

Bell Bay Pulp Mill Project

APPENDIX 1 of WITNESS STATEMENT

Mr. David Balloch

Curriculum Vitae of Mr. David Balloch

January 2007



EnviroGulf Consulting

David Balloch – CV

Year of birth: 1950

Nationality: Australian, EU

Qualifications: B.A. Honours (Biology), University of Stirling, Scotland.
M.Sc. (Biology of Water Management), University of Aston, England.

Present Position: Managing Director, EnviroGulf Consulting.

Affiliations: Member, MICA; Member, AusIMM; Member, IBiol; Member, AIBiol;
Member, ASE; Member, ACRS; Chartered Biologist, CBiol; Chartered
Professional Environmental (CPEnv).

Expertise areas: Project management; integrated environmental planning, management
and troubleshooting; environmental management systems, environmental
impact assessments; water quality and aquatic ecotoxicology;
environmental monitoring; environmental audit; ecological risk
assessment; and environmental and peer reviews.

Speciality areas: Marine impacts of offshore oil and gas exploration and operations;
aquatic biological impacts of mining wastes and wastewaters. marine
biological impacts of ac and dc electromagnetic fields; aquatic biological
impacts of cyanides; and, marine biological impacts of underwater noise.

EXPERIENCE

2006 to present

Managing Director, EnviroGulf Consulting, Dubai, United Arab Emirates.

Currently establishing EnviroGulf Consulting in Dubai, UAE, and marketing in Gulf Cooperation Council (GCC) countries (Saudi Arabia, Kuwait, Bahrain, Qatar, Oman and the UAE) and internationally.

Bell Bay Pulp Mill Project (2006 to date) – Independent peer review expert to Freehills in preparing its case for the Resource Planning and Development (RPDC) Panel Inquiry into the Draft Integrated Impact Statement (Draft IIS) for the Bell Bay Pulp Mill Project, Tasmania (to Freehills for Gunns Limited).

1991 to 2006

Director, David Balloch & Associates Pty. Ltd., Environmental Consultants.

PNG Queensland Gas Pipeline Project (2006) – Critical review and edits of the Marine Survey Report on the Pipeline Route Alignment Options through the Warrior Reefs System in Torres Strait, Australia (to Enesar Consulting Pty Ltd for AGL Petronas Consortium).

PNG Gas Project (2005-2006) - Construction and operational phases: Water Quality and Sedimentation Management Study. Environmental impact assessment of road construction and gas pipeline installation on river, stream and lake water quality, and the aquatic biological communities and aquatic resource uses of the Kikori and Omati river systems. Assistance in the preparation of an Environmental Impact Statement (EIS) and Environmental Management Plan (EMP) for the onshore section of PNG Gas Project, Papua New Guinea (in association with Enesar Consulting to Esso Highlands Limited / ExxonMobil).

Environmental Plan for 2D Seismic Surveys, Bonaparte Basin (2005) - Environmental impact assessment, risk assessment and the setting of environmental performance objectives and targets for 2D seismic surveys in the Joseph Bonaparte Gulf, Western Australia. Work included the preparation of reports meeting Commonwealth and State regulatory requirements (in association with Enesar Consulting to Eni Australia Limited).

Koniambo Nickel Project (2004-2005) - Phase I Sediment Impact Study: Assessment of the potential impacts of total suspended sediment (TSS) concentrations on freshwater habitats and aquatic life, and formulation of TSS Effects Threshold Criteria for the protection of aquatic life (to Roche Limited Consulting Group for Falconbridge Nouvelle-Calédonie).

Offshore Oil Production Facilities Environmental Upgrade (2003-2004) - Assessment of current oily waste and wastewater discharges from offshore oil and gas production, Gas and Oil Separation Plant (GOSP) and tie-in platforms and determination of compliance with local and international effluent and receiving water quality standards. Assessment also provided conceptual process engineering design solutions for platform upgrades in Saudi Aramco's Northern Area Oil Operations (NAOO) (in association with ABB Lummus Global B.V. to Saudi Consulting and Design Office (SCADO) for Saudi Aramco, Oil Facilities Planning Division).

