MOKIHINUI HYDRO ELECTRIC POWER PROPOSAL: SOCIAL IMPACT ASSESSMENT

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1 INTRODUCTION

1.1 Purpose of this document

The purpose of this document is to report on the findings of the Social Impact Assessment (SIA) carried out by Taylor Baines and Associates on Meridian Energy Limited's (Meridian's) Mokihinui Hydro Proposal (MHP). The SIA is one of a number of studies commissioned by Meridian.

1.2 Objectives of the SIA

The objectives of the SIA are to assess the nature and significance of positive and adverse social effects likely to be experienced by various communities that have an interest in the proposal. The SIA will do this by engaging the community at various levels in the assessment process. This SIA report will recommend to Meridian appropriate mitigation measures where the potential for adverse effects is identified or where there is a benefit to the community in ensuring the achievement of expected positive effects.

1.3 Statutory framework for the SIA

The Resource Management Act 1991 (RMA) sets out a statutory framework which aims to direct the assessment of whether the proposed project would promote the sustainable management of resources in a way or at a rate that enables people and communities to provide for their social, cultural and economic well being as provided for in section 5 of the Act. The requirement in the Act is to consider the potential effects on people and communities. Thus a social impact assessment is not focussed just at the community level. Generally, SIA is defined[1] as considering effects on individuals, households, groups, sectors of society as well as communities.

Carrying out a social impact assessment within this statutory framework requires attention to a conceptual framework for thinking about social well being, and the factors which might contribute to people's experience of social well being. Such a conceptual framework, which has been adopted in a range of other SIAs[2] and social research contexts in New Zealand in recent years comes from social indicators work in the OECD[3] and closely parallels the framework adopted by the Ministry of Social Development[4]. The OECD study identified key areas of social life which shape well being:

- the state of physical and mental health;
- the quality of housing, shelter, neighbourhood and living place;
- opportunities for formal education and lifelong learning;
- opportunities for income, employment and the quality of working life;
- opportunities for leisure and recreation, time to enjoy them, and access to quality outdoors/open space;
- access to public facilities, transport, communications, and access to goods and services;

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1 Burdge, R.J. 2004.

2 e.g. Assessment of the effects of project Aqua on local communities and development of community mitigation proposals, for Kurow Aqua Liaison Committee, 2003; SIAs carried out on several wind farm proposals between 2005 and 2007 and on the Wairau Valley HEPS in 2005; social analyses carried out for assessing the social implications of commercial retail strategy development in Christchurch City between 2003 and 2005, social assessment carried out on a Structure Plan proposal in North Shore City in 2007.

3 OECD, 1998.

4 e.g. Ministry of Social Development, 2003.

- the quality of the physical environment, a clean environment with aesthetic appeal;
- influences on family life, social attachment, social contact, interaction and support;
- influences on participation in community and society, including participation in organised groups and social activities; and
- influences on personal safety, public safety, autonomy or freedom from too much risk.

In conducting this SIA, consideration was given to whether or not the proposed project is likely to have consequential effects on any of these areas of social life, and for which communities of interest this is most likely to be the case.

1.4 SIA approach

Issues focus:

An issues-focussed approach was adopted, in which the assessment focussed particularly on those actual and potential effects and issues which are most critical from the perspective of the stakeholders involved, rather than being encyclopaedic and merely descriptive in nature.

A sequence of assessment stages:

The approach adopted also involved a staged sequence of assessment activities, aimed at integrating progressively the findings of the various assessment streams. An initial SIA Scoping visit, including a visit to the proposed MHP site itself, took place in February 2007. This was followed immediately by a full team meeting of consultants, which provided the opportunity to exchange information and highlight potential issues relevant to a number of different assessments. Technical assessments[5] continued for several months and the full team of consultants met again in late June 2007 to exchange information on their preliminary findings. The output of these technical assessments, combined with the findings of the SIA Scoping visit, provided the informational basis for more detailed SIA work between August 2007 and March 2008. The Final Draft of this SIA Report was pre-circulated to members of the Community Consultation Group (see Section 1.7 below) before being discussed at the Group meeting in Mokihinui on 2 April 2008. At that meeting, it was agreed unanimously by those attending that this SIA Report covers all the main social effects which they would expect to see addressed in a report of this kind.

Social impact assessment places an emphasis on process. It is an evolving process during the preparation of an Assessment of Environmental Effects (AEE), the subsequent application for resource consents, and the public submissions process. Indeed, if the consent applications are successful, the social impact assessment process continues through monitoring and evaluation activities during the construction period.

A variety of information sources:

SIA draws on a variety of information sources, including the detailed knowledge of many people living in the affected communities. This primary source[6] of data is supplemented with other secondary sources[7].

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[5] Including, for example, assessments of construction effects, ecological effects, hydrological effects, and landscape effects.

[6] Primary data are data gathered by the researchers themselves specifically associated with this proposal.

[7] Secondary data are from sources gathered by others, either in relation to this project, or in relation to similar projects, or for other purposes altogether, but with relevance to this project.

An important source of secondary data for SIA are the assessments made by other consultants investigating this proposal. In this regard, SIA complements other technical assessments, interpreting them in the social context and in the framework of social analysis described in Section 1.3. Of particular interest in this case are the construction assessment, recreation assessment, landscape assessment, and the assessments of effects on hydrology and fisheries

Given the important role of recreational activities in the MHP area, a recreation specialist - Rob Greenaway & Associates - was engaged by Meridian to assess potential effects and issues for recreational users.

In some cases, as a result of considering potential social consequences, additional mitigation is recommended to that already recommended by other consultants.

1.5 SIA methods

Methods in social assessment are focussed around identifying relevant communities of interest and then investigating potential social effects and issues related to these.

Communities of interest are generally defined in terms of factors such as geographic location, landownership and residence, patterns of employment and business relationships, service delivery and access, and recreational patterns[8]. Communities of interest for this assessment are discussed in Section 3.

A combination of demographic analysis and key informant interviews was used to identify these communities of interest. Interviews with community representatives[9] helped to establish the geographical boundaries of the immediate host community for the purposes of targeting subsequent property-level interviewing.

In the main phase of social assessment, interviewing covered twenty-eight residents of Seddonville and Mokihinui encompassing both farming households and other residents. Interviews were also held with five of the 11 property owners in the Mokihinui Preserve.

Other interviewees were selected on the basis of their roles as service providers in the host community[10], or in order to follow up on particular issues raised during the assessment.

Social analysis typically uses both quantitative and qualitative data[11]. There is often a tendency to assume that the only valid and reliable social data are derived from a sample survey. In terms of generating reliable and valid research findings this is a narrow perspective and one that is not supported by the sociological literature. Accepted methods for social research include case studies, various types of interviewing of selected subjects, focus groups and other qualitative methods, including direct observation. The crucial issues, long recognised by social scientists, are reliability (rigour of the method) and validity (transparency and reproducibility of the findings)[12]. Conclusions in

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8 Taylor Baines & Associates, 1997.

9 e.g. a Seddon Ward representative on the Buller District Council (BDC), Community Relations Manager at the BDC, and a variety of local residents from Seddonville to Ngakawau/Granity, including long-time residents and relative newcomers. For more detail see Appendix 1.

10 e.g. NZ Police, real estate agents.

11 Taylor, C. Nicholas, Bryan, C. Hobson and Goodrich, Colin G. 1995.

12 Coffey, A., and Atkinson. P. 1996. Kirk, J and Miller, M. 1986.

this social impact assessment are drawn from research that uses a range of methods that have produced both quantitative and qualitative data.

The assessment did not involve 'a survey' in the sense that most people think of surveys. That is to say, we did not have a fixed set of questions which was asked of every single person interviewed. Such a method is very rarely used in social impact assessment work, primarily because it is an inflexible way to investigate potential issues and effects that may vary considerably from location to location. Rather, we adopted the use of semi-structured interviews.

Each interview began with an explanation of the SIA role - being to assess effects, not to advocate for the project - and discussion of the proposed project, with related maps and diagrams. The scope of the interview was then explained, noting that it would cover:

(I) background information on the local community and their particular interests in the area (i.e. as landowners, residents, work or business interests, community involvements, etc.);

(ii) any issues and potential effects likely to be of importance to them - both during construction and during on-going operation post-construction;

(iii) any other issues regarding the assessment process.

The issue of confidentiality was discussed with the interviewee, and appropriate assurances given to enable them to continue.

Each interview was thus driven primarily by the interests of the interviewee, rather than being pre-determined by a fixed set of questions from the interviewer.

The interview material was then analysed thematically by using a text database based on keywords.

1.6 Summary of findings from the SIA Scoping visit

The SIA Scoping visit aimed to gather community profile information (see Section 3 for details) and scope likely potential issues from a range of perspectives.

Many of the potential effects and issues raised related to recreation and tourism prospects. This information was passed on to the recreation consultant, Rob Greenaway, and will not be repeated here. The findings from Mr Greenaway's assessment will be discussed later in this report, insofar as they are relevant to an overall assessment of community enablement and social well being.

The remaining potential social effects and issues of concern identified during the SIA Scoping visit were as follows -

- provider opportunities during construction;
- effects related to accommodation of the construction workforce;
- effects from heavy vehicle traffic;
- amenity loss for immediate neighbours of the dam construction site;
- potential risks to the communities of Mokihinui and Seddonville from any construction-related disruption to whitebaiting activities and fishing activities at the river mouth and lower reaches;
- site security and petty crime;
- benefits to electricity consumers in the District;
- flooding in the Mokihinui floodplain;
- run-of-river operation and public safety downstream;
- visual effects of the dam and transmission line for Seddonville residents;
- risk of dam collapse;
- the importance of whitebaiting and fishing to the local communities in the long term;
- a willingness by Meridian to explore options about workforce accommodation;

1.7 Establishing a Community Consultation Group[13]

One particular focus of discussions during the SIA Scoping visit was to explore with a range of stakeholders the desirability of Meridian establishing a project Working Party. A Working Party would be one means of building up in-depth local knowledge about the proposal in a setting designed to encourage enquiry, reflection and discussion rather than position taking.

Without exception, interviewees supported the concept and in most cases they supported it strongly. There are plenty of precedents for the use of working parties in Buller District already - Solid Energy, Holcim, BDC are organisations which use them.

A Working Party's role is an advisory one. Meridian retains ultimate responsibility for making decisions on project design and mitigation, but in doing so demonstrates that it has been willing to receive constructive input from the host community and other stakeholder groups. The functions of a Working Party would be to encourage input of local knowledge into project design and assessment activities, and the development of mitigation options, and to identify gaps in knowledge and contribute to the review of assessment findings.

Meridian subsequently established a Community Consultation Group, which met for the first time at the Cow Café, Gentle Annie, Mokihinui on Thursday 30 August 2007. The Community Consultation Group has met on a further three occasions[14]. After each meeting, Meridian has prepared notes summarising the issues raised and the discussion, and circulated these notes to participants for confirmation.

1.8 Structure of this report

There are four further sections to this SIA report.

Section 2 contains a description of the proposed hydro-electric project and the associated construction activities. This provides the technical assumptions underpinning the assessment of expected social effects.

Section 3 contains a description of the social environment, including demographic data and descriptions of communities and recent changes in communities in northern Buller District, close to the proposed project location. This provides the understanding of social context which underpins the assessment of expected social effects.

Section 4 contains the assessment of expected social effects while Section 5 presents conclusions from this SIA, and summarises recommendations for social mitigation.

