

**Planning Panels Victoria**  
**Expert Witness Statement of *Neville John Rosengren***

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**1 Name and address**

Neville John ROSENGREN  
Bute Road RD9  
Mangapakeha, Masterton 5889  
New Zealand

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**2 Qualifications and experience**

- (a) I have undergraduate qualifications (B.Com) (Melb), Diploma Applied Geology (RMIT) and a Master of Arts (Honours) in Geography (Melb), with a research thesis on aspects of coastal geomorphology in Victoria. This research included studies of Lake Connewarre and the coast of East Gippsland. I have undertaken Ph.D. research on coastal geomorphology in Indonesia and New Zealand.
  - (b) For 45 years I have been involved in study, teaching, research and consultancy in Earth Science specialising in the evolution of landforms in southeastern Australia. Through this work, I have gained detailed knowledge of the geology and geomorphology of the coast of Victoria.
  - (c) My qualifications and experience are detailed in Annexure A.
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**3 Area of expertise to make this statement**

I have expertise in coastal geomorphology and in the evaluation of significant geological and landform features and the development of principles to conserve these features. I have expertise on the geology and landforms of the Bellarine Peninsula. I have gained that expertise as set out in (a), (b), (c) and (d) below.

- (a) Undergraduate and post-graduate studies at the University of Melbourne (1965-1971) including a M.A. (prelim) study of Lake Connewarre.
  - (b) As a member of academic staff (Senior Demonstrator, Lecturer, Research Fellow) at Melbourne University Department of Geography between 1970 and 1987, and subsequently Latrobe University Faculty of Science, Technology and Engineering (Lecturer then Senior Lecturer 1991 – 2009), my teaching duties were primarily preparing and delivering lectures, practical and field classes in the geology and geomorphology of Victoria including coastal localities. I have supervised undergraduate, honours and post-graduate students undertaking studies of the coastal geomorphology of the Bellarine Peninsula. I am now an Honorary Associate of LaTrobe University.
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- (c) As a Research Fellow at the University of Melbourne (1978 – 1987), I directed a research team developing and applying methodologies for determining the scientific significance of places with geological and geomorphological features important in displaying the character and evolution of Earth. These places have importance to the academic and scientific community as teaching and research sites (geoscience sites) in earth science, and as interpretation sites displaying variation and character of landscapes for non-specialists and management authorities. I have published a number of papers and reports (listed in the CV appended to this statement), the most relevant to this expert witness statement being: Rosengren N.J. (1988) *Sites of Geological and Geomorphological Significance on the coast of Port Phillip Bay*. Ministry for Planning and Environment, Victoria, Environmental Studies Publication 320. (628 pages). I have visited geological and landform sites on the Bellarine Peninsula, including Lake Connewarre and Murtnaghurt Lagoon many times either with students on earth science field classes, or for the purposes of evaluating geoscience sites. My most recent visit was to Murthaghurt Lagoon on Nov. 1 2009 specifically to update my knowledge of the site character and condition in preparation of this expert witness statement.
- (d) I am a member of the Geological Society of Australia Geological Heritage Subcommittee. One of the current projects of that committee is to prepare an assessment of the geoheritage values of the Bellarine Peninsula.
- I have consulted relevant literature, maps and aerial and space images as detailed below. Assessment of the geological and geomorphological features and significance of the area is based on my extensive experience in geoscience assessment methodology and application, and contributions I have made to Environmental Effects Statements (Detailed in Annexure A).

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## 4 Scope

I have been requested by the Environmental Defenders Office, Victoria and the Save Barwon Heads Alliance to:

- Outline the geology, geomorphology and landscape evolution of the Bellarine Peninsula.
- Outline the geomorphology, evolution and fluvial and tidal processes of the Barwon River and associated wetlands between Reedy Lake and the estuary entrance at Barwon Heads.
- Give details of the geomorphology and suggested evolution of the area known as Lake Murtnaghurt, including associated wetlands and palaeochannels in the context of the Bellarine Peninsula and Barwon River fluvial and tidal systems.
- Provide an assessment of the geoscience significance of the areas described above with particular reference to the environs of Lake Murtnaghurt and associated and adjacent landforms.

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## 5 Other significant contributors to this statement and their expertise

None. This statement and accompanying report was researched and written by Neville Rosengren.

It is based on my knowledge of the geology and geomorphology of the coast of Victoria, and specifically of the Bellarine Peninsula.