Offshore Seismic Program (2003) - Technical review, edit and contributions to Seafood Industry Victoria report on "Potential Effects of Seismic Noise on Southern Rock Lobster Larvae" from underwater noise generated by proposed offshore seismic surveys along the southwest coast of Victoria, Australia (to Santos Limited).

Otway Drilling Project (2003) - Assessment of the effects of underwater noise from proposed offshore drilling and associated supply vessels and helicopters on cetaceans along the Bonney Coast upwelling off Victoria, Australia (to Santos Limited).

Environmental Impact of Marine Electromagnetic Sounding (2003) - Assessment of the effects of underwater noise and ac electromagnetic fields on marine life (plants, invertebrates, fish, marine mammals, birds and sea turtles) from active electromagnetic (EM) sounding surveys (to Offshore Hydrocarbon Mapping Limited, Aberdeen, UK.).

Basslink Project (2000-2003) - Assessment of construction environmental impacts of HVDC cable installation and sea electrode emplacement and operational environmental impacts (electric fields, magnetic fields, chlorine-produced oxidants and halogenated organic compounds, and heat generation) on marine water quality, flora, fauna and marine resource use (with NSR Environmental Consultants Pty. Ltd for Basslink Pty. Ltd.).

Sepon Gold Project (2001) - Environmental issues and sensitivities of the Sepon Gold Project, Sepon, Lao Peoples Democratic Republic. Review of aquatic environmental impact assessment for preparation of an Environmental and Social Impact Assessment (ESIA) (to NSR for Oxiana Resources NL).

Morobe Gold Project (2000) - Assessment of riverine biological and aquatic resource use impacts of constructing an open cut gold mine and tailing storage facility (to NSR Environmental Consultants Pty. Ltd. for Morobe Goldfields Consolidated).

Basslink Project (2000) - Site visit to transmission system operators of proposed and existing subsea high voltage DC interconnectors in Sweden, Norway, Denmark and The Netherlands and assessment of environmental effects on the marine environment (with NSR for National Grid International Limited).

Ramu Nickel Project (1998-99) - Riverine, coastal and deep-sea environmental impact of lateritic nickel mining wastes and wastewaters (to NSR Environmental Consultants Pty. Ltd. for Highlands Pacific Limited).

Review of Ultrafiltration Technology for Marine Oily Water Separation (1998) - Research and development of marine oily-water separator based on ceramic membrane ultrafiltration technology (to Dr. Baer Verfahrenstechnik GmbH).

Analysis of public submissions on the IFA process (1996) - Analysis of public submissions on the Interim Forest Assessment process in New South Wales and production of report (to Resources and Conservation Assessment Council, NSW).

Sabbatical (1995) - Aquatic Biological Pollution Research.

Queanbeyan and Badja Management Areas Environmental Impact Statement (1994) - Preparation of an EIS for proposed forestry operations in Queanbeyan and Badja Management Areas, southeast New South Wales (to State Forests of New South Wales).

BHP/Ok Tedi Mining Limited Legal Proceedings (1994) - Expert witness for BHP/Ok Tedi Mining Limited in relation to aquatic biological and resource effects of the Ok Tedi Copper/Gold Mine, Western Province, Papua New Guinea (to Arthur Robinson & Hedderwicks, Solicitors & Notaries for Ok Tedi Mining Limited).

Nena Copper/Gold Prospect (1994) - Site visit report and review of environmental sensitivities and issues of the Nena Copper/Gold Prospect, northwest Papua New Guinea, including preparation of an aquatic biological and aquatic resource use baseline survey (to Environmental Management & Monitoring Pty. Ltd for Highlands Gold Limited, Papua New Guinea).

Eden Management Area Environmental Impact Statement (1994) - Revision of draft Environmental Impact Statement (EIS) and preparation of a new EIS for forestry operations proposed in Eden Management Area, southeast New South Wales (to Margules Groome & Pöyry Pty. Ltd. for State Forests of New South Wales).

Environmental Applications (1994) - Reviews and report on potential environmental applications of patented technologies - electroflotation process for oily-water separation within the onshore and offshore oil and gas industry (for P& J Process Engineering Pty. Ltd.).