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[13] Early discussions, with both Meridian and community stakeholders, used the term Working Party rather than Community Consultation Group.

[14] 16 October and 5 December 2007; 2 April 2008.

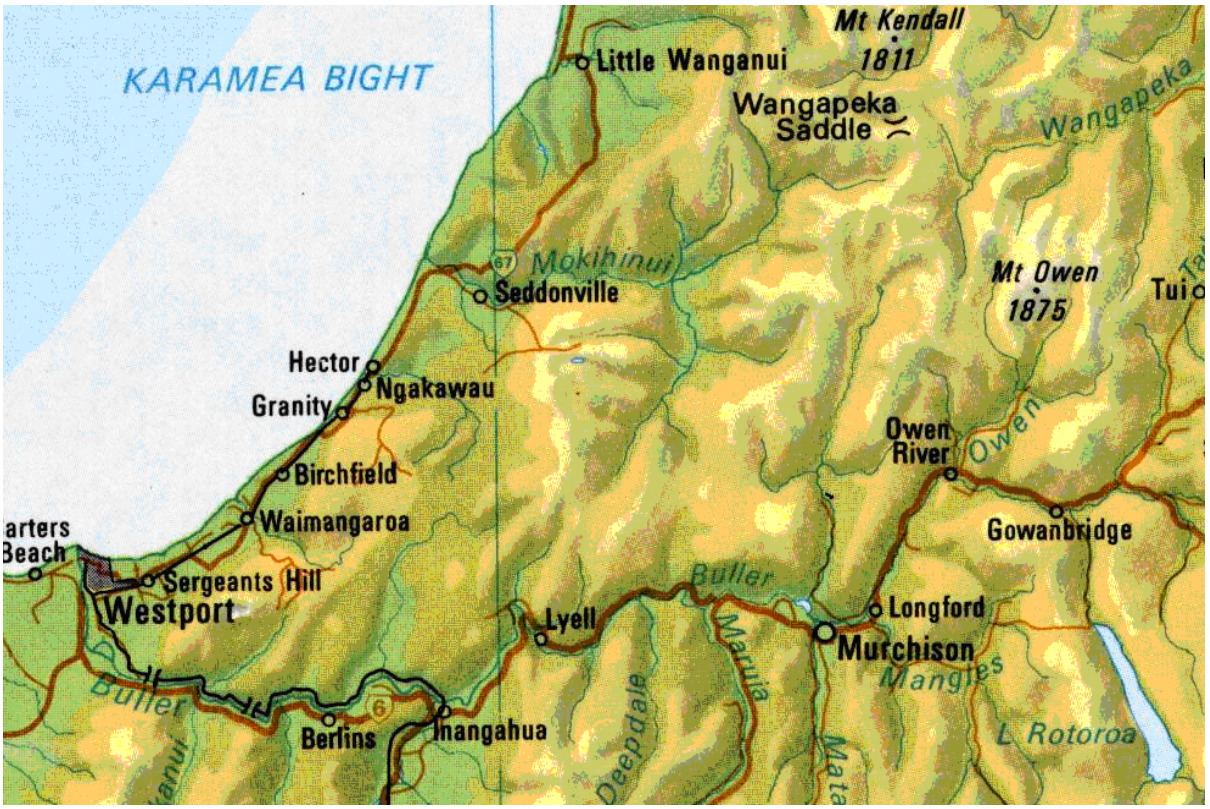
2 PROJECT DESCRIPTION

Information in Sections 2.1-2.3 is based on material provided by Meridian Energy Limited (Meridian). Section 2.4 is based on information provided by URS, consultants to Meridian on construction matters.

2.1 Location

Meridian Energy Limited is currently investigating a hydro development on the Mokihinui River, referred to as the Mokihinui Hydro Proposal (MHP). The Mokihinui River is in the Buller District and is located on the north western coast of the South Island, approximately 40 km north of Westport. The proposed dam site is approximately 3 km upstream of the township of Seddonville (Figure 1).

Figure 1 General location of proposed Mokihinui Hydro Proposal



The Mokihinui River has a catchment area of approximately 68,000 ha above the dam site. The north and south branches of the river drain a large inland basin formed by the Glasgow, Lyell, Matiri, Allen and Radiant Ranges and meet at the Mokihinui Forks about 25 km upstream of the river mouth. The river then passes through the steep-sided Mokihinui Gorge and a short lowland valley before discharging into the Tasman Sea at the coastal settlement of Mokihinui.

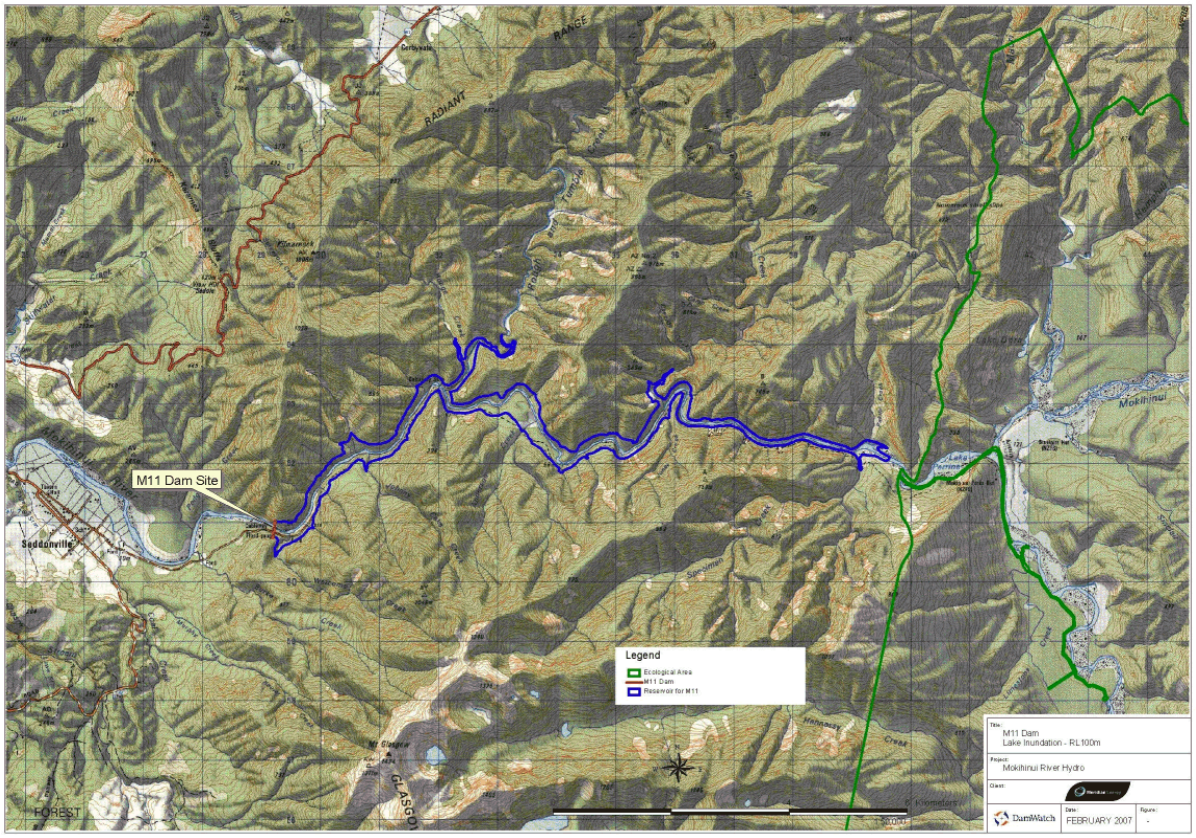
2.2 Proposed dam and inundation area

The Mokihinui River at the proposed dam site has a mean flow of 90 cumecs and a median flow of 46 cumecs. The flow regime is characterised by many varied flood flows, including some large floods, but flows are below 105 cumecs for 80% of the time.

Development of the MHP would require the construction of a hydro dam, approximately 3 km upstream from the township of Seddonville and 11 km upstream of the mouth of the river. An 80 m to 85 m high concrete gravity dam would be constructed using Roller Compacted Concrete (RCC) technology. Meridian's construction experts advise that RCC construction for dams is used extensively throughout the world as they are safe, strong and fast to construct. The installed generation capacity at the proposed dam will be 65 to 85 MW (current peak demand on the West Coast is 65 MW) and will produce 310 to 360 GWh p.a. of renewable generation.

The proposed dam would create a 340 hectare 'ribbon' lake (Figure 2) that would extend approximately 14 km upstream of the dam and would generally be around 200 m wide (500 m at it widest point). The lake does not extend to the Mokihinui Forks area, the confluence of the North and South Branch of the Mokihinui River, located approximately 2 km further upstream from the proposed lake. By design the inland extent of the proposed lake would not inundate any part of the Mokihinui Forks Ecological Reserve.

Figure 2 Inundation area of proposed Mokihinui MHP



The level of the proposed lake when full would be 100 m above mean sea level with an operational range of 3 m (100 m to 97 m above sea level). Under normal conditions the river at the proposed dam site is 23 m above sea level, producing a net head of approximately 77 m at the dam.

The 335 hectares of inundated area is administered by three land owners:

- Department of Conservation (DoC) Stewardship Land (approx. 210 ha). The Stewardship Land is managed for conservation purposes, but has no special protection status.
- The riverbed is administered by Land Information New Zealand (LINZ) and equates to approximately 90 ha.
- The balance of the land is road reserve (approx. 35 ha) under the control of the Buller District Council.

2.3 Proposed Transmission Line

A new transmission line is proposed from the dam site across the Stockton Plateau to link with the existing Inangahua-Waimangaroa 110 kV transmission line in the upper Waimangaroa valley, a total length of approximately 29 km. The proposed transmission route is shown on Figure 3. The route south of Charming Creek Road has been reviewed with DoC and Solid Energy and a preferred route agreed. This is the basis of the current application.

From the Mokihinui dam site the proposed route follows the true left bank of the Mokihinui River to intersect with the Charming Creek Road just south east of Seddonville. The line roughly follows the road and then bears to the east of the Charming Creek walkway, running roughly parallel to it as far as the Ngakawau River. Meridian's intention is to locate the transmission line to minimise potential effects on users of the walkway. The route crosses the Ngakawau River gorge just east of its confluence with the Mangatini Stream. From the Ngakawau gorge the route runs along the Weka Creek plateau and then south across the Stockton Plateau to the upper Waimangaroa valley.

Most of the transmission line will be constructed using poles (not lattice-towers or 'pylons') approximately 18 m high. Four 50 m high steel lattice towers are proposed on Solid Energy land where spans approximately 500 m long are required across a proposed haul road. The transmission line will carry three power conductors (power lines) and a single line containing a fibre optic cable and earth wire (the fibre optic cable is for communication associated with dam operation).

The proposed transmission line will connect into the existing Transpower line (Inangahua to Westport B line) at tower 45 where a new switchyard will be constructed. The switchyard will be very similar in appearance to the existing Reefton switchyard and will consist of an area approximately 65 m wide by 65 m long enclosed by a security fence. Switching, measuring and communications equipment will be located in the switchyard with the highest structures being combined lighting and lightening rod poles which may be up to 25 m high. A building containing control, communications and monitoring equipment and their associated power supplies will be located within the fenced area. To facilitate access to the switchyard, the existing tower 45 access track will be upgraded to include a small all-weather ford or bridge over Cedar Creek nearby. The preferred transmission line passes over the following properties which have been consulted with regarding route selection: Legal road administered by Buller District Council; private land owned by Ngai Tahu Holdings and one other private landowner; Stewardship Land and an Ecological Reserve administered by DoC; and LINZ land, over which Solid Energy has a mining permit.