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## 6 Report on Findings

My findings are set out in the accompanying report:

*Murtnaghurt Lagoon, Bellarine Peninsula & Related Landforms  
Nature, Origin & Geoscience Significance.*

Neville Rosengren

La Trobe University & Environmental GeoSurveys

Prepared for: Save Barwon Heads Alliance

November 2009

In preparing the report, I:

- made a literature search for relevant information
- undertook a number of ground inspections of the site and surrounding area
- examined vertical aerial photographs of the site and surrounding area
- reviewed maps of topography, geology, acid sulphate soil occurrence
- made a low level aerial survey for inspection and photography 19 June 2009.

I adopt the findings and conclusions of my report.

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## 7 Declaration

I have made all the inquiries that I believe are desirable and appropriate and no matters of significance which I regard as relevant have to my knowledge been withheld from the Panel.



**Neville Rosengren**

19 November 2009

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## Annexure A - Qualifications

### Relevant Qualifications

Diploma Applied Geology (RMIT, 1969)

M. A. (Prelim) (Melb, 1972) Geomorphology of Lake Connewarre and Lower Barwon Estuary.

M.A. Hons Hons (Melb, 1978) Thesis: Coastal dunes of eastern Victoria

Ph. D. study United Nations University; Coastal and Volcanic geomorphology of the Krakatau Islands

Ph.D. (in progress) Thesis: (Tectonics and Coastal Landform Evolution, Wairarapa Coast, New Zealand )

### Professional associations

Geological Society of Australia (general member)

LAVA (Learned Australian Vulcanologists Association)

Honorary Associate, LA Trobe University

### Employment history and achievements

#### 1986 – Current:

Managing Director, Environmental GeoSurveys Pty Ltd  
(*Environmental consulting company*)

#### 1991 – 2009

Senior Lecturer: Environmental Geoscience  
(Geology & Environmental Science  
LaTrobe University)

#### 1986 – 1991

Lecturer  
(Dept of Geography Melb State College)  
(Dept Landscape Architecture RMIT)

#### 1969 - 1986

Tutor, Lecturer, Research Fellow  
(Depts. Geography, Geology,  
University of Melbourne)

#### 1963-1968

Teacher, Altona High School

### MAJOR PROFESSIONAL ACHIEVEMENTS

Since completing a Masters research thesis on the geomorphology of the Gippsland coast in 1977, and subsequent Ph.D. studies on coastal change in Indonesia and Nw Zealand, I have been involved in many projects assessing environmental values and environmental change. I have been a consultant to a number of State and Commonwealth Government agencies and major private sector environmental consulting firms and for

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several years was senior environmental consultant to the United Nations University programme on coastal resources management in Indonesia. I have extensive experience in project formulation and have worked as a team member or as the manager of major multidisciplinary environmental assessment projects.

**Since 1978, I have been engaged as principal or sole investigator for studies of features of Geoscience significance. These studies have covered most areas of Victoria.**

Some major clients for geoscience studies include:

- Department of Conservation and Natural Resources, Victoria (and antecedent organisations dating back to 1971)
- Land Conservation Council, Victoria
- Australian Heritage Commission
- Alpine Resorts Commission, Victoria
- Ministry for Planning and Environment, Victoria
- Western Region Commission, Inc
- Ecology Australia P/L
- GHD Pty Ltd
- Kinhill Engineers Pty Ltd
- Australian Groundwater Consultants P/L
- Tract Consultants P/L
- Biosis Research P/L
- NSR Environmental Consultants Pty Ltd
- National Institute of Oceanology, Indonesia
- National Parks Service (Victoria and New South Wales)

I am the author of over 40 published reports and scientific papers including refereed publications in:

Geological Society of Australia Special Publication  
Royal Society of Victoria  
Philosophical Transactions, Royal Society of London  
Journal of Coastal Research  
Aust Journal of Marine Science  
Victorian Naturalist  
Bulletin, National Institute of Oceanology, Indonesia  
Proceedings, National Institute of Science, Indonesia.

My expertise in Geomorphology (specially coastal and volcanic features and geoscience conservation) is evidenced by my current or recent membership of the following:

Member (and sometime Chair): Australian Heritage Commission Natural Environment Evaluation Panel (Victoria)

Member: Geological Society of Australia (Vic) Geological Heritage Subcommittee.

Member: Working Group – Victorian Coastal Council Draft Legislation

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Member: Land Conservation Council, Technical Advisory Committee – Victorian Coastal Review

Member: Senior Scientists Panel – Victorian Coastal Council.

