

LANDSLIDES IN NEW ZEALAND

A selected Bibliography

by

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School of Earth Science Research Report
No. 1

ISSN 1174-7765

CONTENTS

Contents	iii
Acknowledgments	vi
1. Introduction	1
1.1 Definition	1
1.2 Aim and Potential Users	1
1.3 Restrictions and Limitations	2
2. Method	3
2.1 Bibliographies	3
2.2 Monographs	4
2.3 Book Section	4
2.4 Conference Proceedings	4
2.5 Journals, Periodicals	4
2.5 Thesis	4
2.6 Research Publications	4
2.7 Library Searches	4
3. The usage of the bibliography	5
3.1 Reference Details	5
3.2 Keywords	6
4. Availability	7
5. Addresses of other Sources	7
6. Bibliography	9
7. Indices	86
7.1 Keywords Index	86
7.2 Geographical Index	92
7.3 Co-authors Index	94

7.4 Editor Index	96
Appendix 1: Subject Index	98
Appendix 2: Cited periodicals and journals.	100
Appendix 3: List of institutions and organizations	102

Acknowledgments

Thanks are due to a number of people who contributed to this publication. In particular, special thanks to:

- Ruth Berry and Julia Hasse for entering references in the data base.
- Jack McConchie, Senior Lecturer, Department of Geography, Victoria University of Wellington.
- Noel Trustrum, Research Scientist at Landcare Research Ltd., Palmerston North.
- Michael Page, Research Scientist at Landcare Research Ltd., Palmerston North.
- Douglas Hicks, Ecological Research Associates (N.Z.) Inc.
- Mauri McSaveney, Research Scientist at the Institute of Geological and Nuclear Sciences, Lower Hutt.
- Graham Hancox, Research Scientist at the Institute of Geological and Nuclear Sciences, Lower Hutt.
- The librarians of
 - the Geography Departments in Auckland, Hamilton, Palmerston North, Wellington, Christchurch and Dunedin.
 - the Geology Departments in Auckland, Hamilton, Palmerston North, Wellington, Christchurch and Dunedin.
 - the Soil Science Departments in Palmerston North, Christchurch.
- The staff of libraries, councils and individuals who helped us in compiling this bibliography.

1. Introduction

Research on landslides has a well established history in New Zealand. Since the beginning of this century, problems resulting from landslide occurrence have increased steadily. Despite the growing number of publications on landslide issues, only SELBY (1976) published a preliminary bibliography. SELBY's report summarises the major contribution in the field of mass movements until 1970. HARMSWORTH & PAGE (1991) undertook a literature search within the purpose of compiling information on landslide damaging rainstorms. A recent report on earthquake-triggered landslides with a volume $>1,000,000 \text{ m}^3$ is published by IGNS (1996). A landslide inventory compiling information on rainfall-triggered landslides is held at the Institute of Geography, Victoria University of Wellington. The latter data base contains only rainfall-triggered landslides and it became obvious that there was an equal need for a comprehensive bibliography of all accessible landslide references for New Zealand.

1.1 Definition

This bibliography deals with published research and reports on landslides. Therefore it is important to define the term landslides. For the purpose of this report, the definition of CROZIER (1998) is adopted, where landslides are defined as movement of a mass of rock, earth, or debris down a slope, under the influence of gravity and triggered by different agents. These agents may be either natural or human induced. Natural triggers relate mainly to prolonged or/and intense rainfalls, earthquakes, and marine or coastal action, while human induced landslides relate to human activities such as detonations from explosions, damming of rivers, roading, general landuse change, deforestation - all resulting in instability on the surrounding slopes.

Reports on landslides deal with different space and time scales. They range from single, large, often deep-seated landslide complexes to numerous, widespread, often shallow landslides. They can be related to single impact events in the last decades or to Holocene or even Pleistocene time periods.

1.2 Aim and Potential Users

This publication aims to summarize and to provide a list of landslide research publications and reports in New Zealand since publications are available. Potential users of this bibliography are research scientists, students undertaking research in the field of landslide studies,

environmental, engineering and earth science consultants, managers responsible for planning and maintaining landslide programs, policy decision makers, as well as interested individuals.

1.3 Restrictions and Limitations

A decision had to be made as to which publications to include and which to exclude from this bibliography. The general criterion for inclusion in this bibliography is that the focus of the publication should be strongly related to landslides or associated issues. Items were considered if they provided an important contribution to the research field. For example, any items relating to research, geotechnical reports, management and administration of land resources and their social, economic, or environmental impacts are included. Although the importance of political and management plans is recognised, these items have largely been excluded. This decision had to be made due to both the volume of this material and the limited space in this volume, and the difficulty in accessing these reports and plans from the relevant organizations.

Because of the dominant role of landslides in New Zealand soil erosion, a number of papers listed refer to topics on soil erosion, soil conservation and land use sustainability.

Although we tried to consider and access all relevant publication, inevitably we will have missed some. A list has been compiled in Section Two to give the user an overview of which sources have been consulted. 54 Papers for which we do not have a full reference listing, in particular the name of author(s), are listed at the end of the reference list. Every attempt has been made to ensure that the information contained within this bibliography is as accurate and comprehensive as possible. However, if users note any errors or omissions, or have any suggestions for future editions, or want to have specific items included in this bibliography, please write us so that it can be included in any update.

Landslide Bibliography
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2. Method

The bibliography contains 822 references on landslides in New Zealand in the period between 1975 and 1996. References prior to 1975 are already summarized in the report of SELBY (1976) and are also added to this bibliography. Users interested in abstracts of publications prior to 1975 should refer to SELBY (1976). However, some references prior to 1975 were not included in SELBY's publication and are thus included in this bibliography.

The literature sources include monographs, edited books, university theses, published research from journals, conference proceedings and conference papers, and unpublished reports from universities, Crown Research Institutes and their predecessors, private consultancies as well as official institutions such as Councils and Ministries.

All data are stored within the literature database software EndNote 3.0, 1st Edition for Windows95, held by the School of Earth Sciences (SES), Victoria University of Wellington. The developer of EndNote, Niles Software Inc. is offering free trial versions of this programme under <http://www.niles.com>.

Information sources

The accessed sources cover a wide area. The limiting factor was either the public availability of the appropriate item or the importance of the source, as already discussed in Section 1.3.

The starting point of the literature search was the compiled inventory of rainfall-triggered landsliding publications and references held by SES, Victoria University of Wellington. Items were added either by response to an information request sent out to all Universities, Crown Research Institutes, appropriate Ministries, and individuals or by personal notice. A few references were also added as a result of searches in the catalogues of the Auckland University, Massey University, Victoria University, Lincoln University and Otago University libraries. Some items were received from authors personally.

The following subsections summarise the sources used. Refer to Section 6 for the complete reference.

2.1 Bibliographies

SELBY (1976)

HARMSWORTH & PAGE (1991)

IGNS (1993)

2.2 Monographs

CROZIER (1989)
SELBY (1992)
SELBY & SOONS (1993)

2.3 Book Section

2.4 Conference Proceedings

2.5 Journals, Periodicals

To avoid any misunderstanding journals are not abbreviated in the reference list. The following list gives an overview of used journals (Appendix 2).

2.5 Thesis

All theses which were accessible from various New Zealand and overseas universities.

Imperial College of Science and Technology, London
Kyoto University, Disaster Prevention Research Institute, Japan
Massey University
University of Auckland
University of Bern, Switzerland
University of Canterbury
University of Otago
University of Sydney, Australia
University of Waikato
Victoria University of Wellington

2.6 Research Publications

Publications from various institutions organisations, as well as private consultancies (Appendix 3).

2.7 Library Searches

Library catalogues of all New Zealand University libraries and on-line georeference resources.

3. The usage of the bibliography

All references are listed in alphabetical order according to the author's first surname or to the first name of the organisation (Section 6). Where there is more than one author, the additional author/s can be located in the co-author index (Section 7.2). Publications are also indexed by editor where appropriate (Section 7.3).

3.1 Reference Details

Publication information has been provided to assist with item identification and subsequent library searches for the item of interest. The following details are given, where appropriate, for each item:

1. Reference number (number used in indices of this bibliography)
2. Name (author, editor or organisation)
3. Year of publication (unpublished references are filed by the year of completion or presentation)
4. Title
5. a Journal or periodical title
b Name of editor and title of general publication
6. a Volume and number
b Publisher and place of publication (unpublished items have as much information included as possible to provide comprehensive information)
7. Pagination (either range of the pages or total number of pages)
8. Keywords

Examples:

Bibliography:

321. **Harmsworth, G.R. & Page, M.J.** (1991): A review of selected storm damage assessments in New Zealand.- Department of Scientific and Industrial Research, Land Resources, Scientific Report 9.

Keyword(s): Damage Costs, Impacts, Rainfall.

Monograph:

165. **Crozier, M.J.** (1989): Landslides: Causes, consequences and environment, London, Routledge, 252 p.

Keyword(s): Cause, Impacts, Landslide Stability Factors, Overview, Trigger.

Book Section:

461. **McConchie, J.A.** (1992): Water and slope stability.- in: Mosley, M.P. (ed.): Waters of New Zealand, Wellington, New Zealand Hydrological Society, Vol. 1, 381-408.

Keyword(s): Control, Groundwater, Rainfall, Stabilisation.

Conference Proceedings:

480. **McSaveney, M.J., Thomson, R. & Turnbull, I.M.** (1992): Timing of relief and landslides in Central Otago, New Zealand.- in: Bell, D.H. (ed.): Landslides - Proceedings of the Sixth International Symposium, Christchurch, 10-14 February 1992, Rotterdam, A.A. Balkema, Vol. 2(3), 1450-1456.

Keyword(s): Dating, Landform Development, Landslide Stability Factors, Topography, Central Otago.

Journal, Periodical:

215. **DeRose, R.C., Trustrum, N.A. & Blaschke, P.M.** (1993): Post-deforestation soil loss from steepland hillslopes in Taranaki, New Zealand.- Earth Surface Processes and Landforms, Vol. 18(2), 131-144.

