

**The Waitaki Valley:
Its people and resources as depicted in 40 years
of applied and academic social science**

Lee Maynard and Harvey C. Perkins

Department of Social Science, Parks, Recreation, Tourism and Sport, Environment,
Society and Design Faculty, Lincoln University, Canterbury, New Zealand.

Nick Taylor

Taylor Baines & Associates Ltd.
Canterbury, New Zealand

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1 Introduction

This bibliography comprises literature on the social, economic and land use changes arising from natural resource development in the Waitaki Valley, a region on the borders of North Otago and South Canterbury on the east of the South Island of New Zealand, and which extends from the mountain highlands to the coastal plains. The bibliography includes material from a variety of sources including: theses and dissertations, conference papers, refereed journal articles, books, book chapters, edited books, and government, consultancy and university reports. The references focus on social issues in the Waitaki Valley related to natural resource use such as, the hydro-electric power, tourism, irrigation, and the relatively recent growth of dairy farming on land once exclusively used for pastoral (sheep and beef) farming. As a result of these developments the Waitaki Valley has been an important site for social, economic, environmental and resource management research.

A great deal of the material reviewed records various aspects of the social and ecological conditions of the Waitaki Valley. Researchers have been interested in studying the area because it has experienced a unique and high level of natural resource development. Some authors wrote their material to capture for posterity the significance of changes in the Valley; for themselves as local authors, for local communities and for the country. Some research was partly driven by resource management and planning to help in local and regional decision-making. Some references have a historical focus. Having done an initial review of a wider literature set, a choice was then made to annotate a smaller sub-set of that literature focusing particularly on material documenting the social issues related to natural resource development in the Waitaki Valley. Not surprisingly, as the overall sample of literature available to us was piecemeal, ad-hoc, and fragmented, so too is the literature we have annotated. Our purpose in this introductory essay is to try and ‘connect the dots’ of the literature we have reviewed and listed in the annotated bibliography that follows. The objective of this review is to lay the ground work for developing a longitudinal, catchment-wide approach to understanding the Valley from a social perspective; although of necessity a good deal of emphasis is placed at this stage on the experience of specific parts of the Waitaki Valley.

Several themes occur throughout the references and include:

- land use change
- recreation and tourism development
- community development
- regional planning
- government programmes
- population change
- employment
- economic development
- pest management
- natural resource development
- rural society
- cultural landscapes
- resource conservation
- local perspectives on regional change.

The ways these themes are configured are outlined in Figures One to Five and their notable features are discussed below. We begin by describing some of the social theoretical ideas which underpin the research being reviewed.