Consultation on route selection will continue throughout the project consenting phases and beyond.

Figure 3 Proposed route for transmission line

2.4 Construction activities

The purpose of this section is to provide a summary description of construction activities which will occur at the proposed dam site, construction activities associated with the new transmission lines, and the associated construction traffic. This information forms the basis from which to assess the potential for any off-site effects on people and communities due to these construction activities.

An assessment of the environmental effects of construction activities has been carried out by URS New Zealand Limited. The following information has been assembled from their Draft Final Report: Mokihinui Hydro Proposal - Construction Effects and Management Report.

This section will also provide a summary description of the construction workforce. As engineering consultants to the project, DamWatch have made estimates of the size and composition of the expected workforce, as well as the duration of various phases of construction activity. These estimates are summarised later in this section.

Overview of construction activities:

URS describe the following components of construction activity for the MHP -
- Site Clearing
- Staging Area and Road Formation
- Construction Facilities
- Excavations and River Diversion
- Dam Construction
- Powerhouse Construction
- Site Rehabilitation
- Public Access
- Transmission Line Construction
- Reservoir Clearing

Construction workforce:

The construction activities will involve a sizeable construction workforce. DamWatch estimate the peak workforce at 310, including 52 professional staff. Since much of the construction work will be carried out on a shift basis, the peak workforce actually working at the site at any one time is substantially less, estimated at 195, including the 52 professional staff. This peak workforce is expected to be required from month 15 to month 29, a period of 14 months, and for a couple of months preceding this, the total workforce is only slightly less (see Figure 4). These estimates of construction workforce numbers do no include the drivers of vehicles involved in delivering materials and personnel to the construction site, which have been estimated at peak to involve a further 45 people[15].

While all the professional staff are likely to come from further afield, the proportion of the skilled and semi-skilled labour that will be recruited from the local labour market[16] will depend on a range of factors: competing demands for construction workforce skills at the time, the pool of unemployed labour in the District, employment trends in other sectors (farming, forestry, mining) which demand similar skills and work attributes, the capacity to provide training in construction skills, and the pay and working conditions and job duration offered by this construction job opportunity compared with other opportunities in the District.

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[15] Andrew Whaley, Principal Civil Engineer, URS NZ Ltd. Pers.Comm. 19 February 2008.

[16] As in other social impact assessments (e.g. Taylor Baines, March 2007), a practical definition of local labour market is one hour's commuting time; for Mokihinui, this corresponds approximately with the geographic area of the Buller District.

At the present time, construction skills are much in demand[17] throughout the West Coast, with a shortage of good skilled labour. A range of commentators[18] expect this labour market situation to persist for several years. Unemployment in the Buller District and throughout the West Coast is presently at very low levels[19], while mining has witnessed the highest rate of job growth of any sector in the Buller District since 2001[20]. On the other hand, Tai Poutini Polytechnic, based in Greymouth but with satellite training facilities at Reefton and several other locations nationally, is responsible for much of the industry training for heavy earth moving and construction workers, and is accustomed to running both pre-employment and on-site training. Workforce demand is likely to remain strong in the mining sector, but residential housing construction is one sector that may be releasing some of its workforce over the next few years. Demand for construction skills on other West Coast projects such as TrustPower's Arnold HEPS is uncertain; if approved, such demand may be in direct competition, or it could equally precede Meridian's Mokihinui demand and therefore provide continuity of employment, albeit in a geographically distinct labour market further north.

DamWatch estimate that between 50% and 70% of the skilled or semi-skilled labour requirement will be recruited from the West Coast region. For the purposes of this assessment it is necessary to differentiate between the local labour market (Buller District) and the wider regional labour pool on the West Coast. On the basis of discussions with a range of key informants on the West Coast, we have assumed that between 30% and 50% of skilled or semi-skilled construction workers will be recruited from the local labour market[21]. Thus between 90 and 150 local construction and driving jobs can be expected during the peak of the construction period.

Consequently, between 205 and 265 workers (including the 52 professional staff) are expected to come from outside of the district and therefore require accommodation in some form, as well as access to a range of facilities and social services. Some of these in-coming workers will be accompanied by partners and families. As noted by Fitzgerald (2003, p.32), "previous major construction projects in New Zealand indicate that 40% of the new arrivals could be accompanied by partners and children, 10% might be accompanied only by partners, and the remaining 50% would be single persons." As a result, the peak construction workforce for the Mokihinui project would be associated with a considerably larger additional population - in the range of 390-500 people when partners and dependent children are included. Table 2.1 summarises the estimates of peak workforce and associated additional population.

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17 For example for Oceania Gold's operations at Reefton, and in the coal mining sector for Solid Energy and Pike River.

18 Including key informants interviewed at Development West Coast, WINZ and Tai Poutini Polytechnic.

19 Job-seeker lists on the West Coast currently number ~200 compared with ~1,500 four years ago.

20 An increase of 89% from 186 employed in 2001 to 351 employed in 2006.

21 In other words, we have adopted conservative assumptions regard labour market conditions.

Table 2.1 Incoming workers - demographic estimates[22]

Assumed local recruitment of skilled and semi-skilled labour (%)	**30%**	**50%**
Workforce		
Peak number of construction workers + 45 drivers at peak	355	355
Peak local workers	90	150
Peak in-coming workers	265	205
Potential additional District population at project peak		
Unaccompanied workers (50%)	130	100
Partnered workers (50%)	130	100
Partners of workers	130	100
Children of workers (90% of couples - with average 1.5 children)	180	135
Total workers & family members	575	445
Pre-school age children	10	10
Primary school age children	60	50
Secondary school age children	30	25

The scale of the additional population which can be expected in the District during the peak period of construction, implies that consideration needs to be given to possible accommodation options. Accepted daily commuting distances mean that it is legitimate to assume that such accommodation options could be located in the vicinity of Westport or any of the settlements between Westport and Mokihinui.

Generic accommodation options include the use of existing housing (either purchased or rented by in-coming workers) as well as some form of dedicated hostel accommodation, upgraded or newly constructed for the duration of the construction activity, and either removed or converted to other uses subsequently. The latter could be modular in character, to reflect the incremental increase in construction workforce numbers during the first 15 months of the construction period (see Figure 4). DamWatch expect during the period of continuous RCC construction activity (months 15-29), employing three shifts working 11 hours per day, that the shift-work schedule is likely to follow a 10-days-on/4-days-off routine, thus enabling 'long-distance' commuting. As described by Fitzgerald Applied Sociology and Boffa Miskell Ltd (2003, p.33) "This is where unaccompanied workers travel from their homes to work, stay on site or nearby for 10 days or so, then travel back to their homes for their 4 or 5 days off. Under these arrangements, workers are willing to travel hundreds of kilometres to and from the job. For those on their 10 day shift, full-board accommodation (hostels or similar facilities) is usually provided near the worksite." For the purposes of this assessment, it has therefore been assumed that unaccompanied workers (between 100 and 130 workers at peak) will most likely be accommodated in full-board accommodation, adopting the 'long-distance' commuting pattern, while workers who are accompanied by their partners and families will either buy or rent existing houses (between 100 and 130 houses at peak) somewhere within the daily commuting area - the area between Westport and Karamea.

Time-frame of construction activities:

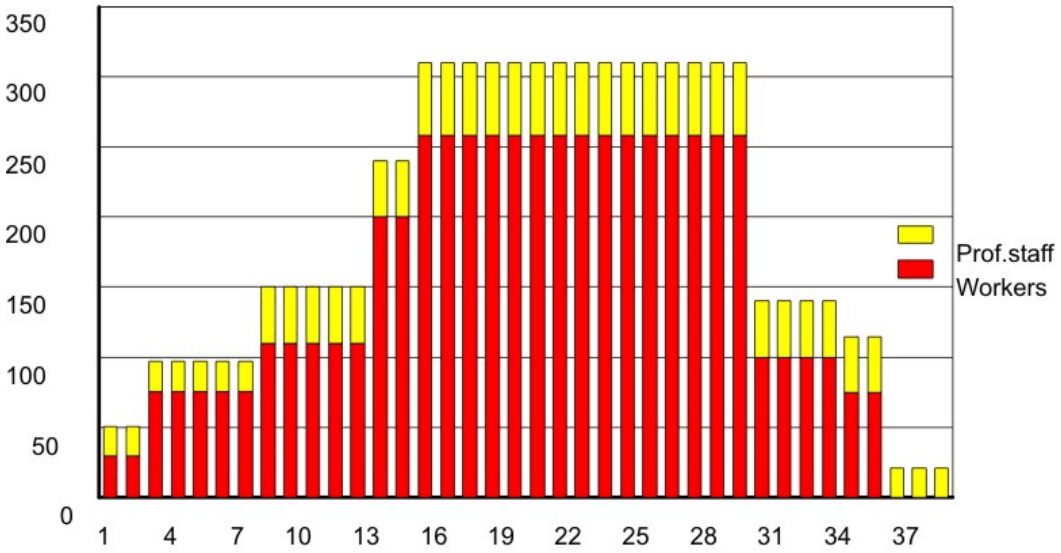
According to DamWatch, construction activities are expected to occur over a period of approximately three years. Furthermore, activities at the construction site are expected to occur generally on a mix of 24/7 or 22/6, as outlined below -

[22] Estimates have been rounded to the nearest multiple of 5.

- All excavation and cofferdam construction: 2x11hour shifts - 22/6
- Powerhouse and tailrace construction: 1 shift of 11hours, with extended hours for concreting
- Roller Compacted Concrete placement: 3x11shifts - 24/7 - shifts work approximately 10 days on and 4 days off
- Other construction activities: 1 shift of 11hours, 6 days/week.

DamWatch also estimate the pattern over time of construction workforce demand, as in Figure 4.

Figure 4 Time profile of construction workforce numbers



Temporary construction facilities:

In addition to the footprint of land required for the permanent structures and reservoir, the construction site also requires an additional “staging area” for temporary construction facilities such as: offices; workshops; stores; aggregate winning, processing and storage; concrete batching plant; access roads, construction services and other temporary facilities.

Construction services required on site include: power supply, stormwater and construction discharge water treatment, potable water supply, compressed air, sewage treatment, lighting and various other items.

Concrete aggregate for the dam and powerhouse construction will be excavated from within the staging area boundaries and processed on site using a screening and crushing plant. All concrete, except for minor quantities of initial temporary works concrete required at start-up, will be produced by two on-site batching plants, on of which is specifically for high-capacity, continuous-mix RCC production.

All stormwater runoff from the site and construction wastewater will be discharged through a retention pond settlement system to remove sediment, before being discharged to the river.

Public access:

Public access will not be permitted within the defined site boundaries for public safety and security reasons and the site will be fenced to exclude the public. However, provision will be made to route a public access track around the site perimeter to connect with the existing walking track up the left bank of the river.