## SELECTED PUBLICATIONS AND REPORTS

### CHAPTERS IN BOOKS

1975 Landform and relief units of Phillip Island. In Seddon G. (ed.) Phillip Island, Capability, Conflict and Compromise, Centre for Environmental Studies, Univ. of Melb., Pub. No 4, 17-25

1976 Victoria, coastal and mountain regions: Victorian Year Book 29-34

1988 Geology and geomorphology of the eastern coastline of Westernport Bay. In I. Clark and B. Cook (eds) Victorian Geology Excursion Guide Aust. Acad. of Sc., Canberra, 289- 308

1994 'The Newer Volcanics Province of Victoria, Australia: the use of an inventory of scientific significance in the management of scoria and tuff quarrying', in Geological and Landscape Conservation, eds O'Halloran, M., Green, C., Harley, M., Stanley, M., & Knill, J., Geological Society, London.

2003 Geomorphology (joint author), In. Birch, W. (Ed) Geology of Victoria. Geological Society of Australia Special Publication 23.

----- Heritage and Conservation (joint author), In. Birch, W. (Ed) Geology of Victoria. Geological Society of Australia Special Publication 23.

### JOURNAL PAPERS

1971 The disappearing Mitchell delta, Proc. Roy. Soc. Vic. 84(1) 153-162 (with E.C.F. Bird)

1973 Conservation problems at Black Rock Point, Vic. Nat. 90 (9) 16-21 (with E.C.F. Bird and P. Cullen)

1974 Geomorphology of estuaries of East Gippsland, Victoria: Aust. Mar. Sc. Bull. 47 (3)28-9

-- Lake Connewarre and the Barwon estuary Vic. Res. 15 (3) 19-22

1981 Dune systems on cusped forelands, East Gippsland, Victoria Proc. Roy. Soc. Vic.. 92 (1 & 2) 137-147

1986 Changes in cliff morphology at Black Rock Point 1973-1986. Vic. Nat. 103 pp 106-13

1984 'The changing coastline of the Krakatau Islands, Indonesia' Zeitschrift fur geomorphologie N.F. 28 (3) 347-366 (with E.C.F. Bird)

1985 'The changing outline of Sertung, Krakatau Islands, Indonesia' Zeitschrift fur geomorphologie Suppl.-Bd 57 (4) 105-119

1987 'Coastal cliff management: an example from Black Rock Point, Melbourne, Australia J. Shoreline Management, 3 39-51 (with E.C.F. Bird)

1987 Coastal cliff management: an example from Black Rock Point, Melbourne, Australia J. Shoreline Management 3, 39-51 (with E.C.F. Bird)

### CONFERENCE PROCEEDINGS

1986 Mangroves and coastal morphology In UNESCO Workshop on Mangrove Ecosystems Dynamics, Port Moresby, 1985 17-28

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1994 Assessment of cliff hazards on the coast of Victoria. in Coast to Coast Conference 94, Hobart July 1994,

## *REPORTS*

1981 Sites of Geological and Geomorphological Significance in East Gippsland, Victoria. Ministry for Conservation, Victoria, Environmental Studies Series Publication No. 345, pp 675 (with M.S. McRae-Williams and S.M. Kraemers)

--Sites of Geological and Geomorphological Significance in the Shire of Portland, Victoria. Ministry for Conservation, Victoria, Environmental Studies Series Publication No. 364, pp 120 (with T. G. Shepherd and J. Mallen)

1984 Sites of Geological and Geomorphological Significance in the Shire of Otway. Ministry for Conservation, Victoria, Environmental Studies Series Publication No. 361. pp 320

--Sites of Geological and Geomorphological Significance in the Catchment of Westernport Bay. Ministry for Conservation, Victoria, Environmental Studies Series Publication No. 401, pp 513.

1985 Sites of Geological and Geomorphological Significance in the Catchment of the Gippsland Lakes. Ministry for Conservation, Forests and Lands Vic, Environmental Studies Series Publication No. 402, pp 399

1988 Sites of geological and geomorphological significance on the coast of Port Phillip Bay. Ministry for Planning and Environment, Victoria. 320

1987 Erosion risk assessment of the Lake Wellington catchment Report to the Land Protection Division, Department of Conservation Forests and Lands, Victoria. 52.

-- Point Nepean: Geology, Geomorphology, Significance, Interpretation. Report prepared for National Parks Service, Department of Conservation Forests and Lands, Victoria.

-- Coastline and coastal processes In Queenscliff Boating and Related Tourist Facilities Study. Report prepared for Loder and Bayly Ltd.