Tolukuma Gold Project (1993) - Assessment of the aquatic biological and resource use effects of mine-derived sediments entering the Angabanga River system, Papua New Guinea (to NSR Environmental Consultants Pty. Ltd. for Dome Resources).

Horn Island Environmental Review (1993) - Assessment of trace metal concentration data for mangrove cockles (*Polymesoda erosa*) and marine sediments in relation to metal-contaminated runoff from a former gold mining site on Horn Island, Torres Strait (for Queensland Department of Minerals & Energy).

Grafton Environmental Impact Statement (1994) - Assessment of aquatic environmental effects of road construction and timber harvesting in the Grafton Forest District of northern New South Wales (to Margules Groome & Pöyry Pty. Ltd for Forestry Commission of New South Wales).

Casino Environmental Impact Statement (1994) - Assessment of aquatic environmental effects of road construction and timber harvesting in the Casino and Murwillumbah Forest Districts of northern New South Wales (to Margules Groome & Pöyry Pty. Ltd for Forestry Commission of New South Wales).

Boral (SEPL) Environmental Impact Statement (1993) - Assessment of aquatic environmental effects of timber harvesting in the coastal region of northern New South Wales by Sawmillers Exports Pty. Ltd. (SEPL) (to Margules Groome & Pöyry Pty. Ltd. for BORAL Timber Division).

Torres Strait Baseline Study (1993) - Technical review, statistical analyses and interpretation of baseline results from the Torres Strait Scientific Baseline Program (to Ok Tedi Mining Limited, Papua New Guinea).

Sansu Gold Project (1992) - Stage I review report for an open-pit mining runoff study for the Sansu Project at Obuasi, Ghana (to Ashanti Goldfields Corporation).

Lihir Gold Project, Papua New Guinea (1991) - Lower Londolovit River Management Study. Assessment of the potential effects of regulated river flows likely to result from a water supply scheme on downstream aquatic biology, subsistence fisheries and land resources (with NSR Environmental Consultant Pty. Ltd. for Kennecott-Niugini Mining Joint Venture).

Porgera Gold Mine (1991) - Critical appraisal of review by Department of Environment & Conservation (PNG) of the environmental baseline and compliance monitoring program of Porgera Gold Mine (to NSR Environmental Consultants Pty. Ltd. for Porgera Joint Venture).

1987 - 1991

Associate Director, NSR Environmental Consultants Pty. Ltd., Melbourne

Kutubu Petroleum Development Project (1991) - Preparation of an environmental management and monitoring program for the Kutubu Petroleum Development Project, PNG (with NSR for Chevron Niugini Pty. Ltd.).

Effects of Mining on the Ghanaian Environment (1991) - River environment impact assessments of five Ghanaian operating mines and formulation of guidelines for draft legislation to minimise the effects of new mining developments on the Ghanaian environment (with NSR for Minerals Commission, Government of Ghana).

Vanimo-Aitape Road Project (1990) - Environmental impact assessment of construction-derived sediments from various road route options on coastal streams and rivers of West Sepik Province, PNG (with NSR for Maunsell Consultants, PNG).

Henty Gold Project (1990) - Environmental impact assessment of the effects of construction-derived sediments and residual cyanides on the Henty River and negotiation of discharge and ambient cyanide criteria (with NSR for RGC (Tasmania) Limited).

East Perth Gasworks Site Rehabilitation (1990) - Planning and implementation of surveys for estuarine waters, bed sediments and associated fauna for environmental impact and risk assessment of polynuclear aromatic hydrocarbons in groundwater and surface runoff from a former gasworks site contaminating the Swan River, Western Australia (with NSR for Camp. Scott & Furphy Pty. Ltd.).

Kerimenge Gold Project (1990) - Preliminary environmental impact assessment of the effects of the proposed open cut gold mine at Kerimenge on Kwembu Creek and the Bulolo River system, Morobe Province, PNG (with NSR for Renison Goldfields Consolidated).

Mount Victor Gold Mine (1990) - Assessment of the impact of residual cyanides on water quality and aquatic life, and giving technical advice on the use of hydrogen peroxide treatment for detoxifying cyanides in tailing supernatant prior to disposal to the receiving river system (with NSR for Niugini Mining Limited).