Figure One: Map

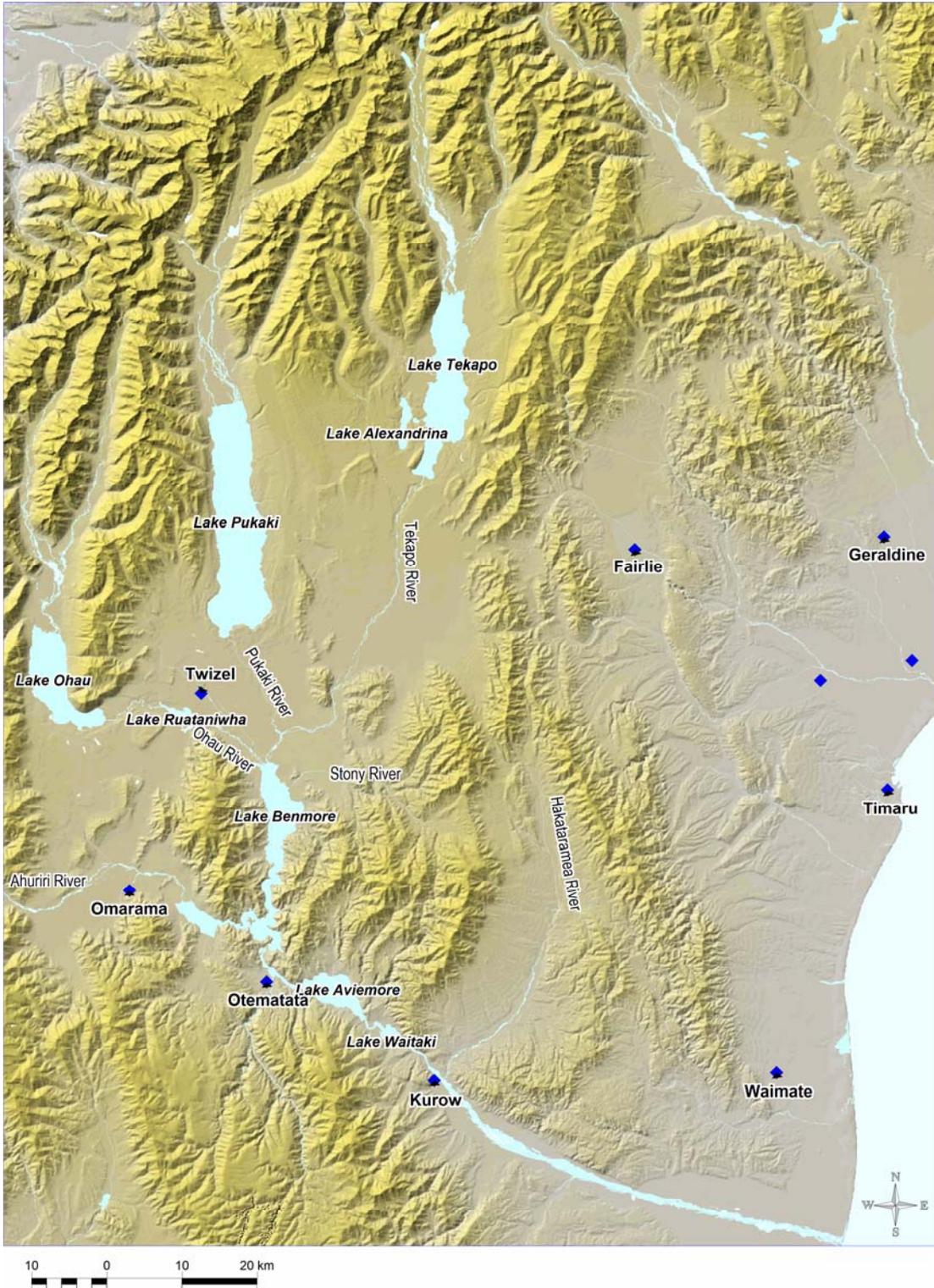


Figure Two: Themes in the literature centred on the Waitaki Valley

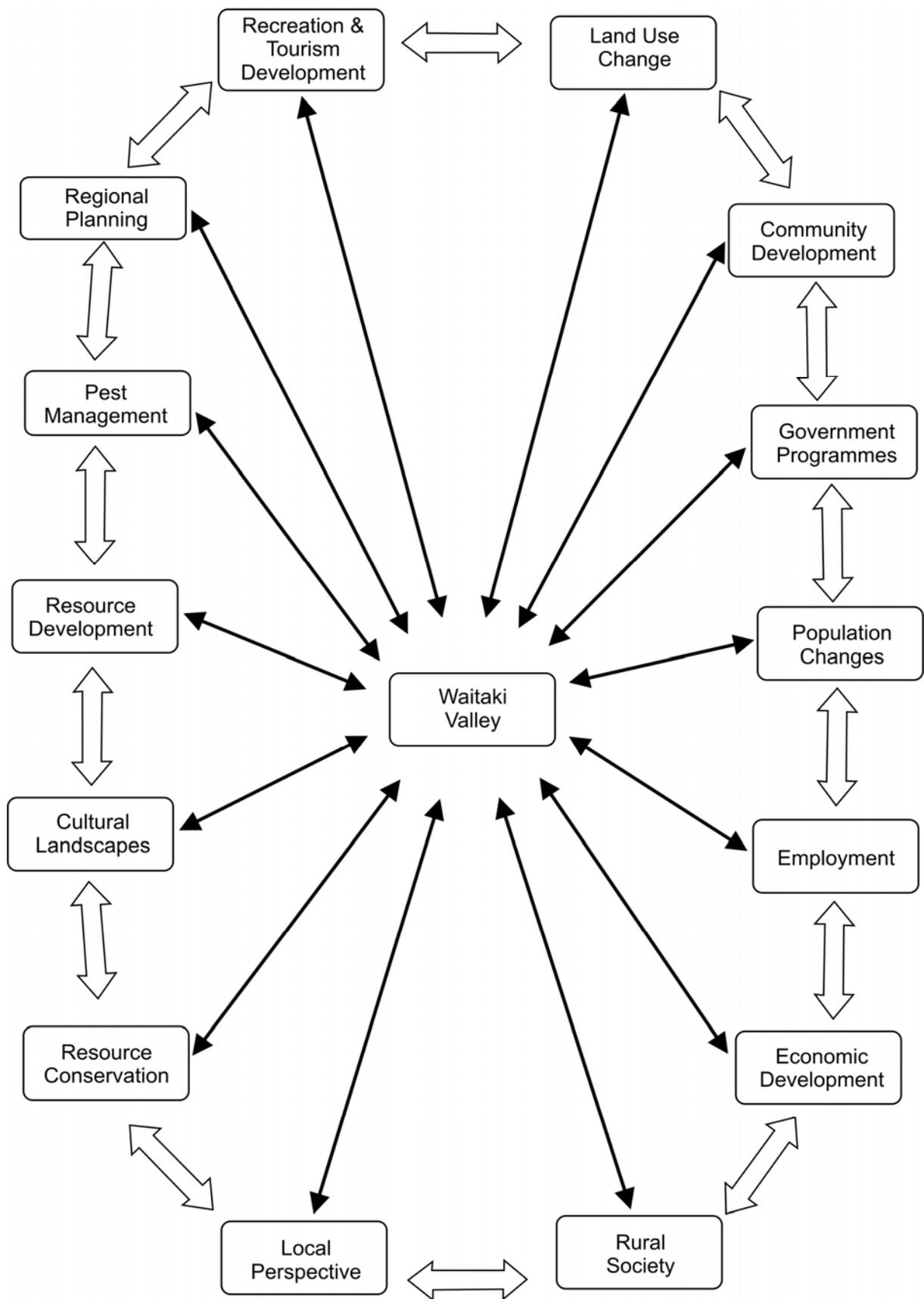


Figure 3: Themes in the literature centred on hydro development

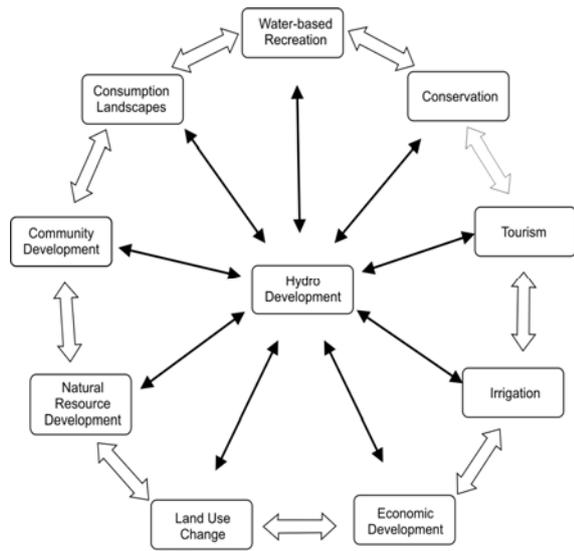


Figure 4: Themes in the literature centred on irrigation

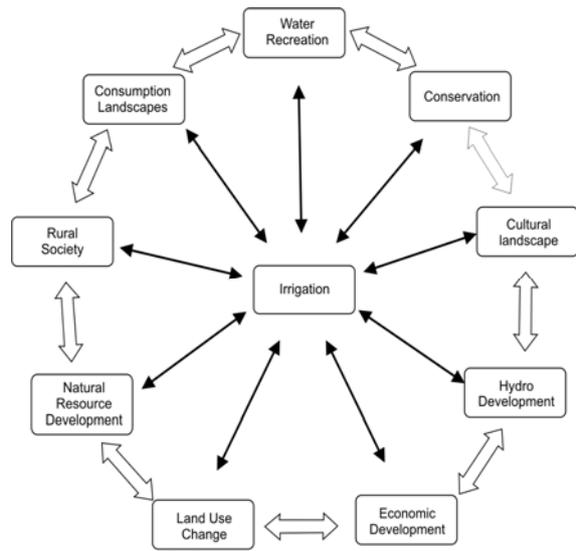


Figure 5: Themes in the literature centred on tourism/consumption landscapes

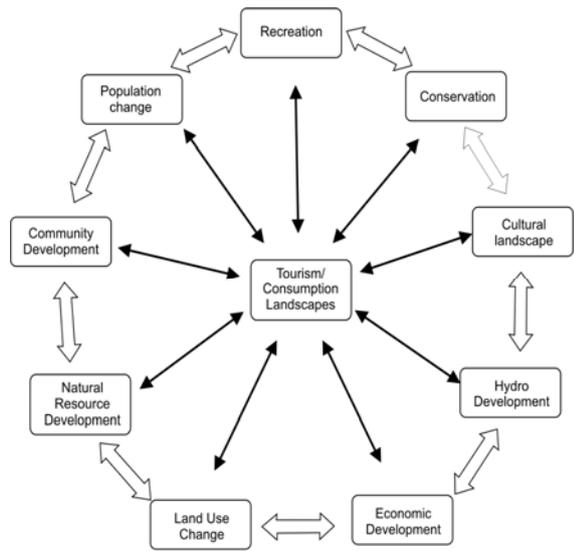
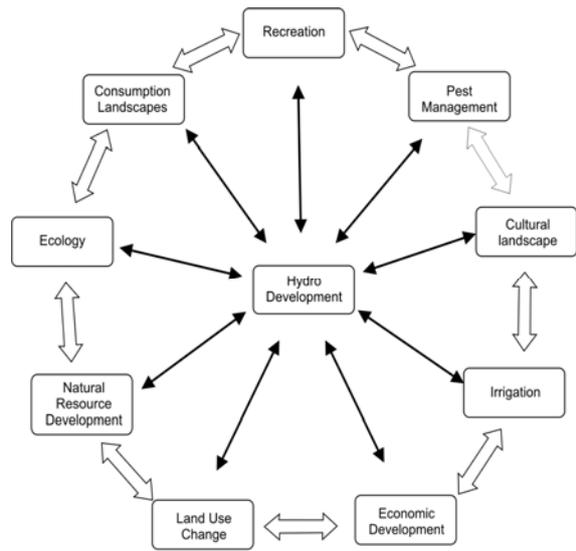


Figure 6: Themes in the literature centred on conservation



2 Theoretical perspectives

The theoretical perspectives adopted by the authors whose work was reviewed are quite eclectic, and included material that was:

- **ecologically related:** Baines 1990, Baines and Taylor 1993, Hughy and Wason 2005, O'Connor 1970, 1975, *Review 43* 1986, Taylor and Baines 1991
- **economic:** Dann 1977, Hubbard and Brown 1979, Kerr, Sharp and Gough 1986, Little and Taylor 2001, Steven 1987, Whitby 1979
- **historical:** Bendien 1983, Gilkison 1936, Natusch 1984, Nordmeyer 1981, Relph 2007, Sheridan 1995
- **social change related:** Blake et al. 1983, Davison 1986, Fitzgerald and Taylor 2000; Fitzgerald and Taylor 1989, Gillies 1977, Hall 1987, Heenan 1973, Little, Taylor and McClintock 1998, McClintock 1999, Ny 1987, Taylor Baines & Associates 1990, Stevens 1974, Taylor Baines and Associates 1996, Taylor Baines and Associates 2006, Taylor and Baines 1989, Taylor and Bettesworth 1983, The Ministry of Agriculture and Fisheries 1991, Wardle, Foran and Gibson 1996
- **cultural:** Douglas 2004, Fairweather and Swaffield 1994, Le Heron and Pawson 1996, Houghton 1980, Pawson 2004, Robertson et al 1978
- **policy and planning oriented:** Fitzharris and Kearsley 1977, Greenaway and Gimblett 2006, Morris, Fairweather and Swaffield 1997, O'Conner and Ackley 1981.