-- Salt Lagoon - Land use and Management Study. Report prepared for Loder and Bayly P/L

-- South Gippsland Marine Parks - Coastal planning study. Report prepared for Department of Conservation Forests and Lands, Victoria, Yarram Region.

-- Mornington Boating study - Existing Conditions Report prepared for Loder and Bayly P/L

-- Land systems at Portsea: re-zoning application. Report prepared for Australian Groundwater Consultants (Melbourne)

-- Lakeshore stability - Lake Victoria. Report prepared for Tract Consultants (Melbourne)

-- The National and International significance of the Australian Alpine Zone. Report prepared for Department of Conservation Forests and Lands, Victoria

1990 Geomorphology of the floodplain of the Mitchell River - Bairnsdale Planning Study Report for Tract Consultants

-- Impact of dredging at Port Welshpool on Little Snake Island. Report prepared for Department of Conservation Forests and Lands, Victoria

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-- Geological nominations for the National Estate, Australia. Report for Australian Heritage Commission

1993 Eruption points of the Newer Volcanics Province of Victoria - an inventory and evaluation of scientific significance. Report for National Trust of Australia (Victoria) and the Geological Society of Australia.

1992-4 Significance and natural features interpretation:

1. Entrance Point (Wilson's Promontory National Park) - for Dept. Cons. & Nat. Res., Victoria

2. Cape Bridgewater (Nelson/Discovery Bay National Park) - for Dept. Cons. & Nat. Res., Victoria

3. The Bluff (Barwon Heads Park) - for Committee of Management

4. Brighton foreshore - for Brighton City Council.

1995 Geological and Geomorphological Values of Six Lightstation Reserves in Victoria Department of Conservation and natural Resources

--Minerva Gasfield Development Natural Environment Study (Phase 2) Coastal Geomorphology - Two Mile Bay Sensitivity and Significance Analysis (Biosis Research Pty. Ltd)

--Evaluation of conservation significance of the former Altona Explosives Reserve. (Dept. of Treasury and Finance, Vic)

1996 Geology, Geomorphology and Coastal and Nearshore Dynamics (in) Frankston to Safety Beach Coastal Study: Report to Dept. Of Natural Resources & Environment.Port

Port Campbell National Park and Bay of Islands Coastal Reserve Management Plan (National Parks Service)

--Minerva Gasfield Development Natural Environment Study (Phase 2) Coastal Geomorphology - Two Mile Bay Sensitivity and Significance Analysis (Biosis Research Pty. Ltd)

--Evaluation of conservation significance of the former Altona Explosives Reserve. (Dept. of Treasury and Finance, Vic)

1996 Geology, Geomorphology and Coastal and Nearshore Dynamics (in) Frankston to Safety Beach Coastal Study: Report to Dept. Of Natural Resources & Environment.Port

Port Campbell National Park and Bay of Islands Coastal Reserve Management Plan (National Parks Service)

1998-9 Walkerville coastal study (Walkerville Foreshore Committee of Management)

1999 Westernport Values Assessment (for PPK P/L and Parks Victoria)

2000 Walkerville Lime Kilns Heritage & Conservation Study (Parks Victoria)

---- Geomorphology and Soils - Proposed Basslink Interconnector, Gippsland (Fisher Stewart P/L).

2001 Geomorphology and Land Systems of proposed pipeline route - Port Campbell to Adelaide (SeaGas). With Ecology Australia P/L.

2002 Terrain and soils of proposed wind turbine sites, Cape Bridgewater, and Yambuk, Victoria (for SinclairKnight Merz P/L).

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2003 Hazelwood Mine West Field Project Environment Effects Statement Geomorphology and Soils. Report prepared for NSR Environmental Consultants Pty Ltd

2004 Mount Hotham and Falls Creek - Underground storage tanks hydrogeological assessment of site sensitivity. report prepared for Arup Environmental & Planning Pty Ltd

2005 Terrain and soils of proposed wind farm - Macarthur. Report prepared for Meridian Energy Ltd.

2005 Geology and Geomorphology of the Mount Eccles lava flows: Report prepared for Ecology Australia P/L

2007-2008 Melbourne Desalination Plant, Wonthaggi. Geology, Geomorphology, Acid Sulphate Soils. Report prepared for GHD P/L.

2009 Erosion and Risk Assessement, 90 Mile Beach. Report to DSE, Victoria.

2009 Historical Development of the Victorian Coast. Report to DSE, Victoria.

2009 Sea Level Rise Impacts on the Victorian Coast. Report to DSE, Victoria.