Mokihinui Road upgrade:

To accommodate the anticipated construction traffic, including long heavy goods vehicles (HGVs), the following upgrades are proposed for the Mokihinui Road -

- improvements to the intersection with SH67, including widening of the SH to accommodate a right-hand turn bay in the north-bound direction and widening the approach to the SH from Seddonville to enable long vehicles to turn the corner;

- localised improvements to the tight bends in the vicinity of Chasm Creek to improve safe stopping distances and sight lines while the installation of temporary traffic lights could be considered to manage two-way traffic on this narrow, winding section of road;

- widening and upgrading the road through Seddonville to allow safe two-way passage of HGV traffic and to minimise the increase in traffic noise caused by the existing uneven road surface;

- construction of underpass (or similar) arrangements at Mulholland's farm to allow cows to access the milking shed without crossing the main construction traffic route;

- replacement of the light bridge immediately east of Seddonville where the Mokihinui Road crosses Coal Creek two accommodate two-way HGV traffic;

- widening and upgrading the Mokihinui Road between Seddonville and Burke Creek to allow for two-way traffic;

- constructing a bridge to replace the Burke Creek ford;

- widening the road from Burke Creek to the dam construction site to a metaled width of 6 m plus shoulders.

Construction traffic:

Existing traffic on SH67 at the traffic count site south of Waimarie Junction (see URS Figure 7.3) is estimated to be between 350 and 370 vehicles per day in 2007[23], of which just over 6% are Heavy Commercial Vehicles (HCVs). Corresponding estimates for the Mokihinui Road are between 190 and 210 vehicle movements per day, of which slightly more than 4% are HCVs.

URS note at Section 7.4 that "construction activities on site will be relatively intensive, ... As a result it is likely that construction related traffic will occur 24 hours per day, 7 days a week during key periods of construction." URS describe traffic generating activities in three groups -

Site establishment:
This occurs during the first three months and involves deliveries of site facilities, equipment and prefabricated components[24].

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[23] Based on Annual Average Daily Traffic (AADT) data provided to URS by Transit NZ.

[24] See URS Section 7.4.1 for details.

Daily operations:
Traffic associated with the arrival and departure of construction workers at each shift change will typically occur over relatively short periods in the morning (6am-7am) and evening (6pm-7pm), with staff travelling in ~15 light vehicles or vans. Thus URS estimates 60 light vehicle movements per day during peak periods travelling along the Mokihinui Road, splitting 50:10 between locations south and north of the Mokihinui River Bridge.

Traffic will also be associated with deliveries of routine construction consumable items[25]. URS estimates ~240 tonnes per month of these consumables on average during periods of high activity, corresponding to 16 HCV trips (i.e. 32 movements) per month.

Bulk delivery of materials:
URS provides estimates of bulk materials and the periods during the construction timetable when they are likely to be required[26]. DamWatch have predicted that all aggregate will be sourced from the dam site, resulting in maximum peak daily HCV movements at about month 15 of 65 HCV movements along the Mokihinui Road[27]. It should be noted that an earlier peak of 60 HCV movements per day is estimated by URS for month 3 delivering concrete made off site for river diversion structures.

Table 7-5 of the URS report summarises additional traffic generation associated with construction activities.

[25] See URS Section 7.4.2 for details.

[26] See URS Section 7.5.1 for details.

[27] See URS Table 7-3 for estimates of daily HCV movements at other points in the road network.

3 DESCRIPTION OF THE SOCIAL ENVIRONMENT

3.1 Introduction

This section provides a description of the social environment for the Mokihinui Hydro Proposal and the backdrop against which potential social effects can be assessed.

The immediate host community associated with the MHP encompasses the two small settlements of Seddonville and Mokihinui and surrounding rural residents, situated in the floodplain of the Mokihinui River and downstream of the proposed dam site. Interdependencies between these settlements and the coastal settlements of Hector, Ngakawau and Granity, the inclusion of a new transmission line, and consideration of construction-related transport indicate a somewhat broader host community. Westport is the District centre. Consideration of a labour market for the construction workforce and ancillary services to construction extends to the whole Buller District, while the electricity generated at Mokihinui will supply demand throughout the West Coast and even further afield, but in the first instance to households and businesses throughout the Buller District.

As various aspects of information in this section exemplify, Buller District, like the West Coast region of which it is a part, faces challenges to sustainable social and economic development. A key challenge for Buller District is to retain its existing population and attract more residents. In the face of relatively high costs of living, the local population, as ratepayers, face the costs of maintaining and upgrading infrastructure to the level expected in the twenty-first century, funded on a relatively small rating base. In this regard, it should be noted that eighty-seven percent of the West Coast land is Crown-owned land, administered by the Department of Conservation, which pays no rates to the local authorities.

3.2 Overall population trends

The Usually Resident Population trend for Buller District has shown a slight reversal since 2001 of the pre-2001 decline, summarised in Table 3.1.

Table 3.1 Population trends by census area unit

Census Area Unit (from north to south)	**1996**	**2001**	**2006**
Karamea	450	444	423
Little Wanganui	231	204	204
Mokihinui	234	162	174
Hector-Ngakawau	357	300	234
Granity	315	243	219
Buller Coalfields	564	498	489
Westport Rural	1,062	1,062	1,218
Westport Urban	4,239	3,783	3,900
BULLER DISTRICT	10,515	9,624	9,702

Source: Statistics NZ, Census series.

The growth in resident population for the District as a whole between 2001 and 2006 is not evenly distributed. The greatest growth in absolute terms has been in areas in and around Westport. Of the smaller population clusters in the northern part of the District, the Mokihinui census area unit is the only one which exhibited resident population growth in this period, while Hector-Ngakawau and Granity continued to exhibit steady population decline. The population in the far north of the District (Little Wanganui and Karamea) was virtually stable over this period.

Statistics NZ[28] recorded evenly balanced external migration for the past year, where 100 permanent and long-term arrivals matched 101 permanent and long-term departures. This level of long-term arrivals was 21% higher than the previous year, well above the comparable national increase of 3%. Statistics NZ's medium-term population projections project a declining population trend for the District as a whole to a level of ~8,500 in 2026[29]. However, such longer-term trends have been shown in the past to be heavily influenced by recent, short-term trends[30]. The 2006 census figures will not reflect the growth of mining activity in the District in the past two years.

Population trends have always been closely linked with the major industries of the District - traditionally mining and the cement works, forestry and farming, and more recently tourism - and also with the nature of the role played by Westport as an important service centre for the District.

Age structure:

In 2006, the Buller District population exhibited some marked differences from national patterns. While the proportions of young children up to intermediate school age were somewhat below the national average and uniformly so throughout the District, there were fewer secondary school-age children resident in rural areas and small settlements outside Westport, suggesting a pattern for some families to send their children to boarding schools outside the District. Young entrants to the workforce (ages 20-29) were significantly under-represented in the Buller District population, as were those aged between 30 and 39 years[31]. The relative shortage of work opportunities in the District in the past has encouraged young adults to leave the District to find work. Similarly, the relatively high cost of living is a dis-incentive for some young people - early in their working life and in their family cycle - to remain in the District. However, there are many examples of people returning to their roots later in life. Consequently, the reverse situation applied for people aged 40 years and over. Indeed, these age groups populate Buller District[32] at much higher proportions than the national average. There has been a considerable trend in recent years for older residents of the District to retire to Westport.

Employment:

In 2006, the retail and wholesale trade sector employed the largest number of workers in the District at 705 (15%), slightly more than agriculture/forestry/fishing at 687 (15%). Five other industry sectors employed between 300 and 400 people in the District[33].

The most pronounced sectoral employment growth for the District in the past five years has been in mining (+89%), property and business services (+45%), transport (+25%) and construction sectors (+22%)[34]. There has been something of a revolution in mining employment in recent years. With specialist skills now more important than physical strength and stamina, women are making inroads into the modern mining workforce. The local construction sector appears to be fully committed at the moment, and for some time into the future with existing and projected activities. Indeed, most

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28 Statistics NZ. 2007.

29 Op.cit., p.16.

30 Taylor Baines, 2003.

31 Typical of parents with young families.

32 38% for those aged 40-64 years compared with 27% nationally; 16% for those aged 65 years and over compared with 12% nationally - for full details see Appendix 2.

33 Manufacturing (372), Accommodation/cafes (369), mining (351), health & community services (321), construction (303) - for full details see Appendix 3.

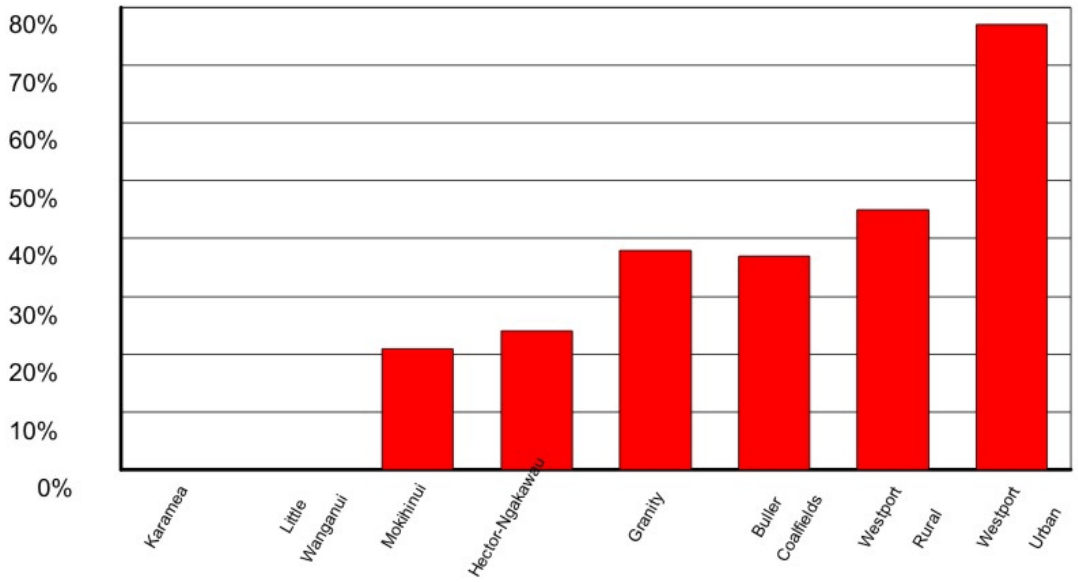
34 For full details see Appendix 4.

observers interviewed concurred that the labour market relevant to mining and construction activities is tight, with considerable competition over wage and salary packages required to retain staff. In these circumstances, long-distance (out-of-district) commuting is a well-established practice[35] for a portion of the workforce, and is likely to remain so.

An important feature of employment patterns in the Buller District is the extent to which people commute to work. Travel-to-work data from the 2006 census show the extent of local labour market catchments. Karamea and Little Wanganui form a largely self-contained labour market in the north, being half an hour's travel by road from Granity and an hour from Westport.

However, from Mokihinui southward, between 41% and 53% of working people work in a census area unit south of the one in which they live. Figure 3.1 shows how the tendency to commute to Westport is largely dependent on commuting distance.

Figure 3.1 Percentage of working people living in each locality who work in Westport
(Source: Statistics NZ)



Westport is also becoming a preferred residential location for people working further north in the District. In 2001, 14% of working people who lived in Westport Urban worked somewhere outside Westport, generally to the north. This proportion increased to 21% in the 2006 census. The increase reflects the increasing numbers of mine workers who have chosen to live in Westport and commute to work, associated with the expansion of mining activities and consequent growth in the mining workforce in recent years. Besides commuting to Stockton, mine workers are known to commute from Westport to Reefton and Ikamatua, involving trips of more than an hour each way.