Hidden Valley Gold Project Environmental Plan (1989) - Environmental impact assessment of potential river biological effects arising from the direct discharge of tailing and/or tailing supernatant (with NSR for CRA Gold Pty. Ltd.).

ANM Boyer Pulp and Paper Mill (1989) - Analysis and interpretation of process effluent and metal residues in the River Derwent and environmental consequences of river dredging operations (with NSR for Benders Civil Developments Pty. Ltd.).

Mount Victor Gold Project Environmental Plan (1988) - Environmental impact assessment of constructing and operating a small gold mine in Eastern Highlands Province, PNG (with NSR for Niugini Mining Ltd.).

Northshore Noosa Project Local Government Appeal (1988) - Sewage effluent management and assessment of water quality impacts on the Noosa River estuary from sewage effluent runoff from watering a proposed gold course and expert witness at legal proceedings (with NSR for Henderson Trout for Leisuremark Australia Pty Ltd.).

1985 - 1987

Associate, NSR Environmental Consultants Pty. Ltd.

Northshore Noosa Project (1986) - Review of sewage effluent management options and assessment of potential water quality impacts on the Noosa River, Queensland (with NSR/Maunsell & Partners for Leisuremark Australia Pty., Ltd.).

Southern Forests Project (1986) - Assessment of ships' ballast and plant effluent disposal and associated discharge permits from an integrated flitch recovery sawmill and woodchip export facility near Geeveston, Tasmania (with NSR for Huon Forest Products Joint Venture).

Beaconsfield Gold Mine (1989) - Environmental assessment of the toxicity of cyanidation tailing and tailing pond cyanogenic supernatant and prediction of potential environmental effects on the Tamar Estuary, Tasmania (with NSR for John Miedecke & Partners Pty. Ltd.).

Bukit Young Goldmine (1989) - Assessment of water and wastewater management, disposal and detoxification of cyanided gold mill and heap leach effluents from the Bukit Young Gold Mine, Sarawak, Malaysia (with NSR for Middle East Timber Company, Singapore).

Port Moresby Industrial Port Study (1986) - Assessment of the marine biological effects of constructing and operating a proposed copper concentrate transshipment terminal within Port Moresby's Halifax Harbour (with NSR for PNG Harbours Board).

Butler Transport Chemical Fire (1986) - Assessment of the impact and potential toxicity of leachate from contaminated soil remaining on site after clean-up operations on aquatic life in a tidal channel and Dynon Road Wildlife Reserve (with NSR Environmental Consultants Pty. Ltd.).

Misima Gold Project Environmental Plan (1985-86) - Assessment of the marine biological effects of at-depth marine tailing disposal and near-surface dumping of soft oxidised waste, on the basis of aeration-dilution and bioassay tests, field dump trials and predictions of waste transport and dispersion (with NSR for Placer (PNG) Pty. Limited).

Porgera Gold Project Environmental Plan (1985-86) - Assessment of river biological effects of mill tailing and mine waste disposal, based on laboratory aeration-dilution and bioassay tests and river transport modelling (with NSR for Placer (PNG) Pty. Limited).

King River Power Development (1985) - Assessment of lake environmental effects of different options for the control of acid mine drainage from Mt. Lyell Mine on a new hydro-electric storage in western Tasmania (with NSR for Hydro-electric Commission of Tasmania).

Goonumbla Copper/Gold Project (1985) - Water quality review and revised program for the assessment of mine water and wastewater management options for Goonumbla Mine, Parkes, (NSW) (with NSR for Peko-Wallsend Ltd.).

1982 - 1985

Senior Environmental Biologist, Ok Tedi Mining Limited (PNG).

Established and operated a biological monitoring program for the Fly River system designed to measure the significant environmental impacts arising from the construction and operation of the Ok Tedi open cut gold/copper mine, Tabubil, Western Province, PNG.