Keyword(s): Land Use, Sedimentation, Vegetation, Taranaki.

Thesis:

20. **Basher, L.R.** (1989): Soil development and erosion history of a mountainous high rainfall area, Cropp River, Central Westland.- PhD Thesis, University of Canterbury.

Keyword(s): Erosion, Historical Record, Soils, Westland.

Research Publication:

127. **Clough, P. & Hicks, D.** (1993): Soil Conservation and the Resource Management Act.- Ministry of Agriculture & Fisheries, Wellington, MAF Policy Technical Report 93/2.

Keyword(s): Soil Conservation, Legislation.

Where an author has two or more publications, the items are listed according to the year of publication. Where an author or a group of authors have one or more publications in one year, the year is indexed by small letters in alphabetical order. The references are numbered in descending numerical order to allow a quick search using all indices (Section 7.1, 7.2 and 7.3). Where possible all items have been sighted.

3.2 Keywords

Each item has a set of keywords. These are used to identify the main context for each item in the most appropriate way. The keywords were either directly imported from the keyword list of the item or derived from title, abstract and main text body. It was always envisaged that keywords reflect all themes covered by the reference. To allow searchers a focus on specific areas, names of regions or landscape types were also included wherever possible. The keywords are sorted in alphabetic order. Keywords containing more than one word are indexed to the way in which they were read.

Example 1:

The keyword *Landslide Investigation* is listed in the keyword index (section 7.1). This item in the keyword index will refer to all publications with the keyword *Landslide Investigation* attached to them. The search can be narrowed by using more specific keywords such as *Stabilisation* or *Remediation*.

Example 2:

Any publication with *James* as the principal author is listed in section 7.2, which is sorted in alphabetical order. If you are interested in all publication published by *James*, refer also to the co-author index (Section 7.3) and to the editor index (Section 7.4).

To allow a quick orientation within the keyword index, these are sorted in alphabetic order. Because of this ordering system, the general thematic context of the keywords may not be clear. To avoid any confusion or misunderstanding, a subject index is included in Appendix 1, which orders the keywords thematically. Keywords listed in Appendix 1 are fully included in the Keyword Index of Section 7.1. Keywords containing more than one word are indexed in the way in which they were read.

4. Availability

References of interest should be obtained through local library or library interloan services. Users can also request the appropriate information through direct contact with either the concerned organisations or the author or co-authors. Some addresses for reference enquiries are Included in Section 5. It may possible that some consulting reports may not be available for general access.

5. Addresses of other Sources

Institute of Geological & Nuclear Sciences Limited (IGNS)

69 Gracefield Road
PO Box 30-368
Lower Hutt
New Zealand

Telephone: +64 - 4 - 570 1444
Facsimile: +64 - 4 - 569 0600
Internet: <http://www.gns.cri.nz>

Manaaki Whenua
Landcare Research New Zealand Limited
Massey University
Private Bag 11052
Palmerston North

Telephone: +64 - 6 - 356 7154
Facsimile: +64 - 6 - 355 9230
Internet: <http://www.landcare.cri.nz>

National Institute of Water & Atmospheric Research Limited (NIWA)
310 Evans Bay Parade
Greta point
PO Box 14 901
Wellington

Telephone: +64 - 4 - 386 1189
Facsimile: +64 - 4 - 386 2153
Internet: <http://www.niwa.cri.nz>

New Zealand Forest Research Institute Limited (NZ FRI)
Sala Street
Private Bag 3020
Rotorua

Telephone: +64 - 7 - 347 5899
Facsimile: +64 - 7 - 347 9380
Internet: <http://www.fri.cri.nz>

6. Bibliography

Note: All references are listed in alphabetical order. Where an author has two or more publications, the items are listed according to the year of publication. Where an author or a group of authors have one or more publications in one year, the year is indexed by small letters in alphabetical order. The references are numbered in descendent order to allow a quick search using all four indices (Section 7.1, 7.2, 7.3 and 7.4).

1. **Ackroyd, P.** (1990): Policies for soil conservation in New Zealand: the institutional setting.- Ministry for the Environment.
Keyword(s): Legislation, Management, Policy, Soil Conservation.
2. **Adams, J.E.** (1979): Late Cenozoic erosion in New Zealand.- PhD Thesis, Research School of Earth Science, Victoria University of Wellington.
Keyword(s): Erosion, Geology, Historical Record, Landform Evolution.
3. **Adams, J.E.** (1980): Contemporary uplift and erosion of the Southern Alps, New Zealand.- Geological Society of America Bulletin, Vol. 91(11), 1-114.
Keyword(s): Erosion, Landform Evolution, Tectonic Movement, Southern Alps.
4. **Adams, J.E.** (1981): Earthquake triggered landslides form lakes in New Zealand.- Earthquake Information Bulletin, Vol. 13, 205-215.
Keyword(s): Cause, Earthquakes, Landslide Dammed Lakes, Trigger.
5. **Adams, J.E.** (1981): Earthquake-dammed lakes in New Zealand.- Geology, Vol. 9, 215-219.
Keyword(s): Cause, Earthquakes, Landslide Dammed Lakes, Overview, Trigger.
6. **Adams, R.D.** (1968): Preliminary reports on the Inangahua Earthquake, New Zealand, May 1968.- Department of Scientific and Industrial Research, Bulletin 193.
Keyword(s): Earthquakes, Impacts, Trigger, Inangahua, West Coast.
7. **Akehurst, N.S.** (1963): Erosion in the Waipaoa catchment: a physiographic analysis.- MA Thesis, University of Auckland, New Zealand.
Keyword(s): Soil Erosion, Gisborne.
8. **Alpe, S.G.** (1977): Farming the moving land: a study of mass movement on Okarahia Downs, Kaikoura, New Zealand.- MSc Thesis, University of Canterbury.
Keyword(s): Land Use, Sustainability, Okarahia Downs, Kaikoura.
9. **Anderson, A.G.** (1980): The land our future: Essays on land use and conservation in New Zealand.- in: New Zealand Geographical Society (ed.): Miscellaneous Series, Longman Paul.
Keyword(s): Land Use, Overview, Soil Conservation, Sustainability.
10. **Anderson, D.** (1996): Social impacts of land use change.- in: New Zealand Agricultural Economics Society (Inc) Conference, Blenheim, New Zealand, 5-6 July 1996, 10.
Keyword(s): Land Use, Social Impact.

11. **Anderson, G.A.** (1962): Observations on burning control in North Otago.- in: 10th N.Z. Science Congress, Conservation Section, Christchurch, 32-39.
Keyword(s): Land Use, Sustainability, Vegetation, Otago.
12. **Anon, R.** (1983): Earthworks erosion management.- Auckland Regional Water Board, Guideline.
Keyword(s): Erosion, Management, Auckland.
13. **Anon, R.** (1983): Sediments of the Upper Waitemata Harbour.- Auckland Regional Water Board, Review.
Keyword(s): Sedimentation, Waitemata Harbour, Auckland.
14. **Ansley, B.** (1994): Dam or disaster? - Listener, 30-32.
Keyword(s): Dams, Management, Policy, Clyde Dam, Otago.
15. **Arand, J.G.** (1986): Mass movement hazard at Te Aroha, North Island, New Zealand, University of Waikato.
Keyword(s): Assessment, Debris Material, Flow Movement, Hazard, Te Aroha.
16. **Ashby, G.C.A.** (1985): Geological controls on landsliding in the Kauaeranga Valley, Coromandel Ranges, and sources of sediment in stream channels, University of Waikato.
Keyword(s): Geology, Geomechanics, Geotechnics, Material Properties, Sedimentation, Kauaeranga Valley, Coromandel.
17. **Augustinus, P.C.** (1991): Rock resistance to erosion: some further considerations.- Earth Surface Processes and Landforms, Vol. 16, 563-569.
Keyword(s): Geology, Rock, Material Properties.
18. **Baldwin, R.G.** (1972): Rock debris slopes.- MA Thesis, Christchurch, University of Canterbury.
Keyword(s): Landform Evolution, Marlborough.
19. **Barton, I.L., Dakin, A.J., McPike, A.W., Mc Quarrie, W.G. & Ogilvie, D.J.G.** (1988): February 1985 Storm - Effects in The Hunua Catchment's.- Auckland Regional Authority, Report 11/26/7.
Keyword(s): Event, Impact, Landslide Disasters, Rainfall, Hunua Catchment.
20. **Basher, L.R.** (1989): Soil development and erosion history of a mountainous high rainfall area, Cropp River, Central Westland.- PhD Thesis, University of Canterbury.
Keyword(s): Erosion, Historical Record, Soils, Westland.
21. **Basher, L.R.** (1989): Surface erosion: a review of techniques for assessing the magnitude of soil loss.- Department of Scientific and Industrial Research, Land Resources, Technical Report CH1.
Keyword(s): Erosion, Soil Conservation.
22. **Basher, L.R., Meurk, C.D. & Tate, K.R.** (1990): The effects of burning on soil properties and vegetation.- Department of Scientific and Industrial Research, Land Resources Technical Report 18.
Keyword(s): Land Use, Material Properties, Sustainability, Vegetation.