Another important new feature of employment patterns in some sectors - particularly mining, the cement works and fishing - is the practice of a 4-days-on/4-days-off style of shift work, organised around 12-hour shifts. For individuals, this offers distinct life-style benefits in terms of work-life balance, although it is noted that some workers also choose to use these arrangements to work second jobs on their days off, which can put them under considerable stress. However, several interviewees for this assessment drew attention to other consequences at the community level. For example, four days free of work enables people to travel out of the District more with the result that there is considerably more leakage of retail spending out of Westport than used to be the case.

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[35] Mine workers were reported as coming from Nelson and Blenheim, but also from as far afield as South Canterbury and Invercargill.

Twelve-hour shifts and a working week that is no longer aligned to the traditional Monday-Friday working week and weekends means that these workers are unlikely to be available for local sports teams, either to play or to coach or assist in other ways. Similarly, involvement in voluntary organisations such as local Domain Boards is limited by such work practices.

Thus, while the resurgence of mining has brought new job opportunities to a new generation of District residents, and also better wages, which puts more money in local pockets[36], the communities of the District have had to adjust in other ways. There now appears to be more of an acceptance than in the recent past that their livelihoods and quality of life depend on local resource development. There is also a familiarity with modern employment patterns (12-hour shifts and 4on-4off cycles) and long-distance commuting habits.

3.3 Seddonville and Mokihinui

History

The Mokihinui River Valley has a long history of public infrastructure development and natural resource development.

The original road north to Karamea, built between 1887 and 1900, passed through what is now Seddonville, across Coal Creek and then across the Mokihinui River at Rough and Tumble Creek before following that Creek to the top of the saddle between the Mokihinui and Wanganui Rivers[37].

In 1885 coal-carrying boats began using a wharf at the mouth of the Mokihinui River[38]. The port remained in use until the 1929 earthquake altered the river substantially, bringing a lot of rock and sediment down to fill the basin.

In the early 1890s, a branch line railway from Westport was opened to Mokihinui; it ultimately ran through to Seddonville and was known as the Seddonville Branch. Passengers were carried on mixed trains until trains became freight-only on 14 October 1946. The line continued to operate until the end of the 1970s, when the coal mining activity that provided almost the sole freight on the line declined to such a point that revenue was lower than maintenance costs. The railway closed north of Ngakawau on 3 May 1981 and traces of its formation can be seen in the countryside around Mokihinui[39].

The first recorded gold discoveries in the Mokihinui area occurred in 1873. Numerous private mining ventures continued prospecting over the subsequent forty years in a variety of locations up the valley on both sides of the river[40].

> *"The closing of the mines was finally brought about by lack of suitable access, the rugged terrain and the broken nature of the quartz lodes."*
>
> *"In the literature available, the first record of actual coal mining in the Westport district was a statement by Sir James Hector, made in 1867, that some years previously a*

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36 For data on unemployment rates and trends in income levels, see Appendix 5.

37 Harmon, 1975, pp.4-5.

38 Op.cit. p.9.

39 http://en.wikipedia.org/w/index.php?title=Mokihinui

40 Op.cit pp.3-4.

coal mine had been opened approximately 3-4 miles from the mouth of the Mokihinui River opposite the islands below Seddonville, slightly over three miles from the sea."[41]

Harmon lists 31 Seddonville coal mines[42] which have operated since 1880. Half of these operated for fewer than ten years, but the Coal Creek mine was worked for 53 years until 1970, while the Charming Creek mine was worked for a similar length of time and was the last mine to close in 1980. All its coal was taken out through the Ngakawau Gorge.

The first sawmill was established near the mouth of the Mokihinui River in 1894 by T and B Marris[43]. In 1975, a fifth-generation Marris was still operating a sawmill in the vicinity of Chasm Creek. Other sawmills, in various locations in the valley[44], have been established in the intervening period.

Settlements

Seddonville and Mokihinui are the two settlements that now occupy the lower catchment of the Mokihinui River itself. Seddonville is the larger of the two with some 30 permanent households while Mokihinui has some 10 permanent households. For much of the year, the resident communities of Seddonville and Mokihinui are very small, but their populations swell during the whitebait season (from mid-August to mid-November) and over the Christmas/New Year, January holiday period. This is an important time for external inputs to the local community, when local businesses such as the Seddonville Pub and the two camping grounds do significant proportions of their annual business.

As noted above, the Mokihinui census area unit is an area which exhibited slight growth in resident population in the period between 2001 and 2006. Most indicators are that the two communities - Seddonville and Mokihinui - are in somewhat different circumstances at the present time. Mokihinui is perhaps at its lowest ebb for a long time; the cafe/dairy closed several years ago and the pub closed after a fire in late 2006. The closures have resulted in the loss of local community focal points and the loss of the local postal agency, although this has been replaced with a Rural Delivery service. The pub has just re-opened (March 2008) under new ownership and management. Of the two settlements, Mokihinui has the more substantial camping ground and range of associated facilities, situated as it is close to the river and the coast where much of the fishing activity takes place. As many as half the dwellings are baches owned by people living in Westport or further afield, so that Mokihinui is increasingly a holiday location rather than a resident community. On the northern side of the river mouth is The Cowshed Café, a long-established business enterprise focusing on accommodation[45] and recreation. In peak times - weekends during the whitebait season or a during the fishing competition at New Year - as many as 50 people stay here.

On the other hand, Seddonville has experienced newcomers in recent years, although a proportion of these have had past family connections with the place; a change from a more itinerant population to more settled families. The number of school-age children living in Seddonville is much the same as it was five years ago, while the number in Mokihinui has declined somewhat. Several houses in Seddonville have also been bought for holiday baches. Seddonville has a pub and associated dairy and motels, and a small camping ground in the old school. With the closure of the pub in Mokihinui, Seddonville has taken on more of a role as a community focus, and there appears to be a greater

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41 Op.cit p.7.

42 Op.cit p.13.

43 Op.cit. p.52.

44 e.g. on the north side of the river near the Karamea Road; also in Seddonville, and Marris and Willet's mill near what is now the Mokihinui Preserve.

45 A mix of self-contained units and room for campervans and caravans, with a restaurant which operates during the summer months.

sense of cohesiveness between the residents of Mokihinui and Seddonville. The principal dairy farm has recently expanded its land holdings, and the Rough and Tumble Bush Lodge is a notable new business enterprise which opened in December 2006 a few kilometres upstream of Seddonville. Locals report a slight increase in traffic through the settlement as a result. Associated with this development has been the creation of a rural residential subdivision - the Mokihiniu Preserve - with eleven residential sections[46] of varying size[47] in dense native bush above the road to the Lodge. All eleven sections have different owners: three owners live in Buller District, one lives elsewhere in the South Island, four live in the North Island, and three live overseas. There have been only four houses built in Seddonville in the past two decades; now there is a sense that after two decades, people are starting to move back in and starting to spend money as well. Nevertheless, there are a number of vacant sections for sale in the village and the bowling club has gone into recess for lack of members. Several locals interviewed also noted a number of people living *'fairly reclusive'* lifestyles in this out-of-the-way location.

While the Mokihinui settlement is close to the river mouth, visitors to the Mokihinui Gorge and those who wish to walk the Charming Creek Walkway from its northern entrance must access these areas via Seddonville. The car park area for the popular Chasm Creek Walkway is also close to the village. Outdoor recreation for local residents tends to focus on the beach and the lower reaches of the river, although a small number of locals are in the habit of traveling up the Mokihinui Gorge for hunting, fishing or tramping. Roads in the settlement are used by young children on their bicycles as well as people riding horses.

Employment for local residents, apart from three local dairy farms, is spread across work at the mines or work in Westport, including Talleys Westport fisheries operation. A milk tanker calls regularly each day, travelling as far as the Mulholland farm in Seddonville. At least 15 of Seddonville's permanent households have people working on shift work at the mines[48], with many of these living on 5-acre lifestyle blocks.

Children generally go to school[49] in Granity (primary) or Westport (intermediate and secondary), although a few children in the area are home schooled.

Neither settlement has a water supply which complies with the Ministry of Health drinking water quality standards[50], but Mokihinui's supply appears to be in greater need of upgrading. All dwellings have their own septic tank waste-water systems. A rural fire-fighting appliance maintained by local volunteers is based in Seddonville, with back-up from the Buller District Council (appliances at Granity). Rural delivery of mail comes to Mokihinui but not into Seddonville itself. Many residents commented on supply interruptions to local electricity supply several times a year.

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46 At the time of writing, one new dwelling is almost complete in the Preserve, while a second section has a caravan installed which allows the owners to make annual visits to the area. Owners of a third section are about to commence building a house in full knowledge of the proposed hydro development.

47 Section sizes range from 1ha to 10ha.

48 Twelve-hour shifts run from 6am to 6pm, implying that some times there are relatively few people in Seddonville during the day; at other times, if working night shifts, some mine workers will be at home sleeping during the day.

49 Travel for most children is via a daily school bus service which follows the same circuit through Seddonville four times each day: in at 7.25am and out at 7.35am for primary school children; in at 8.25am and out at 8.35am for intermediate and secondary school children; and similar routines in the afternoons between 3.20pm and 3.30pm (primary) and 4.20pm and 4.30pm (intermediate/secondary).

50 Buller District Council. 2006.

Mokihinui and Seddonville have strong associations with whitebaiting activity. Whitebait stands are highly valued, the associated licences entitling owners to use the stands in perpetuity, so long as licence fees are paid up. Most people whitebait using a drag scoop; a few have set nets. Patterns of white-baiting activity are no doubt varied. Some report that the best fishing is ~1-2 hours after low tide, on an in-coming tide, and that white-banters rarely fish all day; others talk of spending much longer periods each day. Drag scooping is not a risk-free activity, particularly close to the river mouth. Occasional surges and big waves have sometimes caught fishers by surprise, risking their chest waders filling with water and causing them to get into difficulties.

In summary, the community of Seddonville has experienced a degree of re-vitalisation in recent years even though population numbers have not grown substantially. Residents value the relative peace and quiet of the Valley, but also the fact that it is no longer so 'remote'[51]. A resilient community is developing growing expectations for their standard of living. They appreciate that the Mokihinui is the gateway to somewhere special in the mountains, even though not many people are presently able to access this. The community of Mokihinui is in a relatively static phase, although both communities are now more closely associated, since the Seddonville pub has become a common focal point. Residents of both these communities are familiar with the annual influx of temporary residents and their departure several months later when the whitebait season is over - a pattern which has been established for decades. White-baiting is therefore important economically to these communities as well as being important to their identities. Both communities are also familiar with the more recent change in working patterns related to shift-work and 12-hour shifts.

3.4 Hector, Ngakawau and Granity

Population decline and changing circumstances:

These coastal settlements, which used to be the hub of coal mining communities, have experienced a lot of changes in recent years, including considerable downsizing of their resident populations overall[52], but also a significant proportion of people who are new to the West Coast. Principal drivers behind the fall in resident population are the retirement of older residents to Westport, a similar re-locating of much of the modern mining workforce who now tend to commute daily from Westport or other parts of the District[53], and the fact that new buyers of property are not yet coming to live in the District[54]. Some workers new to the mines do not tend to bring their families to begin with, if they are on a trial contract, hence the continuing decline in school rolls. Nevertheless, several people interviewed for this assessment commented on a growing stream of people coming to this part of the Coast for the lifestyle that is slower paced.

