, Randwick, 2001

Ecotourism Projects:

- Illawong Ski Lodge, Mt Twynam, Kosciusko National Park, 1999
- Cape Byron Headland Reserve Sanitation Systems, 1997-1998

- Eco-tourist Resort, Lake Lyell, Lithgow, 1995-1996
- Eco-tourist Resort, Kangaroo Valley, 1995-1997
- Educational Partnerships, Blackheath, 1995-1996;
- Hideaway Cabins, Megalong Valley, 1995
- Jemby-Rinjah Lodge, Blackheath, 1993-present;
- The Last Resort, Woolamai, 1993-4.

Other projects

- Burning Log Restaurant, on-site wastewater management, Dural, 2002-2003.
- Transitional Group Home for Young Ladies with Eating Disorders, Glenorie, 2000-2001.
- New Town Development, Canterbury Region, New Zealand (Pegasus Bay Coastal Estates) Peer Reviewer, 1997-8
- Aura-Soma Centre, Blackheath. Design of sullage treatment and on-site water supplies, 1993-4.
- Palane Boarding Kennels, Hazelbrook Design of treatment system for runoff from kennels, 1993.
- Holsworthy High School (Public Works Department) Design and documentation of diversion of sewer line, 1993.
- Buxton Public School (Public Works Department) Redesign of on-site waste disposal system, 1992.
- Bundagen Cooperative Preparation of plan of management for on-site waste disposal & treatment, 1992-5.
- Warri Beach Sewerage (Water Board) Investigation of feasibility of Niimi sewage treatment system, 1990.
- Pacific Palms Sewerage Strategy Study (Public Works Department) Assessment of options for consideration by Council, 1990.
- Barren Grounds Bird Observatory, Jamberoo (Royal Australasian Ornithological Union) Advice on provision of low-cost sewerage system with minimal pollution, 1990.
- Govetts Leap Lookout, Blue Mountains National Park (National Parks and Wildlife Service) Advice on provision of low-cost sewerage system with minimal pollution, 1990.

1982-83: Completed doctorate in environmental economics and environmental management.

1981-82: SINCLAIR KNIGHT & PARTNERS

Project Manager, Water Engineering Section: Economic Evaluation of Flood Mitigation Proposals (Department of Environment and Planning): Setting out a manual of procedures for evaluating the economic (cost-benefit) effects of flooding, and of the various options for mitigating these effects.

1979-81: NEXUS ENVIRONMENTAL STUDIES

Senior Environmental Engineer, engaged primarily on studies and planning for proposed oil shale mines in Queensland:

Rundle Oil Shale: Responsible for all aspects of the natural environmental planning and studies. Work included mine planning, environmental aspects of water management, terrestrial and marine ecology, design and layout of waste dumps, transport corridors, and air and water quality.

Condor Oil Shale: Responsible for all aspects of the natural environmental planning and studies. Work included mine planning, environmental aspects of water management (terrestrial and coastal), terrestrial and marine ecology, design and layout of 300-metre high waste dumps covering 100 sq.km, transport corridors, relocation of an airport, relocation of waterways, relocation of residential areas, and air and water quality.

Stuart Oil Shale: Preliminary feasibility study of all aspects of the natural and social environment.

Geelong Marina: Feasibility study of floating tyre breakwater, and analysis of wave climate at Geelong and Port Phillip Bay.

1976-69: UNIVERSITY OF N.S.W.

Doctoral Research Fellow, and tutor in multi-objective planning and systems engineering.

1972-76: PUBLIC WORKS DEPARTMENT, W.A.

Resident Engineer, in charge of Engineering Research Station, investigating hydraulic and geomechanical problems.

1965-72: PUBLIC WORKS DEPARTMENT, N.S.W.

1967-72 Hydraulics and Soils Laboratory, second in charge from 1968. Also responsible for a range of hydraulic and structural model studies.

1965-67 Assistant to Resident Engineer, Hume Reservoir, investigation of and construction for improvements to security of dam.