3 Land Use Change

Little, Taylor and McClintock (1998) have argued that land use and social change in the Waitaki Valley is constantly occurring and irreversible (see also *Review 43* 1986 and Fairweather and Swaffield 1994, Relph 2007). Pastoral farming was the pioneering post-colonial use of the Waitaki (Robertson et al. 1978) and while it is still an important land use, the widespread use of irrigation, some of it associated with hydro-electric power scheme development, has encouraged land use intensification, most recently associated with dairy farming. Consequently, researchers have taken a keen interest in the social aspects of agricultural and other land use change. Morris, Fairweather and Swaffield (1997), for example, used ethnographic methods to study how community dynamics influence land use change and Little and Taylor (2001) discuss the social changes related to irrigation induced agricultural intensification. Such changes have been interpreted in a variety of ways by local residents, with Fairweather and Swaffield (1994) finding that their local respondents had preferences for one of five alternative land use scenarios. Other research (Le Heron and Pawson 1996) suggests that land use change, particularly in the upper valley, is often interpreted negatively, by residents, regardless of economic benefits, because the new use alters the landscape making it visually and symbolically unfamiliar. In the lower valley, where residents were questioned about three potential river development proposals, Houghton (1980) found that they were also negatively disposed towards unfamiliar land use change.

The introduction of a very extensive hydro-electric power generation system in the valley also stimulated dramatic landscape change. As a result of inadequate regional planning in the early stages Fitzharris and Kearsley (1977) note how the creation of the Waitaiki dams and lakes was not incorporated into a wider scheme of multiple landuse. Planning was focused only on the production of electricity but despite this predominant use the valley is today very important recreationally. Had this been anticipated and planned for, a great deal of money and time would have been saved by avoiding having to 'retrofit' the Waitaki lakes for recreational use. It is also conceivable that such multiple use planning could have created a better recreational environment than is currently available.

4 Recreation and Tourism Development

Despite the planning issues mentioned above, recreation and tourism are now very significant socially and economically in the Waitaki Valley (see Stevens, 1974, for an early discussion). Particular effort has been applied by researchers to thinking about the development, role and future of the township of Twizel. Benedien (1983), for example, used Twizel, a former hydro-construction town, as a case study to explain the “hydro-town life cycle” and illustrates how it developed into a tourism support centre; and Ny (1987) refers to tourism as the saving grace of Twizel's economy after its downturn in the early 1980s due to government restructuring and low employment. More recently, Fitzgerald and Taylor (2000) have questioned whether Twizel can establish an identity as a tourism town, and if tourism can sustain its economic base. Their work followed that of McClintock (1999) who profiled four Waitaki Valley communities and their economic bases in energy production and tourism. The research emphasis on tourism has continued, with Relf (2007) also documenting changes of recreation use in the Waitaki Basin and describing the new tourism activities that have recently radically changed the economic use of the high country.

The upper Waitaki has long been important for outdoor recreation. Stevens (1987) studied the development of commercial recreation in the pastoral high country. She recommended a community based planning process as a way to incorporate the perceptions and concerns of all who claim resources in the high country. With a more specific emphasis, Davison (1986) documented the changing fashions in mountain land recreation and the various ways in which recreational opportunities have been facilitated in the Lake Ohau district. Blake et al (1983), taking a broader perspective, focused on the connection between recreation and high country tenure review. They found that recreation interest groups would like to have better access to high country areas for recreation and favoured the adoption of policies to achieve this objective. They also noted that recreation in the high country is also changing in both scale, diversity and intensity arguing that recreation has the potential to cause significant environmental, visual and economic changes in the high country.

The lower Waitaki Valley is also very important recreationally and recently Greenaway and Gimblett (2006) documented the current recreational use and opportunity in the Lower Waitaki River and anticipate changes to recreational use as a consequence of further natural resource development for hydro-electric power.

5 Community Development

There is a very direct connection between social and community change and natural resource development in the Waitaki Valley (Ministry of Agriculture and Fisheries 1991, Morris, Fairweather and Swaffield 1997, McClintock 1999). This is exemplified in Hall's (1987) analysis of rural community formation and change in the Kurow District and his focus on closure, community and communion. This substantial work is also important for its discussion of the historical development of the Kurow district. Research has also focused on the ongoing effects of building towns and communities as part of hydro-electric power development. In this context Benedien (1983) and Fitzgerald and Taylor (2000) focus on the upper Waitaki valley and Nordmeyer (1981) and Natusch (1984) concentrate their efforts on the much earlier development of the first Waitaki dam near Kurow.

In a quite different area of research, Douglas (2004) and Pawson (2004) have examined the lower Waitaki Valley community's effort over nearly a century to memorialize fallen soldiers by planting road side oak trees and how the community maintains the scheme today. Pawson (2004) explains the powerful sense in which the trees embodied the soldiers that they represented, writing that “In

their place, the trees would grow old as the boys would have done, simultaneously changing the landscape as would their work as men” (2004 p.124).

6 Regional Planning and Management

One of the factors underpinning a body of research in the 1970s and early 1980s stemmed from the then strong New Zealand interest in regional planning, particularly among university researchers. Forrest (1977), a geographer, with an interest in regional recreation planning therefore argued that the upper Waitaki Valley had become a recreational growth pole but that its development needed better planning. His view was that “a laissez-faire attitude to recreation is no longer viable, if everyone is to be able to participate in the activity of their choice” (Forrest, 1977 p.89). In the same year, Fitzharris and Kearsley (1977) argued that recreation has a regional impact and therefore planning should take place at a regional level in order to provide users the most optimal recreation experience. With a different focus, O'Connor and Ackley (1981) made regional planning recommendations based on their work in the valley as part of the extensive Man and the Biosphere programme. They discussed the need for regional councils to work more closely with local authorities to increase the quality of regional planning.

With the rise of the sustainability paradigm in the late 1980s a sustainable development ethos began to underpin thinking and research about regional development and management. Concentrating on the Rabbit and Land Management programme Taylor and Baines (1989 and 1991) thus established a framework for thinking about sustainable development based on an adaptive and integrated approach to social impact assessment. This framework was designed to identify unsustainable trends and placed heavy emphasis on monitoring in regional planning. Their work was influenced by the realisation that “the viability of ... farms and their communities are in serious question” due to the environmental degradation of pasture by rabbits (Taylor and Baines, 1991 p.1). In the same vein, Wardle, Foran and Gibson (1996) laid out a framework comprising fifteen sustainable land use scenarios and future land allocation for the mountain lands of the south island of New Zealand.

7 Population Change

Population change has been a particular research focus. O'Connor (1975) showed, for example, how Waitaki villages grew with the intensification of agriculture and describes the demography of the region. One particular trend that was evident in the valley's population in the early 1970s (Heenan 1973) was the domination of males and youth out-migration, as was typical of many rural regions at the time. Heenan argued in his analysis of population change in North Otago that population decline is difficult to reverse because of the impact of underlying social and economic forces causing the trend to be cumulative. Gillies (1977) took a similar view, finding that without irrigation rural population declines and ages, which causes a shift in the need for social services and education. Without irrigation development, areas such as the Waitaki valley lack social, educational and employment opportunities for young people and the overall quality of life decreases for all community members. The advent of irrigation development in the lower Waitaki valley had the effect of creating a more diverse population and workforce (Little, Taylor and McClintock 1998).

With respect to hydro-electric power development in the Waitaki valley, population change has been significantly influenced by 'boom-bust' economic and infrastructural development and this is nowhere better exemplified than in the creation and later disestablishment (at least partially) of hydrotowns. Bendien (1983) discussed the social consequences of the wind-down of Twizel and writing from a different perspective Natusch (1984) examined the demographic imbalance of largely male construction hydro construction camps.

8 Economic Development

A considerable part of the research base dealt with economic development and employment issues. Hubbard and Brown (1979), for example, examined the regional economic impacts of irrigation development finding that the irrigation in the lower Waitaki basin had a positive economic effect on the region. They found that farm owners increased their capital through construction, operation and maintenance on their property in response to irrigation development. Little and Taylor (2001) also analysed the economic impacts associated with irrigated land use change but also paid some attention to the effects of irrigation on farming practices and social change. They identified three waves of ownership change as the effects of irrigation took hold.

Some work has also been conducted in the upper valley with Whitby (1979) examining development possibilities for run holders. The future of Twizel was an important research topic in the 1970s with Dann (1977) arguing for Twizel's suitability as a permanent town to service the Mackenzie Basin through tourism. He believed "the hotels will help sustain the community and vice versa" (1977 par.3). The economic value of recreation and tourism became a matter for research in the 1980s with Kerr, Sharp and Gough (1986) estimating the economic benefits associated with Mount Cook National Park.