The new generation of property buyers tend to have more capital compared to the previous influx of people on benefit incomes in search of cheap rental accommodation during the 1990s[55]. Property values have risen markedly in recent years, as have residential rentals. However, higher incomes in

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51 Various factors have increased people's mobility and connectedness - for example: improved roads along the coast, frequent commuting, shift-work arrangements that facilitate longer-distance excursions, internet connection.

52 Down by one third over the last decade - as shown in Table 3.1.

53 Shift work arrangements - 4days on/4 days off - encourages not only local commuting, but also a degree of longer-distance commuting from outside the District, for example from Nelson or Hanmer Springs.

54 Between 1996 and 2001, the number of unoccupied dwellings throughout the District increased by almost 40% (from 621 in 1996 to 858 in 2001) and has remained about this level since (825 in 2006).

55 See Appendix 5 for census trends in numbers unemployed between1996 and 2006.

the mining sector has seen some new mining families take up residence locally. The community is more diverse than it used to be, in income and values. Views towards environmental management reflect a balance, recognising the dependence of business, work and lifestyles on resource extraction activities as well as the long-term significance of protecting the natural environment for its ecological values, recreation and tourism.

Several people interviewed described in various ways the sense that this area of the District is "going ahead". Even if it is not booming, it is catching up with the rest of the world and there are more employment opportunities. Tourism is becoming more a feature of economic development in this area - walking, biking, kayaking, mine unimog tours, cafes, B&Bs, museums.

Social services, local organisations and community infrastructure:

The de-population trend may be a threat to some services - e.g. mail delivery (currently door-to-door, 6 days/wk), primary school[56], medical centre (used to be 2 centres, now one with ~1100 patients registered). De-population also makes it difficult to sustain the wide range of social and recreational groups which have existed in the past, and the community facilities which they have inherited[57]. There is presently considerable effort being put into consolidating and upgrading local community facilities, such as the Lyric Theatre, Judo rooms and the Visitor Centre/Resource Centre in Ngakawau.

The three adjacent settlements remain collectively the main focus of local services between Waimangaroa and the Mokihinui Bridge, including dairy and convenience stores, cafes, hotels, medical centre (Ngakawau Special Health Area), Volunteer Fire Brigade, ambulance service[58], the North Buller information/resource centre, primary school, postal agency - but no garage or petrol (nearest in Westport or Karamea). In some respects, the mines act as back-up for local emergency services.

Pictures are shown once a fortnight in the Lyric Theatre, and cafes, pubs and the Fishermans Lodge are popular socialising venues. There are also several youth-oriented groups in existence. A number of sports teams are associated with the Ngakawau area, and also with Karamea (rugby and netball). Granity has for a long time boasted a strong Judo club, which has been noteworthy on the national scene; the Axemans Club is the next most active group, while participants in sports like swimming, basketball, and hockey all tend to go to Westport to compete.

These coastal communities have a variety of public water supply schemes, none of which supplies to the quality of national drinking water standards. Generally, these communities have so far resisted calls to upgrade water supplies, due largely to the small ratepayer base and the relatively high costs of providing safe, reticulated water supply to widespread, low-density development. The LTCCP (p.201) suggested that the Hector-Ngakawau community is most in need to upgraded water supply, due to the prospect of increasing population and the potential demand from new commercial operations to service the growing tourist trade.

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[56] See Appendix 6 for trends in school rolls between 1995 and 2007.

[57] Prioritisation for maintenance and re-furbishment of community facilities throughout Seddon Ward has been the focus of recent District Council consultation and Working Party activity.

[58] The Fire Service and Ambulance Service have long distances to cover and still rely on local volunteers.

3.5 Westport and Buller District

Westport is the business and services centre of the District, and the base for the Buller District Council.

The Second Long Term Plan for Buller District sets out a number of community outcomes, indicative of the values and aspirations of the District community as a whole. Of particular interest in assessing the social effects of Meridian's MHP are the outcome statements related to Identity, Economy and Environment[59].

Relevant outcomes related to District Identity include an increased awareness of and participation in recreational activities, the provision of high quality community spaces and facilities, and the promotion of Buller history and environment. The Council aims to achieve this by encouraging and supporting other organisations in providing recreational facilities throughout the District.

Outcome aspirations for Economy and Environment overlap to the extent that they both describe an expectation of balance between economic development and environmental protection.

Relevant outcomes related to Economy include providing an environment that supports the retention of current businesses and attracts new business and investment to the region, providing support for attracting and developing an available skilled workforce, and support sustainable, responsible development. The Council aims to achieve this by continuing to develop and advocate for district-wide infrastructure that supports business and tourism growth, and developing a regulatory framework that supports sustainable economic growth without compromising the environment.

Relevant outcomes related to Environment include an appropriate balance between development and protection that promotes the diversity and sustainability of the natural environment, the provision of services and infrastructure that support the district's environmental goals, and a built environment considered to be attractive, sustainable and healthy. The Council aims to achieve this by developing policies and implementing practices that enhance our environmental sustainability and natural diversity, by recognising and preserving the essential elements of the district's landscape that contribute to Buller's unique natural identity, and ensuring that planning processes enable effective public consultation over an appropriate balance between the natural and built environment.

Westport's interests in the MHP development relate largely to improved electricity supply infrastructure, future recreational opportunities, and employment and business opportunities during the construction period, as well as the longer-term attractiveness of the District to businesses and residents.

Areas in and around Westport exhibit the most substantial population growth and associated demand for electricity in the future. While Holcim, Solid Energy and Postie Plus have been important District businesses and employers, there is some uncertainty about the longer-term future role of all three.

Land use:

There is generally more farming activity now than there used to be, particularly south of Birchfield, resulting from the knowledge of being able to turn the soil and iron pans and add fertiliser to make the land productive. Recent farm conversions to dairying have not so far translated into substantial electrical load growth.

However, there is also a noticeable trend towards rural sub-division. Such sub-division is a discretionary activity to convert rural land to residential land, with no minimum lot size restrictions, although 1500sq.m is required for septic tank treatment. The planning regime is therefore relatively

[59] See Appendix 8 for details.

permissive of such conversions. Since 2000, there have been about 500 new residential sections created, including the potential for 100 in Karamea.

Housing:

Substantial turnover of property ownership and existing dwellings in recent years has been mentioned previously, as has the potential for further rural-residential development throughout coastal areas of northern Buller. During this period there has been a four to five-fold increase in the number of rental properties[60] in the District rental market. Despite this, vacancy rates have been low[61]. Nevertheless, real estate agents agree that there is a considerable untapped potential rental market in some parts of northern Buller, where dwellings would be upgraded if increased demand was created. An upgraded housing stock would support both employment-related rental needs as well as holiday rentals.

Tourism:

Of relevance to the longer-term future of the District is the Major Regional Initiative (MRI) for tourism on the West Coast. This MRI is aimed at developing new tourist attractions, taking pressure off Punakaiki and the glaciers and spreading tourist activity more broadly. Amongst other things, the MRI has led to the 'Turn Right' initiative for getting tourists to go north of Westport rather than just south. There is a sense in which this is promoted as meeting the longer-term socio-economic needs of the District for a post-mining era. Eighty-seven percent of the West Coast land is administered by the Department of Conservation, which pays no rates. Hence tourism is a vital industry for future development.

Data from the last two census show that more residents of Buller District are already employed in the tourism industry[62] than in mining[63].

Public infrastructure and services:

The Buller District's Long Term Plan[64] records that "Council has included in the Long Term Plan a series of redevelopment projects under the title Buller Vision 2010. These projects include a new combined Aquatic and Dry Sports Complex, redevelopment of our museum, renovation of the St James Theatre and streetscaping of the central business district of Westport. In addition funds have also been set aside to undertaken development projects in the Inangahua and Seddon Wards.

In terms of recreation facilities, construction is well underway on Westport's new recreation centre, to be called the Solid Energy Centre. The centre, once complete, will contain an aquatic centre, dry court facility, fitness centre, hockey turf and two squash courts[65]. Fifty percent of the $15.5 million budget has been provided by ratepayers with the rest from external sources.

Many of the civic infrastructure improvements that will attract people to live and work in Buller District will have been completed by 2010, making the District more attractive to new residents seeking relaxed lifestyles and workstyles complemented by good quality civic infrastructure.

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60 For example, one of the major real estate companies reported managing a portfolio of 50 rental properties in 2003 and 230-240 such properties in 2007.

61 Typically 1-2%.

62 351 in 2001 and 369 in 2006, employed in accommodation, cafes and restaurants.

63 186 in 2001 and 351 in 2006, employed in mining.

64 Buller District Council. 2006. p.3.

65 http://www.bullerdc.govt.nz/main/SolidEnergyCentreConstruction/

There are five schools catering to primary and intermediate-age children in northern Buller District[66], as well as Buller High School in Westport and Karamea Area School in the north. Given the trends in permanently resident population of northern Buller over the past decade, it is likely that schools throughout the District have considerable spare capacity[67].

The West Coast District Health Board provides both inpatient services and an outpatient clinic at Buller Hospital in Westport[68]. Inpatient services cover a range of services[69] and are supported by visiting specialists and resident health professionals. St John Ambulance provides patient transfer services on a semi-volunteer basis[70]. Base hospital services and visiting specialist services are provided at Grey Base Hospital in Greymouth with an Outreach clinic at Westport. Out patient services in Westport are currently provided for 7,100 enrolled patients by 7 GPs and supported by District, Public Health and Rural Nursing services. There is a clinic at Karamea staffed by two rural nurse specialists and GP visits for two days each, and another clinic at Hector/Ngakawau staffed by a rural nurse specialist and GP visits for one day each week. There are no private medical practices in northern Buller District. The current 7 GPs comprise a mix of residents and locums who come to Buller typically for 6-12 months. One doctor is on-call after-hours for emergencies, and the emergency helicopter is based at Greymouth.

The Buller District Health interviewee for this assessment expressed the view that the primary care services in northern Buller are at the limit of their capacity. Until recently, there were 6 GPs. They are trailing a seventh and believe there is need for eight to provide an adequate level of primary care. This view is informed by the fact that District residents appear to present more often than populations elsewhere[71] and their assessment that the general health status of the population is below par.

The Westport community enjoys a reticulated water supply which meets the national drinking water standard, and also a reticulated waste water system, which has recently been upgraded.

As part of the electricity supply and distribution system, Buller Electricity Limited is the local lines company. The company is in Community Trust ownership. Consequently, Buller Electricity serves its community in three ways: providing electricity distribution services, providing jobs and providing financial contributions through its community trust fund[72]. Its latest Annual Report states that the company is also in the process of finalising a sponsorship agreement with the Buller District Council for the new Sports and Leisure Centre.

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66 Granity School, St Canice's School, Waimangaroa School, Westport North School and Westport South School

67 See also Appendix 6.

68 http://www.westcoastdhb.org.nz/information/

69 Emergency department, acute admissions, birthing, long-term care and palliative care. There is no theatre, X-ray facility of anaesthetist available in Westport, so that in cases of acute admissions and emergencies, Westport hospital staff assess and stabilise the patient's condition and then arrange for transfers to Greymouth, Blenheim (road/helicopter) or Christchurch (road/rail/helicopter).

70 i.e. volunteers are paid just for the time they spend actually driving patients.

71 Attributed to a combination of possible factors: climate (damp and cold homes), an ageing population and a legacy of working in the mines.