23. **Basher, L.R. & Tonkin, P.J.** (1985): Soil formation, erosion and revegetation in the Central South Island hill and mountain lands.- in: NZ Society of Soil Science, Blenheim, 49-64.
Keyword(s): Erosion, Land Use, Soils, Vegetation.
24. **Beck, A.C.** (1968): Gravity faulting as a mechanism of topographic adjustment.- New Zealand Journal of Geology and Geophysics, Vol. 11, 191-199.
Keyword(s): Sackung/Sagging, Canterbury, Southern Alps.
25. **Beetham, R.D.** (1983): Seismicity and landsliding with especial attention to New Zealand.- MSc Thesis, London, Imperial College of Science and Technology, 137 p.
Keyword(s): Earthquakes, Historical Record, Landslide Dammed Lakes, Tectonic Movement, Mohaka Cliff, Waikaremoana.
26. **Beetham, R.D., Moody, K.E., Ferguson, D.A., Jennings, D.N. & Waugh, P.J.** (1992): Landslide development in schist by toe buckling.- in: Bell, D.H. (ed.): Landslides - Proceedings of the Sixth International Symposium, Christchurch, 10-14 February 1992, Rotterdam, A.A. Balkema, Vol. 1(3), 25-32.
Keyword(s): Dams, Geology, Landslide Behaviour, Otago.
27. **Beetham, R.D., Smith, G., Jennings, D.N. & Newton, C.J.** (1992): The geology of Nine Mile Creek schist landslide complex.- in: Bell, D.H. (ed.): Landslides - Proceedings of the Sixth International Symposium, Christchurch, 10-14 February 1992, Rotterdam, A.A. Balkema, Vol. 1(3), 17-24.
Keyword(s): Dams, Geological Assessment, Landslide Investigation, Cromwell Gorge.
28. **Bell, D.** (1983): The K9 landslide, Kawarau Valley, Central Otago - Abstract only.- in: Pacific Science Association 15th Congress, Dunedin, 17-18.
Keyword(s): Dams, Landslide Investigation, Cromwell Gorge, Kawarau Valley, Central Otago.
29. **Bell, D.H.** (1976): High intensity rainstorms and geological hazards; Cyclone Alison March 1975, Kaikoura, New Zealand.- Engineering Geology Bulletin, Vol. 14, 189-200.
Keyword(s): Cyclone, Event, Hazard Assessment, Rainfall, Kaikoura.
30. **Bell, D.H.** (1976): Slope evolution and slope stability, Kawarau Valley, Central Otago, New Zealand.- Bulletin of the International Association of Engineering Geology, Vol. 14, 189-200.
Keyword(s): Landform Evolution, Landform Development, Stability Analysis, Kawarau Valley, Central Otago.
31. **Bell, D.H.** (1977): Railway and highway stability problems in the Kaikoura area: New Zealand Institute of Engineers Annual Conference, Vol. 91.
Keyword(s): Engineering Assessment, Rail, Road, Stability Analysis, Kaikoura.
32. **Bell, D.H.** (1981): Dispersive loessial soils of the Port Hills, Christchurch.- in: Geomechanics in Urban Planning, Palmerston North.
Keyword(s): Erosion, Geotechnics, Geomechanics, Material Properties, Pipes, Tunnel Gully, Urbanisation, Port Hills, Christchurch.

33. **Bell, D.H.** (1984): Engineering geological aspects of the September 1983 Pompolona Hutt avalanche, Clinton Valley, Fiordland, New Zealand.- in: International Symposium on "Engineering Geological Environment in Mountainous Areas", Beijing, China, 177-188.
Keyword(s): Dams, Geological Assessment, Landslide Disasters, Clinton Valley, Fiordland.
34. **Bell, D.H.** (1990): Report on technical review of landslip hazard studies LR 1990/2 and LR 1990/3.- University of Canterbury.
Keyword(s): Hazard Assessment, Review.
35. **Bell, D.H.** (1992): Full day technical tour: Queenstown to Christchurch: field trip guide.- in: Bell, D.H. (ed.): Landslides - Proceedings of the Sixth International Symposium, Christchurch, 10-14 February 1992, Rotterdam, A.A. Balkema(1).
Keyword(s): Geomorphological Assessment, Queenstown, Christchurch.
36. **Bell, D.H.** (1992): Landslides: Proceedings of the sixth international symposium 10-14 February 1992, Christchurch, Rotterdam, A.A. Balkema, 1495 p.
Keyword(s): Antecedent Moisture, Antecedent Rainfall, Organisation, Overview, Proceedings.
37. **Bell, D.H. & Owens, I.F.** (1979): High intensity rainstorms and mass movements. - in: ANZAAS Conference, January 1979, Auckland, 159.
Keyword(s): Rainfall.
38. **Bell, D.H. & Patterson, B.R.** (1992): Landslides and geomorphology in central and northern South Island, New Zealand: post symposium technical tour H/I.- in: Bell, D.H. (ed.): Landslides - Proceedings of the Sixth International Symposium, Christchurch, 10-14 February 1992, Rotterdam, A.A. Balkema.
Keyword(s): Geomorphological Assessment, Rail, Road, Arthur's Pass.
39. **Bell, D.H. & Pettinga, J.R.** (1988): Bedding-controlled landslides in New Zealand soft rock terrain: Fifth International Symposium on Landslides, Lausanne, A.A. Balkema, Vol. 1, 77-83.
Keyword(s): Geology.
40. **Bell, D.H. & Trangmar, B.B.** (1987): Regolith materials and erosion processes on the Port Hills, Christchurch, New Zealand: Fifth International Symposium and Field Workshop on Landslides, Lausanne, A.A. Balkema, Vol. 1, 77-83.
Keyword(s): Erosion, Material Properties, Port Hills, Christchurch.
41. **Belz, D.T.G.** (1967): Investigations of subsidence at Utiku.- Soil & Water, Vol. 4(1), 19-22.
Keyword(s): Landslide Investigation (case study), Slump Movement, Rangitikei.
42. **Benn, J.** (1990): A Chronology of Flooding on the West Coast, South Island, New Zealand 1846-1990, 153 p.
Keyword(s): Historical Record, Data Bases, Rainfall, West Coast.
43. **Benn, J.** (1992): A Review of Earthquake Hazards on the West Coast, 61 p.
Keyword(s): Earthquakes, Hazard Assessment, Review, West Coast.

44. **Benson, W.N.** (1940): Landslides and allied features in the Dunedin district in relation to geological structure, topography and engineering.- Transactions and Proceedings of the Royal Society of New Zealand, Vol. 70(3), 249-263.
Keyword(s): Geology, Investigation, Otago.
45. **Benson, W.N.** (1946): Landslides and their relation to engineering in the Dunedin District, New Zealand.- Economic Geology, Vol. 41(4), 328-347.
Keyword(s): Geology, Investigation, Otago.
46. **Berezovsky, O.** (1994): Landslide impact on Pakihikura Valley.- BA (Hons) Thesis, Research School of Earth Science, Victoria University of Wellington.
Keyword(s): Indirect Costs, Land Use, Management, Pastoral Productivity, Personal Costs, Rural, Pakihikura Valley, Rangatikei.
47. **Bergin, D.O., Kimberley, M.O. & Marden, M.** (1993): How soon does regenerating scrub control erosion?- New Zealand Journal of Forestry(August).
Keyword(s): Land Use, Soil Conservation, Vegetation.
48. **Bergin, D.O., Kimberley, M.O. & Marden, M.** (1995): Protective value of regenerating tea tree stands on erosion-prone hill country, East Coast, North Island, New Zealand.- New Zealand Journal of Forestry Science, Vol. 25(1), 3-19.
Keyword(s): Land Use, Landslide Stability Factors, Soil Conservation, Vegetation, East Coast, North Island.
49. **Berry, L. & Ruxton, B.P.** (1961): Mass movement and landforms in New Zealand and Hong Kong.- Transactions of the Royal Society of New Zealand, Vol. 88(4), 623-629.
Keyword(s): Flow Movement.
50. **Beschta, R.L.** (1983): Channel changes following storm-induced hillslope erosion in the Upper Kowhai Basin, Torlesse Range, New Zealand.- Journal of Hydrology (New Zealand), Vol. 22(2), 93-111.
Keyword(s): Change, Channels, Erosion, Impact, Rainfall, Kowhai Basin, Torlesse Range, Canterbury.
51. **Bird, G.A.** (1981): The nature and causes of coastal landsliding on the Maungatapu Peninsula, University of Waikato.
Keyword(s): Coast, Landslide Investigation, Maungatapu Peninsula.
52. **Bishop, D.G.** (1968): The geology of an area of accelerated erosion at Waerengaokuri, near Gisborne.- New Zealand Journal of Geology and Geophysics, Vol. 11(3), 551-563.
Keyword(s): Earth Material, Flow Movement, Gisborne.
53. **Bishop, D.G.** (1979): East Abbotsford landslide: basic data available as at 19 October 1979, Lower Hutt, N.Z. Geological Survey.
Keyword(s): Assessment, Data Bases, Inquiry, Landslide Disasters, Landslide Investigation, Abbotsford.
54. **Bishop, D.G. & Hislop, W.F.** (1983): Things that go bang in the night.- Landscape, Vol. 13, 2-5.
Keyword(s): Assessment, Landslide Investigation.

55. **Bishop, D.G. & McKellar, I.C.** (1979): East Abbotsford landslide: N.Z. Geological Survey, DSIR involvement up to end of emergency, Lower Hutt, N.Z. Geological Survey.
- Keyword(s):* Assessment, Inquiry, Landslide Disasters, Landslide Investigation, Abbotsford.
56. **Bishop, D.G. & Norris, R.J.** (1986): Rift and thrust tectonics associated with a translational block slide, Abbotsford, New Zealand. - *Geology Magazine*, Vol. 123, 13-25.
- Keyword(s):* Geology, Slide, Tectonic Movement, Abbotsford.
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- Keyword(s):* Assessment, Geology, Land Use, Soil erosion, Terrain Classification, Topography, Vegetation, Wairoa County.
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7. Indices

Four indices are available to provide a fast and efficient reference search. The first index (Section 7.1) contains the keywords, as obtained in section 3.2, of a given publication. Section 7.2 refers to geographical areas and Section 7.3 lists all references of a given co-author. The last index compiles all editors of publications (Section 7.4).

7.1 Keywords Index

Note: The following list refers to the alphabetical order of the keywords, independent of any thematic context. A subject index thematically ordered is attached in Appendix 1.