PUBLICATIONS

- Progress report on a structural model of a post-tensioned dam Symposium on Structural Models, University of Sydney, 1972.
- Sediment movement in Port Hedland Harbour M.J. Paul and T.L. Lustig, 2nd Australian Conference on Coastal and Ocean Engineering, Institution of Engineers, Australia, 1977.
- Aeolian-induced cyclic meandering of an ephemeral deltaic river mouth 3rd Australian Conference on Coastal Engineering, Institution of Engineers, Australia, 1978.
- Systems engineering: selected reports by students, 1977. T.L. Lustig and S.J. Symonds (Eds.), School of Civil Engineering, University of N.S.W., 1978.
- Project evaluation with thermodynamics? Environmental Engineering Conference, Institution of Engineers, Australia, 1978.
- Planning criteria to cope with the entropy crisis M. Diesendorf (Ed.) Energy and people: social implications of different energy futures. Society for Social Responsibility in Science, Canberra, 1979.
- A systems approach to environmental engineering and planning. T.L. Lustig and R.N.Hirst, Conference on the Marine Environment Townsville 1981, Institution of Engineers, Australia.
- Towards a thermodynamic basis for environmental management. Ph.D. thesis, Uni. of N.S.W., 1983.
- Tangible urban flood damage: an outline manual D.I. Smith, T.L. Lustig and J.W. Handmer, 2nd National Local Government Engineering Conference, Brisbane, 1983. Reprinted in Yip, Y.H. and Low, K.S. (Eds.) Urbanization and ecodevelopment with special reference to Kuala Lumpur. Institute of Advanced Studies, University of Malaya, Kuala Lumpur, 1985.
- Multiple-objective water resources planning: two opposing views on objectives T.L. Lustig and D.T. Howell, Hydrology and Water Resources Symposium, Hobart, 1983.
- Choosing representative reference catchments. T.L. Lustig and T.J. Fatchen, Hydrology and Water Resources Symposium, Sydney, 1985.
- Towards a system of reference catchments in Eastern N.S.W. T.J. Fatchen and T.L. Lustig, National Parks and Wildlife Service, Sydney, 1986.
- An engineering approach to identifying key environmental factors: the environment as a set of heat engines. National Environmental Engineering Conference, 1986, Melbourne.
- An approach to assessing the effectiveness of urban floodplain management in Australia D.I. Smith, J.W. Handmer and T.L. Lustig Hydrology and Water Resources Symposium, 1986, Brisbane.
- Estimating actual from potential flood damages, and assessing alternative floodplain management strategies. T.L. Lustig, J.W. Handmer and D.I. Smith Hydrology and Water Resources Symposium, 1986, Brisbane.

- Assessing intangible flood damages for evaluating urban floodplain management options. J.W. Handmer, T.L. Lustig and D.I. Smith, Hydrology and Water Resources Symposium, 1986, Brisbane.
- The Sydney Floods of 1986 - losses, payouts and the future. D.I. Smith, M.A. Greenaway, J.W. Handmer and T.L. Lustig, 27th Annual Conference of Flood Mitigation Authorities of New South Wales. Penrith, 1986.
- The Sydney Flood Warning System, August, 1986. J.W. Handmer, M.A. Greenaway, T.L. Lustig and D.I. Smith, 27th Annual Conference of Flood Mitigation Authorities of New South Wales. Penrith, 1986.
- The Sydney Floods of 1986: Warnings, Damages, Policy and the Future. J.W. Handmer, D.I. Smith and T.L. Lustig, Hydrology and Water Resources Symposium, 1988, Canberra.
- Losses and Lessons from the Sydney Floods of August, 1986. T.L. Lustig, D.I. Smith, J.W. Handmer and M.A. Greenaway, CRES, ANU, Canberra, 1990.
- Professional interactions between the NSW Public Works Department, the consulting engineer, and vertebrate and aquatic ecologists in ameliorating the effects on the Duckmaloi Platypus. D. Goldney, T.L. Lustig, W.S. Rooney and P. Russell, Workshop on Biology, Conservation and Captive Management (Eds.) D.P. Woodside and F.D. Fanning, Taronga Zoo, Mosman.
- Social and Economic Effects of Floods T.L. Lustig and T.M. Haeusler, 29th Annual Conference of Flood Mitigation Authorities, Batemans Bay, 1989.
- Environmental education for engineers: an Australian viewpoint. Co-author as member of Environmental Education Subcommittee of Environmental Engineering Panel of Sydney Division of Institution of Engineers. Reprinted in *The Environmentalist* 9, 3, 197-200.
- Floodplain Management in New South Wales and New Zealand: lessons from a study of similarities and differences. T.L. Lustig and D. Bewick. Hydrology and Water Resources Symposium, 1989, Christchurch.
- Summary of Proceedings: Seminar on environmental legislation and its impact on management, October, 1987. Co-editor. Sydney Division, Institution of Engineers, Australia, 1989.
- Treatment of sewage closer to home. Effluent Re-use Conference, Water Research Foundation, Wollongong, 1990.
- Flood Insurance - A Social Blessing? 30th Annual Conference of Flood Mitigation Authorities, Wollongong, 1990.
- A case for composting toilets. *Owner Builder* 44, April/May, 1991.
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