72 During the year ended 31 March 2007 the company assisted 29 community organisations with sponsorship; 26 individuals under the youth personal development scheme and eight educational institutions with library grants. A total spend of $43,560.

Buller Electricity indicates that there has been no substantial growth in electricity demand in the past six years, a situation not helped by the relatively high costs of supplying electricity to the District. The higher costs are a direct consequence of line losses incurred due to transmission over long distances from the Waitaki Valley, so that the wholesale price of electricity in Westport is 25% higher than the corresponding price at its point of generation[73].

This stagnant demand creates future issues for Buller Electricity, with conflicting trends[74] for growth in future revenues and costs putting pressure on its ability to contribute funds to its community trust.

[73] See Appendix 8 for detailed comparisons.

[74] Increases in electricity price are limited, by regulation, to a level below the rate of inflation, while operating costs have been increasing at a faster rate.

4 SOCIAL EFFECTS AND ISSUES

4.1 Scope of effects assessed in this SIA

This section describes the links between elements of the MHP, its potential effects, and their consequences for various aspects of social wellbeing as outlined in Section 1.3 of this report. As required under the RMA, the assessment includes consideration of both positive and adverse effects, as well as short-term, temporary and longer-term, cumulative effects.

In discussing the likely social effects, a general reporting pattern has been adopted in which the potential social effects are first discussed on a no- mitigation basis. However, identifying adverse social effects usually results in suggestions for mitigation[75]. Conclusions are then made, based on including the effects of mitigation.

As a new electricity-generating source, the MHP will have electricity-related effects which have the potential to bring long-term benefits to residents and businesses of the District, as well as electricity consumers in other parts of the country. Effects on future electricity prices and security of supply are potentially important to the attractiveness of Buller District as a place to live or conduct business, and therefore to future population trends for the District. The consequences are both for the size of the rating base and for enhancing the social capital of the District's communities. The MHP will require a level of on-going servicing and maintenance work which will translate into a small number of jobs in the District. The MHP is potentially an important development for Buller Electricity (the community-owned lines company), supporting its community trust contributions.

Besides its electricity-producing function, the MHP will have effects on recreational opportunities in the catchment which will change the current pattern of recreational use and the numbers of people able to make use of these opportunities. To varying degrees, it will affect leisure opportunities for local residents, district residents, out-of-district visitors and tourists. There is also the potential for related new business opportunities to evolve over time.

The MHP will modify the physical attributes of the river with its substantial concrete structure at the entrance to the gorge. This has the potential for effects on hydrology and sediment transfer, aquatic ecology and the local landscape as discussed in other specialist assessments prepared for the AEE. The creation of a lake in an area known for its seismological activity raises issues of public risk associated with subsequent earthquake events. This range of potential effects relates to a number of aspects of social wellbeing including:

- the future of river-side residential property at the mouth of the river;
- in-stream recreation prospects;
- appreciation of the local landscape; and
- the perception of personal and public safety immediately downstream of the dam.

Besides the dam, the MHP involves 28 km of overland transmission lines, which has the potential for effects on people's views in certain locations, and on the wider landscape, affecting the aesthetic quality of the physical environment.

To bring the MHP into existence will, in the context of the District, involve a major construction project lasting about three years. The demand for construction workers and ancillary skills, the influx of construction workers into the District and their accommodation, the movement of materials along the road network and their safe storage at the construction site, are all aspects with the potential for effects that need to be assessed, since they raise issues for many aspects of social wellbeing in local communities.

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[75] Often by the technical consultants concerned, but sometimes also by the social impact assessment team.

The proposal itself is a significant matter for the people of Buller District and for the communities closest to the intended dam site. The potential for such a major project to create tensions and division within these communities is of interest in this social impact assessment.

Taking into account all the above, the SIA will also make conclusions about the likely long-term outcomes for the host community and the District.

4.2 Base-line for comparison

As background for assessing the likely effects of the MHP, it is worthwhile considering the future scenario if the MHP does not proceed. To a large extent, such a future scenario must be based on the present situation and current trends.

In the absence of a major electricity-generating station in northern Buller District, electricity consumers will continue to experience electricity prices that are amongst the highest in country. Such electricity prices are currently considered by several business observers interviewed to be a constraint to attracting new businesses to establish in the District. They also contribute to a relatively high cost of living. Until, the national grid is upgraded in the northern part of the South Island, the vulnerability of Buller District to future electricity supply interruptions will increase as the total load[76] increases over time. In summary, some important current disincentives to live, work and run a business in the District will remain.

Without the MHP, recreational opportunities in the upper Mokihinui catchment will for some time continue to be constrained by standards of access through the gorge. Nevertheless, a *"minor increase in recreation and tourism activity"* can be expected as a result of *"improved access and ongoing marketing by commercial rafting and accommodation providers"*[77]. These are likely to be less geographically distributed, due to the lack of facilities and connections throughout the catchment. As noted in the Recreational Assessment[78], the Department of Conservation's Conservation Management Strategy 2007-2017, currently in preparation, envisages developing the lower part of the Gorge as a front country recreation setting, with a mountain biking track to The Forks, while the upper catchment above The Forks would be retained as a back country remote recreation setting, with the possibility of additional controls over helicopter access to the upper catchment.

Without the MHP, the substantial shoreline retreat near the river mouth will continue to occur at the current rate. Residential and recreational activity near the river mouth will continue as at present until such time as this shoreline retreat threatens existing dwellings. The long-term prospects for residential occupation and recreational infrastructure at Mokihinui, south of the river-mouth, are therefore somewhat uncertain.

The boom-bust effects of construction activity will not occur - in terms of jobs and accommodation effects. Seddonville is likely to consolidate as a rural residential settlement, with a gradual increase in numbers of holiday homes. Any increase in permanent residents is likely to be linked to job market opportunities in mining and tourism.

4.3 Electricity-related effects

The MHP offers the prospect of a range of future benefits to electricity consumers throughout the District in terms of more affordable electricity for residents and businesses in the District, more secure

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[76] The total load to the north of the South Island, i.e. including Nelson and Marlborough.

[77] Rob Greenaway & Associates, 2007. p.8

[78] Op.cit. p.4

supply of electricity to the District, and improving the capacity of the lines company community trust to make financial distributions which benefit a range of organisations and individuals throughout the District. All these effects have the potential to address existing issues and disincentives for residents and businesses in the District and make the District a more attractive place to live and work.

The MHP will also result in a small increment to long-term employment associated with maintaining the new electricity infrastructure[79] in the District.

Affordability of electricity in the District

As noted in Section 3.5, the wholesale price of electricity to the District is about 25% higher than the corresponding price at its point of generation. At the time of the comparison (2005) it was also 12% higher than the wholesale price to consumers in Christchurch, but less than the wholesale price faced by consumers further south on the West Coast.

Interviews for this assessment encountered widespread expectation that the MHP will result in lower electricity prices. Any discussion of 'reduced electricity prices' to Buller consumers needs to be couched in terms of 'future electricity prices that would be lower than they otherwise would be' rather than 'lower in absolute terms'. This is because other factors are influencing trends in future electricity prices. These other factors include:

- growth in overall national demand relative to overall national supply and the influence of this supply-demand balance at the margin;
- cyclical spot prices related to hydro storage levels;
- the potential for carbon charges affecting electricity generated from gas or coal;
- increasing capital costs for future additional electricity generation projects.

It is therefore impossible to predict absolute price outcomes with any certainty. Any discussion of prices also needs to distinguish the various components of pricing, such as charges for generating electricity and charges for using the transmission networks (use and connection charges).

Within the understanding of future prices described in the preceding paragraph, the MHP offers the potential to reduce future electricity prices to Buller consumers for several reasons: (1) the nodal price for wholesale electricity to Buller consumers would drop because the physical line losses would be significantly less[80]; (2) Transpower charges to Buller consumers for use of the transmission network (national grid) would reduce, particularly in situations where electricity is exported to consumers elsewhere rather then being used locally; (3) the physical option of a discrete generator unit feeding a separately metered feed direct into the local lines network would avoid some of the electricity-related transmission charges (but not the connection-related charges)[81]. While these effects would all result in reduced wholesale prices, whether the end consumer gains a direct benefit in terms of reduced retail prices depends on whether the electricity retailers pass on the benefits[82].

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79 Including maintenance work at the power station, lake, transmission line and sub-stations.

80 Reflecting transmission distances of no more than ~100 km between MHP and Buller consumers, compared with up to ~500 km between hydro power stations on the Waitaki River and Buller consumers.

81 Buller Electricity estimate this would reduce such charges by half, and is certainly a physical option, for which the commercial and regulatory aspects are likely to get easier in future.

82 If the West Coast nodal electricity price drops, there should be scope for all retailers to lower their prices, but they can choose to do so or not. Buller Electricity indicated that if the existing retailers were to take all the financial gains themselves, then lines companies might be allowed into retailing in future to increase competitive pressure to pass on the benefits. By contrast, if transmission charges drop, lines companies are required to pass on these reductions to the consumer on a 1:1 basis.

The basis for these effects can be considered technically certain. If realised, they would support some significant positive social effects. Downward pressure on electricity prices affects the commercial viability of businesses and the attractiveness of the Buller District to businesses which have options to locate elsewhere, which has consequences for local employment as well as the livelihoods of business owners. Downward pressure on electricity prices also affects the proportion of household income which residents must spend on the essential services which electricity provides, freeing up disposable income for expenditure on other things such as food, clothing, rates/rents, leisure activities and so on, and thereby affecting the quality of life. These effects translate cumulatively into enhancing the attractiveness of the District to retain existing businesses and residents and to attract newcomers.

The risks of these benefits not being passed on to electricity consumers can be mitigated to the extent that Meridian, as an electricity retailer, undertakes to pass on reductions in wholesale electricity price to its consumers, thereby putting pressure on competitors to do likewise[83]. Further mitigation could take the form of Meridian and Buller Electricity committing to establish appropriate network connections and metering.

Security of electricity supply to the District

At the present time, interruptions to electricity supply experienced by consumers in Buller District are likely to result from either unplanned outages at some point along the national transmission grid operated by Transpower, or incidents occurring within the local distribution network operated by Buller Electricity.

According to Buller Electricity, transmission-grid reliability to the Buller district has been good up till now with regular maintenance work carried out all along the way, when sections of the grid have unused capacity which can be 'switched off' for a time (i.e planned outages). However, the grid is reaching its capacity to supply electricity to the northern part of the SI and as the grid is being more fully loaded all the time, the scope for doing the required maintenance and upgrade work is becoming increasing limited. This poses the risk in future of adverse effects on the performance of the transmission network servicing Buller District. Generation from MHP will reduce utilisation levels of the grid and allow opportunities for grid maintenance to continue - to the benefit of consumers in all the northern part of the SI. Furthermore, District electricity consumers will be less reliant on the national grid and therefore less susceptible to these potential future disruptions.

Buller Electricity advises that the advent of the MHP would have no substantial impact on the reliability of the local distribution network within the District, there being dual supply lines throughout the District already[84].

Ability of the lines company community trust to make financial distributions

As reported in Section 3.5, Buller Electricity provides financial contributions to individuals, organisations and community facilities in the District through its community trust fund. Also noted was the fact that conflicting trends between revenues and operating costs, significantly influenced by the lack of demand growth, is putting pressure on its ability to make such financial contributions, and has already resulted in lower levels of 'dividend' to the community trust in recent years.