- A**erial Photograph Analysis 223, 280, 572, 635, 672, 702, 714
 Antecedent Moisture 36, 280, 479
 Antecedent Rainfall 36, 280, 281
 Assessment 15, 27, 29, 31, 33-35, 38, 43, 53-55, 57, 59, 63, 78-82, 84-86, 98, 120, 121, 123, 129, 141, 147, 161-164, 166, 168, 171, 172, 175, 177, 200, 208, 217-219, 234, 236, 238, 241, 253, 255, 256, 260, 264, 265, 270, 280, 291, 298, 308, 312-314, 318, 320, 322, 323, 325, 326, 333, 334, 342, 344, 349, 352, 354, 370, 380, 384-388, 391, 396, 401, 402, 407, 408, 410, 417, 419, 422, 426, 428-430, 432, 436, 443, 444, 458, 463, 469, 473, 474, 476, 477, 483, 496, 500, 524, 531, 533, 535, 536, 547, 554, 563, 572, 580, 581, 586, 587, 589, 591, 592, 596, 601, 602, 605-607, 616, 619, 624, 637, 638, 661, 666, 686, 688, 697, 701, 720, 729, 741, 744, 746, 747, 755-759, 764, 786, 788, 798, 813, 819, 821
 Avalanches 218, 639, 743, 760
- C**atchment 7, 19, 57, 59-61, 64, 69, 77, 87-89, 123, 125, 192, 194, 199, 202, 228, 229, 252, 260, 263, 306, 338, 349, 352, 355, 363, 381, 391, 397, 404, 407, 408, 423, 445, 499, 511, 512, 540, 564, 567, 568, 570, 606, 646, 670, 672, 679, 720, 721, 723, 730, 748, 796, 830, 831
- C**ause 4, 5, 133, 146, 160, 165, 181, 188, 198, 235, 236, 246, 256, 280, 281, 294, 296, 314, 358, 385-387, 389, 475, 479, 509, 535, 616, 754, 777, 784, 786, 791
Channels 16, 50, 148, 347, 348, 359, 458, 540, 595, 675
Classification 57, 59, 69, 71, 72, 151, 157, 225, 264, 374, 409, 517, 654, 742, 750
Climate 156, 179, 231, 232, 280, 281, 295, 296, 298-303, 307, 448, 559, 560, 612, 622, 690
Climate Change 179, 231, 232, 296, 448, 612
Coasts/Coastal 208, 308, 419, 425, 436, 470, 519, 696, 697, 782
Construction 97
Control 11, 47, 95, 97, 106, 109, 111, 116, 150, 173, 197, 200, 201, 203, 219, 228, 240, 251, 272, 276, 310, 311, 327, 337, 338, 360, 363, 366, 368, 370, 372, 394, 399, 419, 435, 454, 461, 477, 481, 486, 488, 490, 492, 500, 501, 513, 515, 521, 522, 552, 573, 575, 589, 591, 609, 629, 658, 668, 694, 724, 789, 831
Creep Movement 254, 288-290, 561, 597, 615, 642, 726
Cyclone 29, 89, 135, 229, 280, 294, 296, 352-354, 358, 359, 364, 420, 447, 468, 514, 566, 607, 609, 610, 622, 636, 699, 703, 708, 731, 732, 791, 817
Cyclone Alison 29, 294
Cyclone Bola 89, 135, 229, 280, 352-354, 358, 359, 364, 420, 447, 468, 514, 566, 607, 609, 610, 622, 636, 699, 703, 708, 731, 732, 791, 817
- 447, 468, 514, 566, 607, 610, 699, 731, 732, 791
- D**amage 74, 86, 227, 229, 236, 249, 252, 280, 282, 283, 287, 319-321, 333, 335, 353, 358-361, 363, 441, 442, 468, 516, 572, 635, 638, 701, 703, 718, 758, 786, 795, 798, 801, 810, 830
Damage Costs 74, 252, 280, 282, 283, 287, 319-321, 333, 335, 353, 360, 516, 703, 718, 798, 801
Dams 14, 26-28, 33, 95, 97, 129, 237, 270-278, 394, 419, 438, 515, 529, 533, 756, 779, 794, 805, 806
Data Bases 42, 53, 187, 242, 279, 280, 282, 283, 384, 441, 651, 762
Dating 75, 98, 99, 161, 171, 231, 232, 266, 295, 301, 302, 381, 449, 464, 465, 480, 564, 565, 643, 707, 713, 716, 751, 752, 800
Debris Material 15, 94, 481, 506, 570, 639, 760, 761
Deforestation 189, 215, 280, 281, 465, 584, 693, 705, 773
Direct Costs 74, 280
- E**arth Material 52, 152, 204, 311, 346, 402, 453, 460, 479, 484-487, 570, 583, 663, 694, 700, 728, 730, 765-767
Earthquakes 4-6, 25, 43, 78-82, 98-100, 144-147, 171, 179, 181, 189, 198, 206, 207, 209, 210, 233, 235, 236, 256, 287,

- 304, 316, 318, 395, 411-416, 429, 475, 509, 585, 590, 593, 628, 683, 685, 686, 718, 725, 757, 758, 762, 764, 779, 784, 810, 816
- Effects 19, 22, 87, 122, 173, 302, 371, 429, 430, 451, 542, 543, 567, 574, 584, 585, 591, 593--595, 599, 600, 606, 607, 640, 688, 709, 769, 773
- Emergency Management 775
- Engineering Assessment 31, 63, 84, 86, 234, 308, 314, 401, 473, 496, 536, 605, 619, 624, 686, 819
- Erosion 2, 3, 7, 12, 17, 20, 21, 23, 32, 40, 47, 48, 50, 52, 57, 59--61, 66, 67, 77, 88, 106, 108, 109, 117, 125, 134, 140, 141, 150, 167, 183, 188, 192-194, 196, 197, 199-201, 203, 212, 216, 220, 223, 228, 232, 241, 244, 250, 252, 253, 257-259, 263, 267, 280, 292, 295-297, 299-302, 309, 311, 330, 334, 336, 339, 345, 347, 351, 352, 354, 356, 357, 359, 360, 362, 364, 371, 372, 375, 379-383, 399, 404, 405, 419, 423, 424, 435, 439, 444, 446, 454, 455, 463-466, 477, 484, 492, 499--502, 510, 518, 522, 537, 540, 542, 544, 545, 547, 549, 564, 565, 573, 574, 582, 586-589, 591, 593, 614, 617, 621, 629, 639, 645, 649, 650, 652, 656, 664, 668-670, 672, 673, 684, 685, 688, 693, 702, 704-706, 709-713, 715, 716, 720, 738, 740, 748, 750, 752, 768
- Event 19, 29, 76, 86, 87, 124, 135, 138, 154, 229, 280, 294, 315, 389, 427, 457, 467, 468, 504, 505, 514, 525, 530, 532, 567, 622, 645, 699, 721, 723, 774, 776, 777, 783, 802, 803, 807
- F**all Movement 99, 683, 685
- Flow Movement 15, 49, 52, 94, 142, 143, 152, 204, 311, 346, 402, 453, 460, 479, 481, 484--487, 506, 583, 663, 694, 700, 765-767
- Frequency 66, 159, 177, 265, 279-281, 334, 356, 357, 371, 373, 391, 555, 571, 582, 741, 743
- G**eological Assessment 27, 33, 120, 256, 312, 313, 385-387, 428-430, 432, 436, 443, 444, 531, 536, 587, 601, 602, 605, 619, 624, 661, 759, 821
- Geology 2, 5, 16, 17, 24, 26, 27, 29, 30, 39, 44, 45, 52, 56-59, 71, 77, 100, 117, 120, 121, 124, 125, 148, 154, 184, 231, 234, 241, 261, 281, 304, 343, 381, 392, 393, 403, 425, 428, 432, 434, 443, 444, 473, 478, 479, 503, 537, 546, 569, 582, 584, 585, 590, 597, 600-604, 615, 620, 623, 624, 648, 661, 665, 676, 691, 700, 724, 737, 739, 743, 745, 769, 781, 785, 793, 803, 811, 813, 819, 821, 830
- Geomechanics 16, 32, 86, 91, 96, 139, 158, 161, 182, 313, 323, 331, 332, 341, 377, 429, 441, 442, 452, 521, 556, 624, 655, 681, 682, 697, 736, 763, 831
- Geomorphological Assessment 35, 38, 98, 141, 161, 162, 172, 208, 253, 260, 291, 391, 474, 476, 554, 581, 586, 589, 606, 607, 688, 744, 746, 747, 755
- Geomorphology 38, 98, 172, 173, 189, 214, 462, 540, 566, 581, 608, 612, 644, 648, 665, 707, 765-767
- Geotechnical Assessment 323, 436, 616
- Geotechnics 16, 32, 86, 96, 331, 341, 377, 655, 681, 697, 763
- GIS Application 224-226, 280, 417, 489, 701, 798, 809
- Groundwater 276, 278, 438, 446, 461, 485, 515, 533, 611, 769
- Gullies 94, 142, 348, 379, 382, 383, 404, 423, 454, 463, 490, 492, 522, 539, 722, 726, 727, 785
- H**azard 15, 29, 34, 43, 74, 78-82, 85, 98, 121, 129, 136, 144, 147, 162-164, 166, 168, 169, 175, 177, 217, 218, 236, 238, 255, 264, 265, 270, 280, 291, 316, 318, 322, 325, 326, 333, 344, 384, 388, 406-409, 411-417, 426, 474, 481, 523, 524, 563, 576, 598, 660, 666, 729, 743, 746, 747, 756-758, 764, 783
- Hazard Assessment 29, 34, 43, 78-82, 85, 98, 129, 147, 162, 164, 166, 168, 175, 177, 217, 218, 236, 238, 255, 264, 265, 270, 280, 318, 322, 325, 326, 333, 344, 384, 388, 407, 408, 417, 426, 474, 524, 563, 666, 729, 746, 747, 756-758, 764
- Hazard Mitigation 85
- Hazard Zonation 264, 344, 409, 411-416
- Historical Record 2, 20, 25, 42, 66, 88, 280, 281, 293, 316, 446, 455, 456, 466, 564, 571, 614, 713, 716, 721, 738, 753
- Human Induced 133, 385-387, 754
- Hydrological Assessment 123, 219, 298, 342, 402, 458, 469, 483, 533, 589, 591, 592, 596, 638, 720, 741
- Hydrology 50, 133, 152, 202, 250, 297, 341, 344, 373, 376, 383, 390, 391, 402, 451, 458, 472, 541, 544, 548, 549, 559, 567, 591, 594, 596, 606, 607, 611, 618, 642, 643, 646, 653, 656, 675, 727, 830
- I**mpacts 6, 10, 87, 93, 120, 122, 131, 164-166, 198, 199, 202, 216, 220, 265, 268, 302, 320, 321, 344, 353, 358, 359, 361-363, 369, 375, 405, 420, 421, 439, 440, 458, 549, 572, 577-579, 593, 595, 596, 606, 624, 626, 628, 635, 638, 640, 645, 695, 699, 703, 708, 710-712, 715, 731, 732, 751, 771, 773, 786, 795, 798, 810, 817
- Indirect Costs 46, 74, 513
- Inherent Factors 312
- Inquiry 53, 55, 137, 211, 227, 262, 493, 494, 534, 535, 577--579, 616, 689, 698, 731, 732, 774, 776-778, 780
- Instrumentation 275, 278, 377, 496, 794, 805, 806
- Insurance 268, 280, 287, 441, 442, 516, 801
- Investigation 27, 28, 41, 44, 45, 51, 53-55, 65, 66, 70, 76, 96, 97, 161, 181, 183, 184, 208, 230, 237, 273, 274, 277, 278, 280, 308, 317, 324, 397, 410, 434, 460, 495, 499, 504, 505, 526-529, 557, 570, 571, 623, 661, 676, 696, 735, 756, 761, 770, 772, 789, 794, 804, 806,