9 Pest Management

With its significant economic reliance on agriculture, introduced plant and animal pest management has long been an important issue in all parts of the Waitaki Valley. Research with a social orientation has been conducted on rabbit and land management (Baines 1990, Baines and Taylor 1993, Taylor Baines and Associates 1996) and Himalayan Tahr management (Hughy and Wason 2005). The latter is complicated, and the source of tension between farmers and the Department of Conservation. Some farmers view the Himalayan Tahr as an economic resource for commercial trophy hunting rather than as an exotic pest, which is the perspective of the Department of Conservation.

10 Cultural Landscapes

Economic and social change in the Waitaki valley has manifested itself most obviously in the landscape. Traditional pastoral farming is the iconic representation of land use in the Waitaki Valley but in many places this has had to make way for new landscapes of production and consumption, not all of which have found favour with locals and those living further afield but who visit the region on a regular basis. Researchers have dealt with such issues in various ways. Davison (1986), for example, found that although a majority of New Zealanders are urban dwellers, many of them identify with backcountry and mountain lands and object to changes in what they see as iconic landscapes as a result of agricultural intensification and the addition of buildings to natural landscapes. This research finding has been replicated by other researchers over the intervening decades (Fairweather and Swaffield 1994, Le Heron and Pawson 1996, Morris, Fairweather and Swaffield 1997). Landscape management is clearly an issue for further research and policy implementation in the Waitaki valley as agricultural intensification is pursued with dairying on irrigated soils and other changes such as life-style block developments take place.

Annotated Bibliography

Baines, J. (1990). *The Rabbit and Land Management Programme 12 Month Review. Canterbury: Taylor Baines & Associates.*

In this report, contracted by the Ministry of Agriculture and Fisheries, Baines discusses key issues concerning the administration the Rabbit and Land Management Programme (RLMP) designed to manage land to limit the infestation of the introduced grey rabbit. The RLMP was, in part, administered in the Waitaki Valley. The report questions whether the existing RLMP strategy has a chance of success. The report includes: an executive summary, background to the first year of implementation, the 1988 task force recommendations, highlights of the 1990 Interim programme, a summary of issues and recommendations. During the review year, the programme had experienced successes and shortcomings. A notable achievement was a generally improved awareness and attitude toward the Programme. A major concern was the lack of ownership of the Programme by land owners. Overall, “many agencies point to the Programme as an innovative approach to implementing public policy that will probably have application elsewhere” (p.1).

Baines, J. and Taylor, N. (1993). *Rabbit and Land Management Programme Social and Institutional Monitoring Mid-term Assessment. Canterbury: Taylor Baines & Associates.*

In November 1992, the Rabbit and Land Management Programme (RLMP) commissioned Taylor Baines and Associates to carry out a mid-term assessment of the programme. They conducted structured interviews with individuals from a wide range of groups. This report focuses specifically on eleven elements of change instituted as a result of the RLMP. The main emphasis was on identifying changes in behaviour and attitudes. The data derived from the interviews, provide local perspectives on the role the RLMP played in the communities in which it was administered.

Bendien, J. (1983). *The Wind-Down of Twizel. Canterbury: Centre for Resource Management and Lincoln College.*

This report is a case study that discusses the wind-down of Twizel, a hydro-town in the Mackenzie Basin. It is allied with historical comparative research into the social changes associated with the development of hydrotowns. This research showed that particular types and patterns of social change could be seen in all hydrotowns regardless of their spatial and temporal location. This reoccurring pattern has been characterised as the “hydro-town life-cycle”, a very helpful phenomenon in the context of forecasting and assessing the social issues arising from changes in the various stage of the life cycle. Bendien applies this knowledge in his examination of the wind-down of Twizel, which began as a temporary construction village but then became “a persistent hydro-town” because of its continued existence after the construction project had been completed. Like other temporary hydrotowns, Twizel suffered a range of social problems during its wind-down phase. At the time of this research private developers proposed to buy Twizel and create a grand tourist attraction but these plans did not eventuate and today Twizel exists as a rural servicing centre and the site of many holiday homes and some commercial tourism and hospitality enterprises.

Blake, H. et al. (1983). *Pastoral High Country: Proposed Tenure Changes and The Public Interest. Canterbury: Centre for Resource Management.*

This report discusses the pastoral high country and the issues surrounding its management in all of the South Island of New Zealand and therefore includes some discussion of the Waitaki Valley. Section 3.4 entitled 'Recreation' is the most relevant to this bibliography. It outlines the role of “the Land Settlement Board [as] ... the main controlling agency for all uses of unalienated Crown land,

including high country recreation” (p.73). The authors discuss how recreation interests groups would like to have better access to high country areas for recreation and have established plans to achieve this. In addition to issues surrounding improved access, the section notes how recreation in the high country is changing in both scale and diversity. Recreation is becoming more intensive, causing more impacts on the land. Some of these impacts can have an adverse effect on farming operations. Ultimately, recreational activity has the potential to cause significant environmental, visual and economic changes in the high country. For these reasons the report concludes with recommendations for careful planning of the high country and the comprehensive assessment of the social, economic and environmental consequences of recreational and other uses.

Dann, D. (1977). *Twizel Tourist Village*. Wellington: Ministry of Works Department.

This report argues in support of the proposal that Twizel should become a permanent town to service the Mackenzie Basin. It is based on the assumption that Twizel will mainly service the New Zealand Electricity Department's operational needs and be used as a holiday resort by tourists. It assesses arguments for and against the proposal, also examining, and finding wanting, the suggestion that a tourist resort might be better established at Lake Pukaki. The lake's rocky shoreline and unpredictable and fast changing weather were considered major demerits by the author. The report offers a brief description of the existing facilities at Twizel and how the town can contribute to the future development of the Mackenzie basin. An addendum written by S.M. J. Smith, project engineer in the Upper Waitaki Electricity Project, is included. He writes in support of a Twizel Tourist Village report arguing for hotels to be based in Twizel rather than Pukaki. He believes “the hotels will help sustain the community and vice versa” (par.3). Following the proposal, are a variety of town planning maps showing the layout of Twizel. A district plan (WP51) shows recreation proposals in the Mackenzie Basin. Sheet 5 is a plan showing the Twizel Tourist Village Scheme. It is recommended that this proposal be revised every five years.

Davison, J. (1986). *OHAU: A Study of the Evolution of New Zealand Mountain Land Recreation*. New Zealand Man and the Biosphere Report No. 10. Canterbury: Centre for Resource Management.

This study contributed to the Waitaki Man and Biosphere programme and discusses the need for recreation management in the Ohau Mountains and the importance of integrating it with other resource uses. Chapter one describes the setting of the study. Chapter two describes recreation in the Lake Ohau district. Chapter three discusses the managing agencies and chapter four describes themes and way of managing policy and planning integration. Three broad themes of this work are the changing fashions in mountain land recreation, the recreational significance of the Lake Ohau district and the various ways in which recreational opportunities have been facilitated in the district. The report concludes with a discussion of the view that inclusion of recreation in high country management planning can serve only to stimulate a sense of public community and identity with the land.

Douglas, R. L. (2004). *Mighty Oaks From Tiny Acorns Grow: The Story of the Memorial Oaks Scheme in North Otago*. Oamaru, N.Z.

This book tells the story of a scheme to memorialize fallen soldiers of the Great War who were from the Waitaki Valley. The scheme consisted of planting oak trees, each with a bronze plaque, throughout the Waitaki Valley, for every fallen soldier. This book records “what the ‘Memorial Oaks’ are, why they were planted, and where to find them” (foreword). It tells about changes to the scheme, since its origin in 1918, such as replacing the bronze plaques with concrete crosses. The book also includes biographies of fallen soldiers, maps, photographs and a list of the soldiers who are memorialized by the scheme. The ‘Memorial Oaks’ scheme is a unique feature of the Waitaki Valley and exemplifies the relationship between people and landscape.

Fairweather, J. and Swaffield, S. (1994). *Preferences for Land Use Options in the Mackenzie/Waitaki Basin*. Research Report No. 224. Canterbury: New Zealand Forest Research Institute Limited.

This study uses the Mackenzie/Waitaki Basin as a case study for the estimation of socio-economic effects of land use change in rural environments. The method used to identify attitudes was a 'Q sort' survey. The survey involved seventy-seven stakeholders expressing preferences for pictures that showed the effects of a range of different land use scenarios. Analysis of the results identified several sets of preferences or themes. Five composite land use scenarios were generated. The method found clear patterns of preferences for different land use effects but these five scenarios did not correspond closely to the preferences of particular stakeholder groups. Rather, patterns of land use effects were identified by stakeholders as a whole.