Responsibilities included both laboratory and field experimentation in the areas of water quality assessment, physicochemical and biological analyses of waters, biological monitoring, fisheries assessments, in situ toxicity testing, environmental ecotoxicology of trace metals and cyanides, and water pollution control. Pollutants at issue included metals (e.g., Cu, Pb, Cd and Cr) and residual cyanides in mill tailing discharges, and sediment waste from construction and mill tailing disposal.

An environmental impact study was also carried to assess the effects of proposals for an ocean port for the transshipment of copper concentrate from Daru, involving assessment of the effects of copper concentrates, dredge spoil sediments and accidental spillages of hydrocarbons on mangrove communities and tidal mud flats.

1977 - 1980

Project Manager and Research Fellow, Applied Hydrobiology Research Station, England.

Responsible for contract research investigations of the long-term effects of oxidised sewage effluent containing heavy metals on experiment stream ecosystems. Contaminants at issue were cadmium, lead, chromium, nickel, copper and zinc. Studies included assessments of the long term effects on algae, macroinvertebrates and fish (eggs, larvae, juveniles and adults).

Protracted in situ toxicity testing was carried out and related to water quality based on 15-minute water sampling.

1975 - 1977

Contract Officer and Research Hydrobiologist, Applied Hydrobiology Research Station, England.

Responsible for conducting long-term experiments on the effects of metal-contaminated sewage effluent on algae and benthic macroinvertebrate communities resident in simulated stream ecosystems.

PUBLICATIONS/REPORTS

- Balloch, D. (1993). Aquatic environment survey. Supplementary Report, Grafton Management Area Environmental Impact Statement, Forestry Commission of New South Wales.
- Balloch, D. (1993). Aquatic environment survey. Supplementary Report, Casino Management Area Environmental Impact Statement, Forestry Commission of New South Wales.
- Balloch, D. (1985). Procedures for the toxicity testing and monitoring of mining wastewaters. Ok Tedi Mining Limited, Papua New Guinea. Technical Report No. PA/03/85-6.
- Balloch, D. (1984). Optimisation of the hydrogen peroxide treatment of mine wastewaters containing residual cyanides. Ok Tedi Mining Limited, Papua New Guinea. Technical Report No. PA/03/84-30.
- Balloch, D. (1984). The effects of particulate and dissolved copper on aquatic organisms. Ok Tedi Mining Limited, Papua New Guinea. Technical Report No. PA/03/84-29.
- Balloch, D. (1984). The interim tailings system and waste disposal strategies - Environmental impact assessment. Ok Tedi Mining Limited, Papua New Guinea. Technical Report No. PA/03/84-23.
- Balloch, D. (1984). Toxicity of cadmium and a review of water quality criteria. Ok Tedi Mining Limited, Papua New Guinea. Technical Report No. PA/03/84-13.
- Balloch, D. (1984). Interim tailings system - predicted environmental impact. Ok Tedi Mining Limited, Papua New Guinea. Technical Report No. PA/03/84-9.
- Balloch, D. (1980). Effects of an oxidised sewage effluent on freshwater fisheries. Summary Report, University of Aston in Birmingham; 127 pp.
- Balloch, D. (1973). Effects of a paper mill effluent on the water quality and biota of the River North Esk, Scotland. Technical Report to Lothians River Purification Board, Midlothian.
- Balloch, D. Davies, C.D. and Jones, F.H. (1976). Biological assessment of water quality in three British Rivers: The North Esk (Scotland), the Ivel (England) and the Taf (Wales). *Wat. Pollut. Control* 75(1): 92-114.
- Hortle, G.H., Balloch, D. and Maie, A.Y. (1990). Marine benthic fauna, sediment and trace metals near Daru Island, Western Province, Papua New Guinea. *Science in New Guinea*, 16(1): 1-12.

AFFILIATIONS

Member, Minerals Industry Consultants Association (MICA)
Member, Australasian Institute of Mining and Metallurgy (AusIMM)
Member, Australasian Society for Ecotoxicology (ASE)
Member, Australian Coral Reef Society (ACRS)
Member, Australian Institute of Biology (AIBiol)
Member, Institute of Biology (IBiol) U.K.

Chartered Biologist (CBiol) U.K.
Chartered Professional Environmental (CPEnv)