- 807, 811, 812, 815, 818
- Lahars** 217
- Land Use** 8-11, 22, 23, 46-48, 57, 59, 62, 67, 68, 83, 89, 93, 101-105, 107, 113, 117, 119, 131, 132, 192, 195, 212, 215, 228, 243, 250, 257, 258, 267, 284, 303, 336, 364-366, 368, 371, 374-376, 405, 421, 423, 439, 497, 498, 502, 512, 538, 542, 543, 564, 594, 605, 610, 657, 659, 684, 688, 706, 709, 713, 717, 730, 734, 752, 817, 822
- Landform Development** 30, 65, 93, 244, 470, 471, 480, 604, 612, 647, 796, 800
- Landform Evolution** 2, 3, 18, 30, 65, 73, 93, 117, 190, 462, 612, 644, 648, 796, 800
- Landslide Behaviour** 26, 148, 178, 207, 278, 552, 583, 608, 721, 765-767
- Landslide Classification** 69, 71, 72
- Landslide Dammed Lakes** 4, 5, 25, 221, 395, 431-433, 450, 508, 576, 599, 620, 626, 627, 675, 687, 808
- Landslide Disasters** 19, 33, 53, 55, 76, 86, 135, 137, 138, 211, 227, 229, 247, 248, 262, 294, 427, 440, 457, 467-469, 493, 494, 514, 525, 530, 532, 534, 535, 577-579, 616, 622, 678, 689, 698, 699, 731, 732, 774-778, 780, 783
- Landslide Investigation (case study)** 41, 70, 161, 183, 184, 208, 230, 237, 273, 274, 277, 278, 317, 324, 397, 410, 434, 460, 495, 504, 505, 526-529, 623, 676, 696, 735, 756, 761, 770, 772, 789, 794, 804, 806, 812, 815, 818
- Landslide Stability Factors** 48, 92, 95-97, 134, 136, 155, 162, 165, 167, 170, 173, 184-186, 188, 191, 213, 261, 271, 337, 338, 361, 377, 392, 393, 445, 447-449, 457, 459, 480, 483, 519, 630, 653, 664, 682, 691, 696, 700, 707, 724, 745, 763, 769, 773, 781, 785, 789, 795, 804
- Landslide Types** 170, 188, 205
- Legislation** 1, 127, 128, 131, 268, 441, 442, 776, 814
- Magnitude** 21, 66, 159, 177, 265, 280, 281, 334, 356, 357, 371, 373, 391, 477, 555, 571, 582, 743
- Management** 1, 12, 14, 46, 62, 64, 67, 77, 83, 89, 114, 126-128, 131, 149, 174, 212, 238, 243, 255, 280, 284, 340, 344, 354, 388, 418, 421, 426, 437, 445, 456, 458, 481, 521, 523, 553, 557, 576, 591, 594, 657, 667, 713, 734, 775, 776, 787, 798, 814, 816, 817, 819, 821, 830, 831
- Mass Movement** 8, 15, 49, 70, 133, 155, 161, 179, 182, 183, 188, 208, 244, 425, 437, 451, 470, 473, 492, 522, 546, 560, 568-570, 573, 584, 693, 717, 726, 755, 792
- Mass Wasting** 651, 717
- Material Properties** 16, 17, 22, 32, 40, 209, 323, 446, 451, 452, 550, 551, 553, 556, 558, 559, 608, 632, 654, 655, 697, 700, 705, 719, 730, 736, 750, 769, 773, 783
- Mechanisms** 70, 125, 139, 204, 484, 517, 573, 631, 766
- Methods** 96, 159, 176, 182, 222--225, 264, 322, 325, 326, 357, 370, 406, 463, 544, 608, 617, 621, 642, 654, 660, 668, 671, 672, 688, 714, 791, 809
- Mines** 149
- Monitoring** 131, 275, 377, 421, 435, 538, 794, 805, 806
- Movement** 3, 8, 15, 25, 41, 49, 52, 56, 70, 94, 99, 115, 124, 133, 142, 143, 145, 146, 149, 152, 155, 156, 161, 179, 182, 183, 188, 189, 204, 208, 244, 254, 278, 288-290, 305, 311, 346, 402, 403, 425, 429, 437, 451, 453, 460, 470, 473, 479, 481, 484-487, 492, 506, 522, 546, 552, 560, 561, 568-571, 573, 583, 584, 597, 612, 615, 642, 643, 658, 661, 663, 673, 683, 685, 693, 694, 700, 717, 718, 726, 728, 749, 755, 761, 764-767, 781, 792, 793, 800, 810, 811
- Mud Material** 728
- National Park** 121, 218, 266, 476, 729, 818
- Organisation** 36, 257, 258, 260, 263, 712, 830, 831
- Overview** 5, 9, 36, 68, 74, 101, 162, 165, 166, 168, 170, 183, 186, 197, 200, 241, 265, 267, 277, 278, 285, 291, 331, 333, 336, 589, 653, 655, 659, 665, 666, 678, 679, 682, 709, 734, 740
- Pastoral Productivity** 216, 220, 259, 263, 330, 362, 365, 369, 372, 420, 424, 487, 518, 601, 692, 704, 705, 708-712, 714, 715, 734
- Personal Costs** 46
- Pipes** 32, 454, 492, 522, 722, 785
- Planning** 32, 93, 97, 102, 158, 255, 313, 322, 378, 409, 426, 429, 523, 556, 610, 681, 709, 736, 776, 787
- Policy** 1, 14, 83, 101, 110, 127, 128, 132, 238, 284, 322, 335, 372, 375, 380, 409, 557, 629, 662, 667, 689, 732, 733, 740
- Porewater** 438, 446, 485, 533, 611
- Preconditions** 245, 280, 281
- Prevention** 134, 217, 492, 522, 573, 593, 609
- Probability of Occurrence** 159, 176, 182, 280, 281, 356, 402, 555
- Proceedings** 26, 27, 35, 36, 38, 44, 96, 97, 101, 131, 171, 175, 182, 200, 240, 243, 249, 264, 272-278, 283, 290, 313, 317, 325, 334, 350, 352, 394, 417, 437, 438, 445, 468, 477, 480, 515, 518, 552, 555, 592, 599, 604, 605, 620, 627, 640, 660, 700, 711, 713, 715, 763, 790, 814, 816
- Rail** 31, 38, 772, 819
- Rainfall** 19, 20, 29, 36, 37, 42, 50, 85, 87, 134, 153, 154, 159, 160, 179, 185, 202, 246, 249, 279--281, 293, 296, 298, 307, 320, 321, 341, 357, 358, 369, 373, 389, 390, 402, 446, 461, 469, 471, 479, 549, 565, 566, 572, 588, 606, 611, 617, 623, 624, 631, 635, 636, 638, 640, 646, 650, 652, 674, 684, 695, 741, 786, 791
- Remediation** 149, 230, 662