Fitzgerald, G. and Taylor, N. (2000). *Resource Community Formation and Change: A Case Study of Twizel*. (Working Paper 22). Taylor Baines & Associates.

This paper focuses on the history and development of Twizel and provides a strong “conceptual and empirical basis for social assessment and resource planning in New Zealand, especially in rural communities that depend directly on primary production or processing of natural resources” (p.1). Using a variety of research methods, the authors tell the story of Twizel, a unique “residual hydrotown” (p.42). A survivor of significant transformation, Twizel originated as a company construction community and has evolved into a self administered and self funding rural town. The town overcame political, social and economic struggles in response to this transformation. The paper concludes by questioning the future of Twizel establishing a new identity. Can tourism, its most recent economic base, sustain the town?

Fitzgerald, K. and Taylor, N. (1989). *North Otago Social Assessment*. Lincoln: Centre for Resource Management.

This unpublished report, written for the North Otago Council for Social Services (NOCOSS), provides a social assessment of rural North Otago as it responded to economic restructuring. Fitzgerald and Taylor’s field research comprised purposive, in-depth interviews with providers of social services. The report describes the social conditions of rural change, unemployment, youth, women and children, elderly, minority groups and economic initiatives of North Otago at a time (1989) when social conditions were difficult in North Otago, due to economic restructuring, lack of funding and severe drought. Fitzgerald and Taylor conclude with recommendations and a social development strategy to guide rural social development in North Otago. Their concluding comment was that “there is a need to coordinate and advocate for social services, and to review regularly mechanisms for funding” (p.46).

Fitzharris, B. and Kearsley, G. (1977). *Recreation and Hydro Development in the Waitaki Valley: Lessons for the Clutha*. Proceedings of the Ninth New Zealand Geography Conference.

As plans for the hydro electric power development of the Upper Clutha River proceeded, commentators began to reflect on the experience of earlier schemes for more effective environmental management approaches. In many hydro schemes, after the construction phase, local benefits often did not compensate for the loss of a variety of landscape features except in the area of recreational provision. This paper examines this thesis using experience from the Waitaki Catchment. The authors argue that recreational development has not been sufficiently associated with hydro schemes, saying that this is unfortunate because hydro power construction offers many opportunities to develop recreation in a planned manner. In the Waitaki Valley, the use of the

former hydro town, Otematata, as second-home community is a good example of what might be done. The provision of a competition rowing centre on the deliberately created Lake Ruataniwha, in the upper Waitaki, where only a canal was intended, is a further example. There is considerable potential to consider the needs and impacts of recreation provision in regional planning and it is here that the connections between hydro development and recreation should be considered.

Forrest, D. (1977). *Recreation as a Regional Resource. The Waitaki Example. Proceedings of the Ninth New Zealand Geography Conference.*

This paper discusses the need for regional recreation planning and development on hydro project schemes in the Waitaki Valley. In the 1960s, for the first time, the New Zealand government utilized a resource associated with a hydro project by retaining part of Otematata, a hydro construction town, as a holiday and retirement village. Since this precedent, the Upper Waitaki Valley has become a recreational growth pole. But very little research into this phenomenon exists. Forrest is an advocate for recreational issues being given full consideration in the planning and design of water resource projects. He suggests that, ideally, a multi-objective planning approach will be developed for recreation in the Waitaki Valley with specific focus on agricultural, recreational and tourism potential rather than just electricity production as in the past. The paper gives full credit to the Waitaki Lakes Committee for recreation development and opportunities existing on hydro project sites in the Upper Waitaki. The paper concludes that “a laissez-faire attitude to recreation is no longer viable, if everyone is to be able to participate in the activity of their choice” (p.89).

Gilkison, R. (1936). *Early Days In Central Otago (New Zealand) Being Tales of Times Gone By. Second Ed. Auckland: Whitcombe & Tombs Limited.*

This book provides, in detail, historical information of Central Otago. Originally written in 1940. This revised version includes re-written and re-assessed material since the publication of the previous volume. The book includes twelve chapters covering a variety of social topics on Central Otago. The book does not include information on the Waitaki hydro-electric power scheme because it was written as the scheme was in its infancy. Even so, this reference is relevant to this bibliography because it tells of life in the Waitaki Valley before the scheme. The chapters include detailed accounts of individuals' stories providing a vivid picture of life in the early days of Central Otago. In addition to the descriptive text, many maps, illustrations and photographs provide interesting visual aides.

Gillies, A. (1977). *Social and demographic consequences of irrigation development in the Kakanui-Waiareka catchments and Lower Waitaki Plains, North Otago, New Zealand: a comparative study. A thesis submitted for the degree of Master of Arts in Geography. Dunedin, New Zealand: University of Otago*

Gillies compares the social and demographic effects of irrigation schemes in the Downlands of the Kakanui Basin and the Lower Waitaki Plains. She found that without irrigation development the population declines and ages, causing shifts in social and educational service requirements. Without irrigation, rural areas lack social, educational and employment opportunities for young people and overall quality of life decreases for all community members. Gillies concludes that an opposite, and therefore positive, social and demographic effect occurs with the development of an irrigation scheme. In addition to a more diverse population and broader range of social services, development of an irrigation scheme reduces the risk of droughts and the economic and social disruption caused by such events. Irrigation development “has important implications for the total social and economic growth and development of the North Otago region as a whole” (p.176).

Greenaway, R. and Gimblett, K. (2006). *North Bank Tunnel Concept: Water Consents Recreation Report. Appendix 23. Report to Meridian Energy Ltd.*

This report assesses the potential effects the North Bank Tunnel Concept (NBTC) being promoted by Meridian Energy will have on recreational activities of the Lower Waitaki River. The report describes the nature of current recreational use and opportunity in the area of the Lower Waitaki River between the Waitaki Dam and the coast. It also considers anticipated changes to recreational use and related opportunities as a consequence of the NBTC. Section five of the report discusses the significance of the Lower Waitaki River to recreation based on a River Recreation Survey undertaken in the summer of 2002. The report concludes with a table (Table 14) showing the comparison of effects on the Lower Waitaki River from the NBTC with the status quo. The summary of the report and table is that the net effect on recreation in the Lower Waitaki River from the NBTC is generally likely to be minor.

Hall, R. (1987). *Continuity and Change in a New Zealand Rural District, Unpublished PhD, Christchurch: University of Canterbury.*

Halls' work is on the historical development of the Kurow district and focuses on rural community formation and change. Using a Weberian framework Hall explains the dynamic interplay between three sets of locality relationships: propinquity (community), property (class) and kinship (family). A key argument is that the process of community formation within a locality cannot be adequately understood without understanding all three sets of relationships together. Hall writes within a theoretical framework of closure, community and communion being sensitive to the tensions between relations of propinquity, property and kinship. This enables us to better understand the process of community formation and change within a locality.

Heenan, L. B. D. (1973). *The People of North Otago: A Demographic Profile. In T.J. Hearn and F.A. Slater (eds), North Otago, Region and Development, North Otago Development Conference.*

Heenan analyzes the demographic trends of North Otago. This demographic analysis shows a level of differentiation between village and farming communities in North Otago. Population trends in Waitaki County are consistent with other rural regions, being characterised by an imbalance of males over females and the out-migration of young people. Heenan notes that population decline is difficult to reverse because of the impact of the underlying social and economic forces causing the trend to be cumulative.

Houghton, R. (1980). *Lower Waitaki Communities Study. Wellington: Ministry of Works and Development and Department of Lands and Survey.*

Lower Waitaki communities are generally farming communities and residents share farming values. "Socially, the area is stable and homogeneous" (p.82). This study includes aspects of regional planning, irrigation development and power development of the Lower Waitaki. The social impacts of proposed river development depend on which of three plans is chosen. During this study, residents were unsettled because they did not know how the river would be developed. Local preference was for irrigation as a high priority river use. Residents reported concern about the impacts of construction of any future development on the lower river. They "don't want the problems of Twizel" and would prefer for the workforce to be dispersed rather than living in one large construction works town (p.76). If construction does occur on the Lower Waitaki this report serves as a "base-line" study and the author recommends continuous monitoring of social change in the area so remedial action can be taken where problems occur.