- Remote Sensing 222, 345-347, 671, 672, 701, 708, 791, 798
- Reporting Protocol 187, 280, 282, 283, 778
- Resource Management Act (RMA) 280, 814
- Return Period 161, 179, 246, 373
- Review 13, 21, 34, 43, 169, 175, 196, 219, 235, 242, 270, 284, 316, 321, 348, 351, 374, 442, 486, 490, 511, 512, 520, 543, 580, 598, 613, 641, 651, 653, 659, 680, 722, 740
- Risk 78-82, 147, 218, 257, 258, 268, 270, 344, 402, 524, 660, 745, 817
- Road 31, 38, 97, 120, 133, 136, 250, 310, 385-387, 443, 502, 526-528, 533, 618, 660, 676, 717, 744, 745, 747, 754, 815
- Rock Avalanche 100, 118, 124, 315, 478, 562, 737, 739, 743, 802, 803, 820
- Rock Material 90, 99, 118, 124, 136, 452, 625, 683, 685, 781, 811
- Rural 46, 93, 418, 605
- Sackung/Sagging** 24
- Sediment Budget 297, 299, 371, 419, 500, 503, 546, 564, 566, 585, 588, 595, 618
- Sediment Yield 306, 307, 350, 371, 376, 546, 549, 574, 588, 677
- Sedimentation 13, 16, 66, 77, 87, 125, 134, 194, 215, 231, 293, 295, 301, 302, 305, 307, 350, 376, 398, 399, 455, 466, 472, 499, 501, 544, 548, 549, 564, 565, 586, 593, 614, 706, 713, 752
- Sediments 13, 232, 565
- Slide Movement 570, 661, 728, 761, 781, 793, 811
- Slope 30, 63, 78-82, 84, 90, 95, 153, 162, 170, 191, 209, 212--214, 230, 234, 239, 261, 268, 312, 316, 327, 329, 333, 343, 383, 385, 386, 388, 393, 400, 401, 411-416, 422, 430, 452, 461, 488, 517, 521, 542, 544, 545, 549, 580, 586, 587, 600, 601, 605, 619, 623-625, 647, 652, 653, 660, 682, 688, 691, 719, 724, 769, 773, 782, 785, 816, 821
- Slope Form 191, 213, 214, 393, 587, 719
- Slump Movement 41, 346, 402, 570, 643, 658, 749
- Social 10, 421, 440, 577-579, 731, 732
- Soil Conservation 1, 9, 21, 47, 48, 60, 64, 83, 102-107, 109-114, 119, 127, 128, 193, 195, 197, 212, 219, 228, 243, 244, 252, 263, 269, 285, 286, 292, 298, 299, 319, 320, 327, 328, 330, 331, 335, 338-340, 349, 351--355, 357, 360, 363, 365, 367, 369, 370, 372, 378, 399, 456, 482, 491, 497, 498, 507, 510-513, 520, 522-524, 632-635, 638, 641, 663, 667, 672, 679, 712, 733, 744, 748, 830, 831
- Soil Erosion 7, 57, 59, 67, 106, 108, 140, 196, 197, 201, 220, 241, 244, 267, 292, 309, 336, 372, 379, 540, 617, 621, 629, 639, 656, 684, 705, 711, 748, 768
- Soil Material 142, 143
- Soil Moisture 451
- Soils 20, 23, 32, 75, 214, 230, 290, 338, 423, 430, 451, 537, 541, 558, 656, 707, 730, 749, 760, 769, 773, 785
- Stabilisation 92, 95, 97, 116, 129, 173, 201, 203, 228, 240, 251, 271, 272, 276, 310, 311, 327, 337, 348, 366, 394, 397, 435, 454, 461, 481, 486, 488, 490, 492, 515, 521, 575, 694, 756, 782, 789, 821
- Stability Analysis 30, 31, 63, 84, 91, 92, 95-97, 181, 191, 274, 332, 333, 377, 400, 401, 541, 580, 619, 625, 627, 637, 638, 680, 681, 686, 725, 763
- Submarine Landslides 343
- Subsidence 41, 556
- Susceptibility 78-82, 117, 162, 280, 788
- Sustainability 8, 9, 11, 22, 67, 68, 83, 89, 93, 101, 103-105, 107, 113, 132, 195, 212, 243, 284, 368, 374, 375, 439, 510, 538, 543, 657, 667, 706, 713, 717, 734, 817, 822
- Tectonic Movement** 3, 25, 56, 145, 146, 189, 305, 429, 584, 612, 718, 764, 810
- Terminology 163, 180
- Terrain 39, 57, 59, 190, 225, 250, 447, 584, 604, 729, 742, 750, 812, 815
- Terrain Classification 57, 59, 225, 742, 750
- Thresholds 159, 179, 185, 190, 246, 249, 280, 281
- Topography 44, 57, 59, 77, 87, 241, 480, 537, 590
- Trigger 4-6, 133, 146, 160, 165, 181, 185, 198, 210, 235, 236, 246, 256, 294, 296, 304, 316, 358, 385-387, 389, 390, 411-416, 471, 475, 479, 509, 640, 754, 784, 786, 791
- Tropical Cyclones 294, 296, 358, 622
- Tunnel Gullies 379, 382, 383, 404, 423, 454, 492, 522, 539, 722, 726, 727, 785
- Types 108, 118, 124, 170, 188, 205, 537, 653, 671, 768, 797
- Urban Landslides** 82, 158, 185, 239, 251, 313, 325, 329, 377, 396, 397, 409, 426, 473, 521, 523, 557, 681, 682, 736, 787, 788, 799, 801, 809
- Urbanisation 32
- Vegetation** 11, 22, 23, 47, 48, 57-59, 65, 66, 68, 75, 78-82, 98, 134, 198, 201, 205, 215, 253, 254, 259, 300, 302-304, 327, 328, 337, 348, 350, 358, 361, 363, 364, 366, 368, 376, 391, 392, 433, 445-449, 464, 465, 471, 488, 500, 501, 541--543, 545, 548, 550-553, 558, 564, 568, 570, 574, 575, 584, 591, 596, 609, 610, 618, 628, 639, 702, 707, 709, 713, 749, 751, 752, 760, 771, 773, 795
- Water Quality** 351
- Wedge Failure 812
- Zonation** 264, 344, 409, 411-416, 474, 758

7.2 Geographical Index

- A**bbotsford 53, 55, 56, 76, 86, 137, 138, 211, 227, 262, 314, 427, 440, 467, 493, 494, 525, 530, 532, 534, 535, 577-579, 616, 637, 678, 689, 698, 774, 776-778, 780
- Acheron River 100
- Antarctica 654
- Arthur's Pass 38, 120, 121, 475, 476, 581, 718, 729, 745, 821
- Auckland 7, 12, 13, 19, 37, 87, 91, 121, 139, 183, 186, 230, 323, 388, 400, 425, 436, 473, 567-569, 597, 602, 643, 677, 691, 722, 724-726, 761, 770, 818, 827
- B**ay of Plenty 733
- Brewery Creek 95, 276
- C**anterbury 8, 18, 20, 24, 34, 50, 61, 94, 100, 113, 118, 144-147, 192, 194, 200, 208, 210, 234, 239, 253, 289, 315, 324, 343, 379, 382, 383, 419, 428, 453, 474-476, 540, 560, 561, 563, 579, 601, 615, 640, 661, 729, 737, 748, 763, 764, 772, 804, 827, 828
- Central Otago 28, 30, 462, 480, 756, 815
- Christchurch 11, 18, 26, 27, 32, 35, 36, 38, 40, 61, 94, 96, 97, 141, 171, 175, 197, 200, 201, 210, 236, 240, 264, 272-278, 283, 295, 324, 329, 376, 379, 382, 394, 417, 437, 438, 468, 480, 500, 515, 519, 540, 554, 555, 579, 581, 587, 589, 599, 604, 605, 620, 627, 632, 660, 700, 729, 763, 790, 802
- Clinton Valley 33
- Clutha Valley 95
- Clyde Dam 14, 92, 130, 805
- Coringa 804
- Coromandel 16, 149, 638
- Cromwell Gorge 27, 28, 97, 129, 237, 272-278, 394, 438, 515, 529, 533, 756, 794, 806
- D**unedin 28, 44, 45, 131, 138, 151, 155, 160, 256, 262, 325, 350, 389, 530, 629, 674, 678, 735, 774, 780, 799, 809, 819
- E**ast Coast 48, 60, 89, 222, 228, 252, 339, 348, 349, 351, 352, 366, 368, 402, 420, 435, 445, 447, 468, 486, 490, 587, 604, 606, 663, 817
- F**eatherston 82, 416
- Fiordland 33, 317, 390, 448, 449, 639, 760, 771, 810-812
- Franklin 597, 697, 827
- G**isborne 7, 52, 58, 115, 125, 208, 228, 229, 261, 420, 435, 470, 484, 485, 487, 537, 584, 591, 613, 614, 663, 728, 765-767, 792, 827
- Golden Downs 133, 717
- H**amner Springs 428, 764
- Hapuakohe Range 630, 773
- Hauraki 720, 721, 827
- Hawke's Bay 57, 59, 60, 88, 89, 103-105, 107, 190, 199, 201, 203, 221, 231, 232, 244, 245, 257-260, 280, 281, 293, 294, 297-300, 303, 309, 319, 320, 345, 352-354, 358, 364, 381, 391, 398, 420, 432, 444, 464, 472, 483, 499, 501, 507, 514, 564-566, 600, 602, 603, 605, 607, 636, 669, 670, 699, 713, 731, 732, 750-752, 759, 791, 793, 796, 827
- Hope Fault 146
- Hunua Catchment 19, 570
- I**ngangahua 6
- K**aikoura 8, 29, 31
- Kaimai Range 392, 393
- Kapiti Coast 81, 415
- Karitane 819
- Kauaeranga Valley 16
- Kawarau Valley 28, 30
- King Country 122, 808
- Kowhai Basin 50
- M**akahu 225, 693
- Manawatu 375, 439, 499, 679, 827
- Mangahao 77
- Mangatu 58, 261, 348
- Mangaweka 387, 558, 691, 781
- Mangawhara 69
- Marlborough 18, 288, 423, 436
- Maungapatu Peninsula 51
- Mohaka 25
- Motueka 133, 505, 717
- Motunau 804
- Mt. Cook 124, 266, 315, 562, 738, 746, 803, 820
- Mt. Fletcher 478, 802
- Mt. Thomas 804
- Murchison 509
- N**elson 250, 251, 352, 395, 396, 497, 498, 502, 512, 548, 557, 587, 717, 828
- North Canterbury 144-146, 428, 474, 661, 804
- North Island 15, 48, 60, 64, 65, 69, 71, 89, 178, 206, 219, 222, 228, 232, 252, 280, 281, 285, 292, 295, 300, 305, 307, 339, 348, 368, 381, 387, 393, 434, 445-447, 450, 468, 486, 490, 587, 604, 606, 630-632, 656, 676, 691, 705, 766, 773, 781, 782, 786, 787, 791, 817
- Northland 722, 726, 727
- O**karahia Downs 8
- Oreere 425, 567, 568, 570
- Orongorongo 198, 628, 673
- Otago 11, 14, 26, 28, 30, 44, 45, 92, 95-97, 129, 130, 152-155, 157, 170, 237, 270-273, 275-278, 325, 419, 430, 438, 440, 462, 480, 515, 527-529, 678, 730, 754, 756, 763, 769, 794, 805, 806, 809, 813, 815, 819, 828
- Otago Peninsula 430, 763, 769
- Otira 120, 443, 476
- P**akihikura Valley 46
- Palliser Bay 410
- Porirua 80, 407, 408, 413, 418,

- 757, 758, 828
 Port Hills 32, 40, 324, 379
 Porter's Pass 145
- R**angitikei 41, 263, 397, 403, 431
 Raukumara 58, 584, 587, 591, 606, 765-767
 Rimutaka 202
 Ruahihi 783
 Ruahine Range 203, 294, 297--300, 303, 381, 391, 444, 472, 501, 669
- S**outh Island 23, 38, 42, 140, 267, 290, 306, 380, 422, 448, 527, 528, 581, 634, 730, 740, 762, 772, 780, 809-812, 815, 820, 821
 Southern Alps 3, 24, 94, 99, 100, 253, 342, 477, 502, 547, 560--562, 581, 664, 718, 737-739, 741-747, 768
 State Highway 1 387, 754
 State Highway 2 78, 82, 413, 416
 State Highway 58 80, 385, 413
 State Highway 6 744
 State Highway 73 120, 443, 821
- T**aihape 397, 691, 781, 787
 Tangoio 244, 507
 Taranaki 65-67, 75, 171, 172, 181, 189, 209, 213-216, 225, 233, 361, 374, 511, 538, 572, 692, 693, 707, 708, 716, 795, 822, 828
 Taumarunui 205
 Tauranga 308, 696, 828
 Te Anau 531
 Te Aroha 15, 638
 Te Urewera National Park 818
 Tokomaru Bay 792
 Torlesse Range 50, 61
 Tunawaea 576, 626, 808
 Tutira 231, 293, 309, 398, 432, 483, 564, 566, 687, 713, 750
- U**pper Hutt 78, 82, 416
- W**aikaremoana 25, 450, 455, 620, 627
 Waikato 15, 16, 51, 69, 72, 75, 87, 122, 205, 291, 455, 539, 630, 644, 645, 650-652, 723, 724, 773, 828
 Wairarapa 64, 117, 123, 161, 167, 183, 184, 188, 207, 280, 281, 304, 305, 338, 386, 390, 404, 410, 424, 460, 463, 559, 672, 690, 755, 827, 828
 Wairoa County 57, 59, 88, 229, 349, 355, 753, 828
 Waitemata Harbour 13
 Waitoki 721
 Wanganui 209, 225, 233, 375, 397, 439, 675, 828
 Wellington 2, 46, 65, 76-82, 85, 106, 111, 117, 123, 126, 127, 136, 142, 143, 166-169, 176, 182, 185, 187, 188, 191, 198, 202, 206, 207, 209, 210, 233, 237, 246-249, 265, 280, 281, 309, 316, 322, 325, 326, 333, 338, 385, 390, 404, 406-417, 426, 431, 432, 451, 457-461, 463, 471, 506, 516, 523, 536, 617, 623, 624, 628, 666, 673, 675, 693, 695, 703, 719, 742, 749, 750, 755, 757, 758, 782, 786, 814, 816, 827, 828
 Wellsford 495
 West Coast 6, 42, 43, 545
 Westland 20, 120, 234, 422, 443, 476, 546, 548, 549, 579, 592
 Wharekiri 641

7.3 Co-authors Index

- A**naru 116
 Anderson 272
 Arnott 202
 Arulchelvam 402
- B**arker 517
 Basher 742
 Beetham 96, 394, 620
 Bell 436, 563, 605, 661
 Berryman 718
 Bishop 314
 Black 89, 261, 587
 Blakeley 310
 Blakely 504
 Blaschke 214, 215, 704-706, 708
 Blong 544
 Blyth 574
 Brown 220
 Brownlie 259, 260
 Buchan 731
 Buchan 732
- C**arr 701
 Cederholme 618
 Chinn 315
 Coker 250
 Costall 424
 Crippen 638
 Crozier 247, 248, 282, 283, 291, 666
 Cutler 423
- D**akin 19
 Davidson 470
 Davies 608
 Deere 92
 Deimel 181
 Dellow 78-82, 316, 318
 Denton 273
 Depledge 426
 DeRose 67, 68, 224, 225, 538, 565, 701, 705-708, 716
 Douglas 220
 Dunne 618
 During 269
 Dymond 337, 566, 708
- E**kanayake 446
 Eyles 67, 74, 182-185, 188, 375, 426
- F**ahey 134, 133
 Ferguson 26
 Findlay 443
 Fitzharris 218
 Fletcher 375
 Foster 274, 275
 Froggatt 231
- G**age 186, 545, 692
 Gibb 538
 Gibbs 292
 Gilchrist 488
 Gillon 92
 Glade 187
 Glassey 255
 Graham 274, 276
 Green 392, 393, 433
 Griffiths 479, 743
 Grocott 276
 Gulliver 681
- H**all 728
 Halliday 272, 278
 Hancox 78-82, 277, 599, 637
 Harmsworth 224, 242, 376
 Harrington 417
 Hastie 412-416
 Hawley 517, 682, 709
 Hewson 419
 Hicks 67, 127, 128, 223, 488, 555, 558, 672
 Hislop 54
 Hodgiss 588
 Hope 320
 Hosking 571, 656
 Houghton 308
 Howie 399
- J**ackson 446, 591
 James 449
 Jennings 26, 27, 274, 576
- K**elly 574
 Kimberley 48
 King 98, 338, 421
 Kirk 563
 Kirkland 511
 Kong 98
 Krausse 405
- L**ambert 710, 711, 715
- Lilley 278, 626
 Logan 96
 Lovell 126
 Luckman 226
 Lynch 733
- M**acfarlane 273
 Manson 320
 Marden 47, 48, 402, 609, 610, 765, 766
 Marx 183, 184
 Matthews 721
 McCahon 236
 McConchie 183, 184, 188
 McGlone 146, 752
 McKellar 55, 314
 McKelvey 240
 McManus 437
 McPhail 375
 McPherson 97
 McPike 19
 McQuarrie 19
 McSaveney 124, 315, 744-747
 Meister 733
 Meredith 626
 Meurk 22
 Millar 452
 Miller 760
 Moody 26
 Mosedale 574
 Moutoux 98
 Murton 468
- N**eall 381
 Nelson 587
 Newsome 243
 Newton 27, 394
 Noble 638
 Norris 56, 138
 Northey 314, 637
- O**'Connor 472
 O'Loughlin 589-593, 659
 Oakley 426
 Ogilvie 19
 Ohara 558
 Omura 558
 Owen 183, 184, 188
 Owens 37, 218, 554
- P**age 231, 232, 320, 321, 701,

- 706, 712, 713
Partridge 752
Patterson 38
Pattle 438
Pearce 134, 546-549, 609, 659,
767
Penhale 614
Perrin 78-82, 316-318
Pettinga 39, 147, 186, 563
Phillips 98, 446, 765-767
Pillans 189
Pinkney 700
Preston 190
Proffitt 275
- R**ayner 731, 732
Read 627
Riddolls 682
Riley 278, 620
Rivers 731, 732
Roberts 216
Robinson 398
Rogers 681
Rowan 447, 610
Rowe 548, 549, 592, 594
Ruxton 49
- S**alinger 426
Salt 438
Sanderson 448, 449
Saul 97
Scott 449
Selby 186, 631, 665
Simon 181, 209
Smith 27, 344, 394, 515
Smits 275
Stephens 538, 572, 701, 714
Stribling 203
Sutherland 538
Swanston 544
- T**ate 22
Te Punga 142, 143
Thomas 710, 711, 715
Thompson 435
Thomson 216, 480
Tippet 191
Tod 700
Todd 563
Tonkin 23, 742
Trangmar 40
Trotter 225, 339, 671
Trustrum 68, 214-216, 220, 231,
424, 564-566, 672, 688,
692, 701
Turnball 255, 480
- V**an der Lingen 661
Vaughan 191
- W**agendonk 717
Wallace 716
Ward 622
Wasson 186, 375, 402, 550, 551,
593, 595
Watts 272
Waugh 26
Wayne 417
Webby 576
West 705
Wheeler 185, 247, 248
White 538
Whitehouse 481
Wije-Wardana 126
Willoughby 538
Wilson 633
Woodward 96
- Y**etton 236
- Z**hang 446, 552, 553, 591;

7.4 Editor Index

- A**cheson 513
Ackroyd 653
Adams 151
- B**aker 357
Bell 26, 27, 35, 38, 96, 97, 172, 176, 240, 265, 272-278, 394, 417, 437, 438, 515, 555, 599, 603, 605, 620, 627, 660, 700, 763
Brabb 74, 170
Bren 548
Britton 287
Brunsdon 164, 167
- C**airns 132
Church 747
Cowie 347, 484, 490
Crozier 85, 161, 189, 214, 238, 334, 577, 702
- D**avies 201, 294, 587
- E**ngineers 182
- F**itzharris 174
Forer 283
Frenzel 164
- G**läser 164
- H**amilton 66, 134, 706
Harrod 74, 170
Helleiner 151
Henriques 713
Hergarten 190
Holland 554
- J**ohnston 554
- K**earsley 174
Kesby 373
Kundzewicz 342
- L**oughran 373
- M**atthews 164
Mäusbacher 180, 279
Mosley 461
- Murray 653
- N**eall 669
Neugebauer 190
- O**'Connor 488
O'Loughlin 66, 134, 542, 548, 688, 706
Olive 287, 373
- P**earce 201, 294, 542, 587, 688
Perry 283
Phillips 131
Prior 167
- R**achocki 747
Rosbjerg 342
- S**chulte 180, 279
Selby 186, 547
Simonovic 342
Soons 186, 547
Speden 334, 577, 702
Stephens 672
- T**akeuchi 342
Thompson 126
Trustrum 263
- V**ine 721
- W**eiß 164
Whitwell 126
- Z**iemer 66, 134, 706