Hubbard, L. and Brown, W. (1979). *The Regional Impacts of Irrigation Development in the Lower Waitaki*. Research Report No. 99. Canterbury: Agricultural Economics Research Unit, Lincoln College.

The aim of this study is to examine in terms of output, income and employment, the regional impacts of the irrigation developments which have occurred in the Lower Waitaki basin. Specific focus was placed on calculating the net regional value of increased agriculture output, on and off farm construction, and operations and maintenance. The authors concluded that irrigation development in the Lower Waitaki basin has had a positive economic effect on the region. Farm owners have increased their capital through construction, operations and maintenance on their properties in response to irrigation development.

Hughey, K. and Wason, K. (2005). *Management of Himalayan Tahr in New Zealand: High Country Farmer Perspectives and Implications*. Research Report No. 276. Canterbury: Lincoln University.

The purpose of this report is: (1) to outline farmer perspectives about Himalayan tahr and the management of tahr on high country stations; and (2) to contribute to the ongoing debate about the future management of the species. Forty-three high country farmers were surveyed in 2004. Almost all respondents consider tahr a resource to some extent and that they have become more so over the last ten years. Almost all respondents favoured sustainable management of tahr in the long run. Reported income for farmers generated by activities associated with tahr ranged from under \$1,000 to over \$50,000 per year per property. The study results found a need for a cooperative management approach between run holders, the Department of Conservation and hunting interests that seeks to meet the combined interests of all parties. This regime would be based on the recognition that tahr are a significant resource.

Kerr, G., Sharp, B. and Gough, J. (1986). *Economic Benefits of Mt. Cook National Park*. Canterbury: Centre for Resource Management.

This study's aim is to estimate the economic benefits associated with Mount Cook National Park, a significant natural and cultural resource at the head of the Waitaki Valley. The report rests on the assumption that economic benefit analysis is valuable to park management because it provides guidance in making decisions at the margin, and especially in cases of conflict in which one group's welfare must be traded-off for another's (p.141). Using such a model to describe the optimal number of visitors to a national park, the authors found that individual domestic and foreign tourists have very similar effects on regional development and concluded that it is not, therefore, beneficial to market or provide for one user group over the other.

Le Heron, R. and Pawson, E. (eds.) (1996) *Changing Places. New Zealand in the Nineties*. Auckland: Longman Paul Limited.

This book is particularly relevant for the study of rural restructuring, and therefore the whole of the Waitaki River catchment, but case study 8.4: cultural landscapes of the high country, is of specific importance to an understanding of those part of the Waitaki catchment that are in the high country. Images and ideals of the South Island high country play an important role in the self identity of many New Zealanders. However, the current economic and ecological reality is far removed from the myth of a pastoral utopia promoted in advertisements. Due to restructuring, economic, political and social changes are inevitable in the high country. Run-holders fear foreigners will obtain exclusive mountain views through land ownership in the high country. Alternative natural resource uses, such as forestry, have been considered in order to improve the current situation. However, a change of resource use and landscape is often unpopular since culturally, residents relate pastoral farming with the high country. Thus, the fundamental issue of high country sustainability is as much cultural as ecological. The issue of landscape sustainability in the high country can be seen as

an expression of the contest between global, regional and local ownership of ecology, identity and capital. This contest is intense because the high country landscape has strong symbolic meaning to many.

Little, H. and Taylor, N. (2001). *Social and Economic Impacts Associated with Irrigated Land Use Change*. The New Zealand Association for Agricultural and Resource Economics (NZAERS) Conference: 6-7 July, 2001.

The authors discuss the social and land use changes associated with irrigation. Little and Taylor created a model that illustrates how irrigation creates three waves of ownership change. Phase One comprises the period of relatively extensive pastoral un-irrigated farming. Phase two begins with the introduction of irrigation and comprises the beginnings of intensive agriculture, often associated with dairy farming. The Third Phase is in place when an irrigated region is fully intensified and land use change is complete. These changes have significant social and economic impacts. Irrigation provides the impetus for changes in land use, ownership, work and employment patterns (including the introduction of a new class of rural workers such as dairy farm staff), and therefore demography and community social structures. The ability of people to adapt to farming with irrigation turns on many factors, but especially age. In general, younger people are more willing to adopt the new and different farming practices that depend on and derive from irrigation. In addition to farmers, service providers in towns must adapt to irrigation; making their businesses relevant to farming with irrigation is necessary in order to survive in a new social and economic environment. Appropriate positioning of rural towns is critical in order to capitalize on the production, social and economic changes associated with irrigation.

Little, H., Taylor, N. and McClintock, W. (1998). *Resource Community Formation and Change: A Case Study of Waitaki Plains*. (Working Paper 14). Canterbury: Taylor Baines & Associates.

This paper is one in a series of case studies about agricultural communities in New Zealand, produced as part of a project entitled "Resource Community Formation and Change" funded by the Foundation for Research, Science and Technology. The setting of this paper is the Waitaki Plains in the lower valley and it tells the story of dairy farming in the area. Irrigating the Waitaki plains caused "irrevocable change" that substituted dairy farming for the traditional land use of the area: pastoral farming (p.4). This new agricultural practice attracted farmers from the North Island. Irrigation and dairy farming required and established a different lifestyle and way of life in the Waitaki Plains with many established locals reporting a reduced quality of life which they did not like. Compared with pastoral farming, dairy farming requires more time on the job, is more capital intensive and employs an occupational class of farm workers and sharemilkers. These new work patterns, landscape changes and the introduction of a hitherto un-encountered and disliked socio-economic class (from the point of view of some established rural residents) put very real social and cultural pressure on them.

McClintock, W. (1999). *Resource Community Formation and Change: Profiles of Energy, Fishing and Tourism Communities*. (Working Paper 19). Canterbury: Taylor Baines & Associates.

This paper reports part of a study which investigates resource community formation and change in New Zealand and uses four examples of communities from the Waitaki Valley (among a total sample of 30 nationally) including Twizel, Otematata, Omarama and Lake Tekapo. Using census data, McClintock categorizes these as either energy, fishing or tourism communities depending on the main source of employment. Twizel and Otematata are energy communities whereas, Omarama and Lake Tekapo are tourism communities. All four of these communities have a commonality; their economy depends on a natural resource or resources. Each of the profiles of these

communities varies depending upon whether its workforce is energy or tourism based. An energy-based workforce has a higher percentage of trades workers/machine operators, whereas a tourism community workforce has a high percentage of people in sales/service. All four communities have experienced the development of natural resource and population changes. McClintock concludes that the tourism sector is not immune to similar cyclical pressures experienced by the other natural resource based sectors.

Ministry of Agriculture and Fisheries. (1991). *Report on Community Development Initiatives For Sustainable Land Management*. Canterbury, New Zealand: Taylor Baines & Associates.

Twenty months were spent monitoring rural community change in New Zealand. The principal aim of this work was to provide “information critical to the formation of policy as well as to the implementation and organization of the Rabbit and Land Management Programme (RLMP)” (p.2). The paper illustrates the “The General Picture” providing the context for community development in respect to current issues for the RLMP (p.3). The following section explains the RLMP in respect to local initiatives. This includes discussion on the background, philosophy and principles behind development initiatives in the high country. The report lists and briefly describes current local initiatives. It addresses issues and concerns associated with the process of rural community development and makes recommendations for improvement. The report concludes with a summary of key issues for a community development process and key messages to MAF and the regional councils on the community development process. Overall, this report makes recommendations to improve community development in rural high country communities in New Zealand.

Morris, C., Fairweather, J. and Swaffield, S. (1997). *Investigating Community: Imperatives For But Constraints Against Land Use Change in the Mackenzie/Waitaki Basin*. Research Report No. 236. Canterbury: Lincoln University.

This report examines the character of the rural community in the Mackenzie/Waitaki Basin and the role that community dynamics play in land use change. The study utilizes an ethnographic approach to provide a description and analysis of the social context of land use change in the Mackenzie/Waitaki Basin. The report begins by reviewing the history of land use change, identifying land user groups, and describing the environmental and political factors that influence land use. The report then accounts for landholder's attitudes to farming and intensification and diversification of land uses. Their opinions and points of view are illustrated in their own words. Landholder's in the District perceive themselves to be in conflict with a number of groups: government, bureaucracy environmentalists. The report concludes by examining the policy implications of its findings, asking if there a consensus among residents of the Mackenzie/Waitaki on their experience of 'community' and finding that there are multiple communities.