Appendix 1: Subject Index

- A**ssessment/Investigation
 Engineering/Geotechnical Assessment
 Geological Assessment
 Geomorphological Assessment
 Hazard Assessment
 Hazard/Hazards
 Risk
 Susceptibility
 Zonation
 Landslide Investigation (case study)
 Hydrological Assessment
 Impact/damage Assessment
- C**hannels
 Classification
 Landslide Classification
 Terrain Classification
 Terminology
 Climate Change
 Control (see also methods)
 Prevention
 Remediation
 Stabilisation
- D**amage Costs
 Direct Costs
 Indirect Costs
 Personal Costs
 Data Bases
 Reporting Protocol
 Dating
- E**rosion
 Soil Erosion
 Soil conservation
- F**requency/Magnitude
 Probability of Occurrence
 Return Period
 Thresholds
- G**eotechnics/Geomechanics
 Material Properties
 Stability Analysis
 Groundwater/porewater
- H**azard Mitigation (See also Assessment Hazard; Methods; Management)
 Insurance
- Emergency Management
 Legislation
 Historical Record (see also Data base)
- I**mpacts/Effects (see also Damage Costs)
 Catchment
 Channels
 Social
 Insurance
- L**and Use
 Pastoral productivity
 Soil Conservation
 Sustainability
 Urbanisation
 Vegetation
- Landform Evolution/Development
 Landslide Behaviour
 Mechanisms
 Movement
 Landslide Dammed Lakes
 Landslide Disasters
 Event
 Inquiry
 Landslide Location/Setting
 Coasts
 Dams/Reservoirs
 Mines
 Rail
 Roads
 Rural
 Urban
 Landslide Stability Factors/
 Preconditions/ Inherent
 Factors
 Climate
 Geology
 Groundwater/Hydrology
 Land Use
 Topography/Terrain
 Slope Form
 Slope
 Catchment
 Tectonic Movement
 Soils
 Vegetation
- Legislation
 Resource Management Act (RMA)
- M**anagement/Planning/Policy
 Methods
 Aerial Photograph Analysis
- Dating
 GIS Application
 Monitoring/Instrumentation
 Prevention
 Remote Sensing
 Remediation
 Soil Conservation
 Stabilisation/Controls
- O**rganisations/Meetings/
 Proceedings
- P**astoral Productivity
- R**eporting Protocol (see also Data Bases)
 Reviews/Overview
- S**ediments
 Sediment Budget
 Sediment Yield
 Sedimentation
 Water Quality
- T**rigger/Cause
 Coasts/Coastal
 Cohesion/tension/Suction
 Earthquakes
 Groundwater/Porewater
 Human Induced
 Construction
 Cuts
 Fills
 Dams/Reservoirs
 Mines
 Rainfall
 Antecedent Moisture
 Antecedent Rainfall
 Cyclones
 Tropical Cyclones
 Cyclone Bola
 Volcanic Activity
 Transportation Routes
 Rail
 Roads
 Pipelines/Transmission
 Lines
 Tunnel Gullies/Pipes/Gullies
 Types
 Lahars
 Mass Movement
 Rock Avalanche
 Sackung/Sagging
 Snow Avalanche

Submarine Landslides

Subsidence

Wedge failure

Material

Debris

Earth/Mud

Rock

Movement

Complex

Creep

Fall

Flow

Slide

Slump

Spread

Topple

Appendix 2: Cited periodicals and journals.

Agricultural, Ecosystems and Environment
Archaeology in Oceania
ASCE Journal of Hydraulics Engineering
Auckland Student Geographer
Australian Geographical Studies
Australian Journal of Soil and Water Conservation
Broadsheet, N.Z. Assn. Soil Conservators
Bulletin de liaison des laboratoires des ponts et chaussees
Bulletin of Geomorphology, Turkey
Bulletin of the International Association of Engineering Geology
Catena
Earth Science Journal
Earth Surface Processes and Landforms
Earthquake Information Bulletin
Economic Geology
Engineering Geology
Engineering Geology Bulletin
Environmental & Engineering Geoscience
Environmental Geology
Forest Ecology and Management
Forestry Research West
Geocarto International
Geoderma
Geografiska Annaler, Series A
Geological Society of America Bulletin
Geology
Geomorphology
Geotech. Eng
Géotechnique
Holocene
International Journal Geographical Information Systems
Journal of Environmental Quality
Journal of Forestry
Journal of Geology
Journal of Geotech. Engineering ASCE
Journal of Hydrology
Journal of Hydrology (New Zealand)
Journal of Paleolimnology
Journal of Soil and Water Conservation
Journal of the Royal Society of New Zealand
Journal of Water Resources
Landscape
Landscape Planning
New Zealand Agricultural Science
New Zealand Association of Resource Management, Broadsheet
New Zealand ASWC Broadsheet
New Zealand Engineering
New Zealand Forestry
New Zealand Geographer
New Zealand Geomechanics News
New Zealand Journal Experimental Agriculture
New Zealand Journal of Agricultural Research
New Zealand Journal of Agriculture
New Zealand Journal of Botany
New Zealand Journal of Ecology
New Zealand Journal of Engineering Geology

New Zealand Journal of Forestry
New Zealand Journal of Forestry Science
New Zealand Journal of Geography
New Zealand Journal of Geology and Geophysics
New Zealand Journal of Marine and Freshwater Research
New Zealand Journal of Science
New Zealand Journal of Science and Technology
New Zealand Meteorological Society Newsletter
New Zealand Mining
New Zealand Science Monthly
New Zealand Science Review
New Zealand Surveyor
Planning Quarterly
Quarterly Journal of Engineering Geology
Quaternary International
Resource Research
Soil & Water
Soil and Water Conservation
Streamland
Terra Nova
TGMLI Review
The Australian Geograph
Transactions Japanese Forestry Society
Transactions of the Royal Society of New Zealand
Tuatara
Water & Atmosphere
Water Resources Bulletin
Water Resources Research
Weather and Climate
Zeitschrift für Geomorphologie, Supplementband

Appendix 3: List of institutions and organizations referred to.

American Geophysical Union
Association Internationale d'Hydrologie Scientifique
Auckland Regional Authority
Auckland Regional Water Board
Canterbury Regional Council
Centre for Resource Management, Lincoln
Department of Conservation
Department of Scientific and Industrial Research, Land and Soil Sciences
Department of Scientific and Industrial Research, Botany
Department of Scientific and Industrial Research, Geology and Geophysics
Department of Scientific and Industrial Research, Land and Soil Sciences
Department of Scientific and Industrial Research, Land Resources
Earthquake and War Damage Commission
East Cape Catchment Board, Gisborne
ECNZ
Electricorp Production, Wellington
Forest Research Institute
Forest Research Laboratory, Oregon State University
Franklin District Council
Geological Society of New Zealand
Geotechnical Engineering Division/ASCE
Hauraki Catchment Board
Hawke's Bay Catchment Board
Hurunui District Council
Imperial College of Science and Technology
Institute of Geological and Nuclear Science
International Association of Hydrological Sciences
International Association of Scientific Hydrology
Land Resources Department, Wellington Regional Council
Landcare Research New Zealand Ltd.
Logging Industry Research Organisation
MAFTech
Manawatu Catchment Board
Ministry for the Environment
Ministry of Agriculture and Fisheries
Ministry of Works and Development, Water and Soil Directorate
Ministry of Works and Development, Civil Directorate
Ministry of Works and Development, Hydrology Centre
Ministry of Works and Development, National Water and Soil Conservation Organisation
Ministry of Works and Development, Soil Conservation
Ministry of Works and Development, Water and Soil
Napier City Council
National Parks Authority of New Zealand
National Water and Soil Conservation Organisation
Nelson City Council
New Zealand Association of Economists Incorporated
New Zealand Association of Resource Management
New Zealand Association of Soil Conservators
New Zealand Forest Service
New Zealand Geographical Society
New Zealand Geological Society
New Zealand Geological Survey
New Zealand Hydrological Society
New Zealand Logging Industry Research Organisation
New Zealand Meteorological Service

New Zealand Society of Soil Science
New Zealand Soil Bureau
NZ Association of Soil and Water Conservators
NZ Forestry Service
NZ Geological Survey
NZ Geomechanics Society
NZ Institute of Economic Research
NZ Institution of Engineers
NZ National Water and Soil Conservation
NZ Soil Bureau
NZ Water and Soil Conservation
Otago Catchment Board
Pacific Science Association
Porirua City Council
Rangitikei-Wanganui Catchment Board and Regional Water Board
Royal Society of New Zealand
Soil Conservation and Rivers Control Council
Soil Conservation Centre
South Canterbury Catchment Board
Taranaki Regional Council
Tasman District Council
Tauranga County Council
The Institution of Engineers, Australia
Tussock Grasslands and Mountain Lands Institute
UNESCO
United Nations Centre for Science and Technology for Development
Waikato Regional Council
Wairarapa Catchment Board
Wairoa County Council
Wellington Regional Council
Works Consultancy Services Ltd

Appendix 4: Common abbreviations used in references.

ANZASS	Australian-New Zealand Association of
DSIR	Department of Scientific and Industrial Research
EC	Earthquake Commission
ECNZ	Electricity Cooperation New Zealand
FRI	Forest Research Institute
GIS	Geographical Information System
IGNS	Institute of Geological and Nuclear Sciences
MAF	Ministry of Agriculture and Fisheries
MWD	Ministry of Works and Development
NIWA	National Institute of Water and Atmosphere
NZASWC	New Zealand Association of Soil and Water Conservators (??????)
NZGS	New Zealand Geological Survey
RMA	Resource Management Act
SRCC	Soil and River Control Council
WSD	Water and Soil Devisi on