Natusch, G. (1984). *Waitaki Dammed and the Origins of Social Security*. Dunedin: Otago Heritage Books.

The author had “a distinguished career as an engineer with the Ministry of Works and is well equipped to tell the story” about damming the Waitaki (Foreword). The book describes in detail, with many photographs, the social history of the Waitaki Dam construction. Overall, social conditions were poor and work on the dam was labour intensive. The hydrotown communities had a population of about 2,000 people, mostly men employed by the Ministry of Works. The book includes a map of the Waitaki Valley, upstream of Kurow, showing the course of the river as it was in the 1920s. The chapters are entitled: In the beginning, Construction, Life in the Camp and The Later Developments. Natusch concludes that damming the Waitaki was a highly efficient long term investment and the value of the project will continue to rise. However, due to the social,

economical and environmental elements of the 1920s it cannot be repeated, “there will never be another Waitaki” (p. 62) he argues.

Nordmeyer, A. (1981). *Waitaki The River and its Lakes The Land and its People*. Upper Hutt: Waitaki Lakes Committee.

The Waitaki Lakes Committee commissioned Nordmeyer, a renowned parson, politician and public figure who lived from 1925 to 1935 in Kurow during the construction of the Waitaki Dam, to write about the history of the Waitaki River catchment. The Committee “felt that the vast and dramatic changes which were taking place in the river’s struggles from the mountain to the sea through man’s efforts to control and harness her resources should be noted and that the changes that have occurred in river, land and people, both during the last century and this, should be recorded in book form” (p.xi). All of the content in this book is relevant to this bibliography; however certain chapters are more significant than others. These chapters discuss hydro development and the man-made lake’s effects on recreation and the environment, developments in farming and the people of the river basin. The book includes many high quality photographs and illustrations providing both a historic and modern depiction of social, natural and hydro scheme life of the Waitaki Valley.

Ny, A. (1987). *A Study of the Pukaki-Ahuriri High Country Area. A Focus on Population Change in Twizel and a Discussion of Community Services in Twizel, Mt. Cook and Omarama*.

Ny discusses the population changes and community services of Twizel, Mt. Cook and Omarama, all villages located within the Waitaki Valley. Twizel originated as a temporary hydro town but later became a permanent settlement. At this time its population was decreasing so its facilities and services were under-utilised. The decision was made to make Twizel a regional service centre (e.g., locating education and health services). Ny refers to tourism as the “saving grace” of Twizel’s economy after its downturn in the early 1980s due to government cutbacks and limited employment opportunities.

O'Connor, K. (1970). *Reconciling Uses of High-Country Resources*. Tussock Grasslands and Mountain Lands Institute. *Review*. No. 19: 113-123, September.

This article is based on an address to the conference of the High-Country Section of Federated Farmers. The author describes 'The Situation' by listing various ways people value and use high-country resources. This includes a discussion of the 'Rights to Resource Use', farmers’ relationships with the Crown and land use regulation in the high country. O'Connor outlines his belief in a national need for healthy, profitable, high-country farming, explaining the social or cultural basis for fostering the development of high-country resources. He argues that it is through such development, based on a partnership between farmers and government, that undeveloped mountain resources can be most effectively managed.

O'Connor, K. (1975). *An Introduction to the Waitaki*. (Report no. 1). Canterbury: The New Zealand National Commission for UNESCO by the Tussock Grasslands and Mountain Lands Institute.

This report describes human use of the natural resources of the Waitaki. The Man and the Biosphere (MAB) Programme, for which this reference was written, is introduced incorporating the history of the MAB programme and its thirteen projects and five objectives. It also gives a New Zealand context for the MAB programme and describes how five of the thirteen projects are of significance to the Waitaki, “as a microcosm for study of the complex interactions and feed-back relations between man and the environment” (p.5). The author defines “the Waitaki”, describes the form of the land, its geology, climate, soil resources, vegetation, water resources and wildlife. The

last section describes the use of resources with a sub-section about human settlement and demographic change in the Waitaki. The focus here is on how the Waitaki villages grew with the intensification of agricultural settlement, and covers the age and gender of people in the area. In a following sub-section, about electricity generation, O'Connor explains how a negative relationship existed between people and the exploitation of a natural resource, because for many years the "Waitaki dam caused local concern and anxiety due to differentials in down stream flow" (p.70).

O'Connor, K. and Ackley, K. (1981). *New Zealand's Waitaki: A Regional Planning Perspective for Regional Resources. A Journal of Human Environment Research and Management, Volume X, Number 2-3,143-147.*

This paper makes regional planning recommendations based on The Man and the Biosphere Programme (MAB) project centred on the Waitaki Valley. The authors first discuss the history of human cultures and their various influences on the land and relate this to the reasons for choosing the Waitaki Valley as a field laboratory for the MAB study. Using the Waitaki as an example, the authors discuss landscape transformation in New Zealand, making special mention of the respective roles of local and regional government in resource management. Reference is made to pastoral development, nature conservation and recreation. It is the authors' hope that the Waitaki MAB study will increase confidence in public decision-making and regional planning in the Waitaki. A regional planning approach "promises much by taking account of both the understanding of natural and human use systems and the identification of community goals" (p.147), the authors argue.

Pawson, E. (2004). *The Memorial Oaks of North Otago: A Commemorative Landscape. Glimpses of A Gaian World. In G.Kearsley and B. Fitzharris (eds.), Glimpses of a Gaian World. Essays in Honour of Peter Holland. Dunedin: University of Otago (see also Cloke, P. and Pawson, E. (2008). 'Memorial trees and treescape memories', *Environment and Planning D, Society and Space* 26 (1): 107-22.)*

The North Otago Memorial Oaks Scheme is a memorial of the people of that District who lost their lives in WWI. Oak trees accompanied by memorial crosses were placed on the roadsides of the Waitaki and other valleys and in Oamaru. They created social and natural changes to the Waitaki Valley. In the beginning of the paper Pawson discusses the planting of trees for commemorative purposes and how there is a lack of research on this topic. "The scheme was ambitious and unusual. It was popular at its time and over the past decade has regained attention and significance" (p.116). There is a powerful sense in which the trees embodied the soldiers that they represented. "In their place, the trees would grow old as the boys would have done, simultaneously changing the landscape as would their work as men" (p. 124).

Relph, D. (2007). *From Tussocks to Tourists: The Story of the Central Canterbury High Country. Christchurch: Canterbury University Press.*

Originally from the high country, Relph's childhood memories inspired him to write this book. On his return, fifty years later, he found that some aspects of the high country were unchanged, but many other aspects had changed dramatically and continued to do so, "particularly as regards to land management and the rise of tourism" (p. 7). The book includes a discussion of the high country "Where Wool is King" - the era of the big sheep stations; the growth of hydro electricity development, domestic alpine recreation (ice skating, tramping, climbing, hunting, fishing and skiing) and the further commercialisation of recreation in tourism and multisport activities. This reference includes many pictures, maps and diagrams of interest.

Review 43. (1986). Tussock Grasslands and Mountain Lands Institute. Canterbury, New Zealand: Lincoln College.

This journal contains poems and articles relevant to natural resource use in the Waitaki Valley. Topics of the articles include a review of fire management, the influence of science on the use of tussock grasslands, the effect of snow fall on farming, roles of forestry, rabbit control and Matagouri management.

Robertson, W., et al. (1978). *Waitaki Basin Land Use Study*. Wellington: Department of Lands and Survey.

This is a technical report about the history and development of the Waitaki Basin. It comprises a survey of land use in the Basin showing that pastoral farming was the pioneering use of the area's natural resources and how this had been eclipsed by energy production, recreation and tourism. The writing of the report was prompted by the appearance of land use issues associated with these activities. The study found that an increasing diversity in land use is a key feature of the Waitaki landscape. Water from hydro canals is used for irrigation and tourist attractions and recreation facilities based on outdoor activities are being developed. Pressure for more intense land uses are also apparent, such as subdivision of rural land. The report concludes that "land use prospects magnify when landholders, residents and government agencies co-operate in testing new land uses. The Waitaki Basin is ripe for positive action and innovative land use" (p.42). Appendix B of the report includes a Land Use Legend and Explanation for mapping and classifying the Waitaki Basin.

Sheridan, M. (1995). *Damn Dwellers*. Twizel, NZ: Sheridan Press.

Sheridan, the author and spouse of a former hydro worker, experienced life in the Waitaki Valley throughout the hydro project scheme. A mission to compile and publish her poems evolved over nine years, resulting in this book. The book comprises two parts. Part One is about the town of Otematata and Part Two is about the town of Twizel. In addition to a personal and historical contextual account; photographs, poems, cartoons, maps and letters provide a vivid depiction of the hydro-communities.

Steven, J. (1987). *Commercial Recreation in the Pastoral High Country: Clarification of the Issues*. Master of Science in Resource Management. Canterbury: Centre for Resource Management. This report discusses the development of commercial recreation in the pastoral high country of the South Island of New Zealand including the Waitaki Valley. It examines how commercial recreation might be aligned with the Crown's administration of its high country assets and broader policy and planning activities. This study confirms the need to consider commercial recreation as more than an isolated form of development. Rather, broad decisions about the implementation of existing land use policies should guide future administration of commercial recreation. The author recommends a community-based planning process as a way to incorporate the perceptions and concerns of all who claim resources in the high country.

Stevens, W. (1974). *Recreation in the 'Waitaki'*. Canterbury: Lincoln College.

This report provides a general overview of the social, administrative and resources associated with recreation in the Waitaki Valley. It highlights themes that need more research. These themes include: the role of regional planning in the provision of recreation, changes in population and people's identification with certain recreational activities in the area.

Taylor Baines & Associates (1990) *Social and Institutional Monitoring and Evaluation in the Rabbit and Land Management Programme*. Report for Phase I and II. Canterbury: Taylor Baines & Associates

The research reported here was funded by the Ministry of Agriculture and Fisheries and represents the social and institutional component of the monitoring of the Rabbit and Land Management Programme (RLMP) as it attempted to achieve its goal of long-term sustainability of land resources in semi-arid areas, including the Waitaki Valley. The aim of this report is to better understand the decision-making process associated with rabbit control and management. This report covers the early phases of the Programme and its main finding “is that a better consultative mechanism needs to be established between regional councils and farmers” (p.21). In order to become more involved in the RLMP, farmers need more access to critical information and power to share in decisions.

Taylor Baines & Associates. (1996). *Rabbit and Land Management Programme End of Programme Social Assessment*. Canterbury: Taylor Baines and Associates.

The Rabbit and Land Management Programme (RLMP) ran from 1989-95 and covered 400,000 ha, including areas in the Waitaki Valley. It “aimed to achieve a reorientation towards sustainable land use and pest control in areas of high infestation from rabbits” (p.vi). This report provides a thorough assessment of the social implications of the RLMP.

Taylor Baines & Associates. (2006). *Waitaki North Bank Tunnel Hydro- Electricity Proposal. Social Impact Assessment - Stage One (Water consents application)*. Report to Meridian Energy Ltd.

This report is the first stage of the Social Impact Assessment (SIA) of the effects of the North Bank Tunnel Concept (NBTC) on the Waitaki River. The SIA provides an output specific to the water resource consents being sought for the NBTC. Future stages of the SIA will identify potential positive and negative social effects of the NBTC during the consenting, planning and design, construction and operation stages of the project. This report includes an introduction to the NBTC and the report’s scope and objectives, approach and methodology of the SIA, a description of the social environment and the capacity to manage social issues in that environment. The SIA concludes that recreation users and nearby land owners are likely to be the most affected by the taking of water for NBTC. Being the first stage of SIA, the report focuses on assessment of social/community needs and opportunities for building capacity and partnerships as a basis for maximizing social benefits from any further Waitaki water allocation to hydro-electricity. The report recommends further social assessment alongside ongoing communication and consultation activities between Meridian and the community.

Taylor, N. and Baines, J. (1989). *Sustainability, Social Issues and Integrated Assessment for a Rabbit and Land Management Programme. Presentation to the Rabbit and Land Management Workshop*. MAFTECH, Lincoln: Rabbit and Land Management Workshop.

Arguing that programmes with a sustainable development focus are necessarily outcome oriented and therefore require monitoring, the authors reflect on their experience in developing a framework for thinking about adaptive and integrated social impact assessment. The presentation discusses unsustainable trends, attributes of sustainable development, specific issues for the Rabbit and Land Management Programme (including the Waitaki Valley) and lessons for SIA and integrated impact assessment.

Taylor, N. and Baines, J. (1991). Monitoring for Sustainable Land Use: The Case of the South Island New Zealand Rabbit and Land Management Programme. *Eleventh Annual Meeting of the International Association for Impact Assessment*. (pp.1-18) Urbana-Champaign, Illinois: International Association for Impact Assessment.

This paper was prepared from work undertaken on contract to the Ministry of Agriculture (MAF Technology, Lincoln) as part of the social monitoring for the Rabbit and Land Management Programme (RLMP) of which the Waitaki Valley was a part. The rabbit, a non-native species to New Zealand, has caused damage to pastures and landscapes. As a result of this damage, “the viability of the farms and their communities are in serious question” (p.1). This paper provides a framework for sustainable development of rabbit-prone lands. The definition of sustainable development and community viability is “the establishment of management regimes that are based on a partnership between social systems and the natural environment” (p.2). Based on survey data, the paper describes the profile of farmers and their communities. It discusses the programme’s organisation and implementation by central government and at regional and community levels. Major issues for programme implementation were financial and administrative shortcomings. The authors recommend more effective co-operation between pest authorities, farmers and researchers assisting the programme. In conclusion, they emphasize that it is “crucial to get the process of the assessment right from the start” for effective social monitoring (p.14).

Taylor, N. and Bettesworth, M. (1983). *Social Characteristics of New Zealand Hydrotowns: A Case Study*. (Information Paper No. 1). Canterbury: Centre for Resource Management.

The authors’ aim in this study was to examine the existing literature on the social characteristics of hydrotowns as part of a comparative study of rapid growth and resource development in New Zealand (p.124). It includes information of two hydrotowns in the Waitaki Valley: Twizel and Otematata. The paper includes: an introduction discussing the history and evolution of hydrotowns; demographic patterns; characteristics of the workforce; housing and accommodation; commercial activity and local body finance; hydrotowns as communities; welfare associations and community services; disadvantaged groups; winding down (impacts and issues); and suggestions for further research. Three future research proposals are: Project One. Improved Statistical Data Base, Project Two: Cromwell Community Study and Project Three: The Long Term Position of Twizel in the Waitaki.

Wardle, K., Foran, B. and Gibson, R. (1996). Developing Sustainable land use scenarios for the dry tussock grasslands of New Zealand. *Mountains of East Asia and the Pacific*. Lincoln University: Centre for Mountain Studies.

Mountains of East Asia and the Pacific is a book of the proceedings of the East Asia Pacific Mountain Association symposium, held at Lincoln University in May 1993. Papers include a wide range of mountain issues, from cultural attachment to issues of sustainable resource use in mountain areas. The aim of this paper is to set a logical framework for land use scenarios and future land allocation for the mountain lands of the South Island of New Zealand, while accommodating the needs of the stakeholders. Fifteen land uses were proposed for the pilot planning study, which included farming, enterprises, forestry, conservation, recreation, wasteland, watershed and scenic backdrop. This framework enables government agencies to utilise the “bigger view” in resource and land use planning on a broader scale. This long-term regional process does not fit in with current planning processes. The Resource Management Act is underpinned by the notion that land use change should be market driven and the role of resource management is to avoid the adverse environmental impacts of this process. This can result in inappropriate land use in the long run. In order for a long term regional planning process to be successful it must have widespread local participation and support.

Whitby, M. (1979). *Economics of Pastoral Development in the Upper Waitaki*. New Zealand Man and the Biosphere Report No. 3. Canterbury: Tussock Grasslands and Mountain Lands Institute.

The purpose of this report was to examine development possibilities in the Upper Waitaki. These possibilities are characterised in terms of their private profitability to the individual run-holder and contribution to the public good. The physical and economic uncertainty confronting high country run-holders created a cautious approach to business planning. The study found that there is enough water to irrigate 31,000 ha of the total 90,000 ha of irrigable land of the Upper Waitaki. There is also the possibility to establish 120 new farming units. Properties affected by the irrigation/land settlement scheme must undertake alternative land development or, on average, the carrying capacity of each property will fall by approximately 1,200 stock units. Irrigation and land settlement schemes offer significant possibilities for integration of dryland, irrigated and pastoral farming systems.