The MHP has the potential to redress this situation, as a result of stimulating local load growth through the downward pressure on retail electricity prices discussed above. Avoiding further reductions in

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[83] A similar effect would occur in reverse, if TrustPower is granted consents to build and operate a hydro-electric power station on the Arnold River, currently the subject of a resource consent application.

[84] For example, supply disruptions within the local reticulation network caused by extreme weather events will not change in frequency. Buller Electricity does not consider voltage fluctuations to be a problem with good quality sub-stations.

community 'dividends' would have the positive social effect of maintaining current levels of financial support to individuals[85] and local organisations[86]. Increasing lines company profitability and thereby increasing the potential to make such dividend payments would be even more significant. While the general proposition is likely, the extent of this social benefit would depend on the demand response to future electricity price changes.

Increment to long-term employment

Other business opportunities would arise for Buller Electricity if MHP proceeds, related to building and/or maintaining the new transmission and distribution infrastructure. Options for Buller Electricity would be to (I) build, own and operate the new line, or if another party builds the new line to (ii) maintain the new line with Meridian as a customer. Either way, there are potential benefits for Buller Electricity as a business, and in social terms, the demand for a small increment to permanent employment.

Meridian estimates the number of long-term maintenance jobs created by the MHP at 6. Some of these workers could reasonably be expected to live in the District.

While this is a minor positive social effect, the scale of effect is nevertheless certain.

4.4 Recreation-related effects

Assessment of effects on future recreation and tourism activities

The potential effects of the MHP on the prospects for recreation and tourism activities have been assessed by a Rob Greenaway & Associates (2007). Having noted the prospects if the MHP does not proceed, the recreation and tourism assessment (at pp.5-9) draws attention to the following effects should the scheme be built:

- the replacement of whitewater opportunities with lake-based opportunities for recreation, and the loss of a source-to-sea opportunity for existing activities, although whitewater kayaking and rafting will still be available in the North branch;

- given the distance to alternative freshwater locations, the likely demand from some residents from throughout the northern Buller for jet boating and power boating, and therefore the potential for conflicts with non-motorised use of the lakes;

- improved opportunities for walking, tramping, mountain biking, hunting and fishing if the standard and maintenance regime for the Mokihinui River track is upgraded;

- the absence of any effect on access to walking tracks at Denniston and Charming Creek and the insignificant visual effects of the proposed transmission line on the attractiveness of these locations as recreational settings[87];

- the retention of existing and targeted market would avoid long-term adverse effects on local accommodation and tourism businesses; the range of recreational opportunities with the scheme in place has the potential to sustain the growth of these businesses;

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85 For example, for educational scholarships.

86 For example, supporting services such as community libraries.

87 with reference to Peter Rough, 2007.

- the lake and the upgraded track may increase the numbers of anglers accessing the North and South branches of the River without the use of helicopters and may have a minor effect on the current wilderness fishery;

- heritage asset enhancements resulting from "the relocation and interpretation of currently inaccessible and poorly-known mining artefacts"; and

- overall, the opportunity for the Mokihinui River catchment to develop as a destination, with a combination of "front-country recreation" focused on the proposed lake and "back country-remote" qualities in the upper catchment.

Links to social wellbeing

These effects raise the prospect of cumulatively significant social wellbeing benefits for a much wider group of people than those who currently enjoy the recreational setting[88]. The benefits to social wellbeing encompass opportunities for personal recreation and maintaining physical health, opportunities to appreciate the natural environment and heritage assets of the area in a setting which will have improved levels of safety, additional local business opportunities, and the opportunity to participate in community initiatives around local recreational activities and community events.

The potential gains in personal recreation opportunities are the result of a more diverse set of recreation options for a greater variety of people with fewer outdoor skills - local and District residents of all ages and levels of fitness; regular visitors to Mokihinui and Seddonville during the whitebait season and summer holiday period; people interested in a variety of other activities such as flatwater boating of various kinds, walkers, mountain bikers and those interested in lake fishing. It is likely that the greatest increase in recreation accessibility[89] will be for local residents and for residents of northern Buller, by virtue of proximity. Their access will be less constrained than at present by considerations of outdoor skills and time constraints or personal income. This will add to the attractiveness of northern Buller as a place to live.

Such increased opportunities for accessible outdoor recreation support the District's population health objectives for improved physical health, as well as providing more opportunities for local and district residents to appreciate their natural environment and heritage.

The recreation and tourism assessment refers to changes in business opportunities. It notes[90] some reductions in the level of commercial activity associated with whitewater recreation but concludes that this is not a significant net effect for these operations. It also concludes that there are likely to be some expanded opportunities for existing accommodation businesses as well as new business opportunities in canoe, kayak and bike hire services, water taxi services and guiding. Overall, this has the potential to support some additional livelihoods in the District's tourism sector, which is a further increment to the number District residents who will benefit as a result of the change in recreational setting triggered by the MHP.

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88 Predominantly those who are extremely fit and sufficiently adventurous to negotiate the route through the Gorge and those with sufficient income to afford helicopter-based pursuits in the upper catchment.

89 This refers to the level of accessibility at a personal level, not to the total numbers of people making use of the recreation setting.

90 Rob Greenaway & Associates. 2007. pp.5-6.

The Seddonville and Mokihinui perspective

Most[91] of the residents of Seddonville[92] and Mokihinui interviewed for this assessment expressed support for the changes in the local recreational setting that will result if the MHP goes ahead. Their responses focused equally on opportunities associated with the proposed lake and with the proposed enhanced track network.

Local residents and Preserve section owners are also aware of the potential for conflicts of value. Some expressed their concerns around the potential for congestion or loss of tranquillity in the recreational settings themselves. As noted in the recreation assessment[93], there will be a need to manage potential conflicts of use, particularly with regard to motorised and non-motorised water-based recreation on the lake.

Nevertheless, there is already an expectation that tourism and holiday making will dominate the future 'development' of this area, with many local residents expecting better and cheaper access to The Forks as a result of the MHP. Seddonville is therefore likely to experience some busier times. However, the current pattern of visitation is already strongly seasonal, because of its association with whitebaiting and summer holidays.

Conclusions

The losses in social wellbeing associated with changes to the recreational setting, while certain and unavoidable, would be experienced by a relatively small number of people undertaking specifically whitewater activities. The associated risk of adverse social effects for local communities will be insignificant since the greatest number of those currently enjoying recreational benefits live out of the District, and those regional businesses which currently offer tourism services within the area potentially affected by the MHP have a diverse product base. By contrast, the potential benefits to social wellbeing have the potential to be significantly positive, affecting in a variety of ways a substantial number of people who live in the District - through their own recreational experience, particular business opportunities, and the overall attractiveness of the District as a place to live or place to visit.

It is arguable that the land-based recreational benefits will be more certain than the alternative outcomes for improved access resulting from the proposed Department of Conservation Conservation Management Strategy, since the proposal associated with the MHP involves the greater combined resources of the Department, Solid Energy and Meridian, as well as local tourism businesses, with the backing of local councils and development agencies.

Ensuring maximum overall social benefit from use of the lake will require some restrictions on jet boating and power boating with respect to timing, speed and noise *"to secure a predictable setting for other uses"*[94].

Potential for conflicts between walkers and cyclists on an upgraded Mokihinui Gorge Track is also possible, and may also require restrictions, of the kind which currently apply to use of the Charming Creek Walkway. Nevertheless, some locals urged that the re-instated track include provision for mountain biking.

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91 Others did not express a rejection of the proposed changes; rather a focus on ensuring that existing values are not compromised, for example fishing, particularly at the river mouth.

92 Including a sample of Preserve owners interviewed for this assessment.

93 Rob Greenaway & Associates. 2007. p.6

94 Op.cit.

In summary, the recreational outcomes associated with the MHP support a range of desired outcomes expressed in the District's Long Term Plan.

4.5 Other dam structure-related effects

Four issues associated with the presence of the dam structure were raised during discussions with local residents for this assessment. They were:

- concerns about the risk of physical dam failure for the safety of persons downstream;
- changes in the visual amenity and landscape for people living within sight of the dam's general location;
- risks to existing fishing activities (trout and whitebait) downstream of the dam affecting the identity of the Mokihinui and Seddonville; and
- changes in bank erosion and shoreline retreat rates near the river mouth and the consequent implications for residential properties.

Community anxiety over the risk of dam failure

Anyone who has visited the Seddonville Pub will probably have seen the photographs on the dining-room wall portraying the settlement's experience of the flood which followed the 1929 Murchison earthquake[95]. It is therefore not surprising that local residents express concern and ask questions about the ability of the proposed dam structure to withstand earthquake shocks, sited as it would be in an active earthquake fault zone. Indeed, a number of residents interviewed for this assessment raised the issue. The issue was also raised at the first meeting of the Community Consultation Group.

This issue is important because, unless it is resolved, it has the potential to result in a significant adverse social effect where perceived risks to life and property that might occur as a result of catastrophic dam failure give rise to personal anxieties sufficient to affect people's health, and then result in a population decline in Seddonville because of this perception of risk.

Part of the issue at the present time appears to be associated with a lack of clear explanations and consequent confusion. There is uncertainty in the minds of local residents about the nature and severity of the earthquake event that is being considered, the likelihood of such an event, the social consequences of the event, and how this is or is not related to the presence of a dam.

The following assessment is the result of discussions with a number of people across a range of disciplines and perspectives including dam design engineering, insurance risk assessment and civil defence.

From a resident's perspective, a key question is "what is the most extreme earthquake event imaginable that might cause the dam to fail?" In the case of Mokihinui, the earthquake experts at Geological and Nuclear Sciences (GNS Science) have given the dam design engineers a preliminary assessment of what they call the Maximum Credible Earthquake which, as the name implies, is the largest earthquake that they believe could realistically hit the dam site. The event is so extreme that its

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[95] The various newspaper articles which are framed on the Pub wall tell how it was the Murchison earthquake of 1929 which triggered numerous slips in the Mokihinui Gorge, resulting in the build up of water behind them. When the Mokihinui River subsequently broke through these landslip 'dams' the result was the destructive flooding which was experienced in Seddonville, and which is captured in a series of graphic newspaper photographs from the period. The newspaper articles describe how only seven houses in Seddonville escaped the floodwaters; some houses and the hall were lifted off their foundations; residents evacuated hurriedly, leaving most of their possessions behind. The descriptions make it clear that the experience of the flood was of the river rising rapidly, not a tidal-wave-type wall of water. Two lives were lost, but these were local residents who were out in the Gorge at the time of the earthquake, and it has been assumed that they were caught under the landslips.

likelihood of occurrence is extremely small, usually greater than a 1 in 10,000 years return period in any specific location. This is the earthquake for which the dam must be designed to remain standing and hold its contents. The dam may well be damaged, but it must not breach catastrophically. These are the requirements in the NZ Dam Safety Guidelines for this size of dam sited upstream of a community such as Seddonville and is the basis that the dam design engineers have used for the proposed dam at Mokihinui[96].

For comparison, a normal building is designed for a 1 in 500 year return period earthquake; a less extreme and therefore much more frequent event. An earthquake of this magnitude would still be enough to cause major damage to houses, but it is not nearly as strong as the level of earthquake considered when designing the proposed Mokihinui Dam. The strength of the 1 in 10,000-year earthquake (at the proposed Mokihinui dam-site), set as the benchmark for designing the Mokihinui dam to withstand, would completely destroy just about every building in Seddonville. For a dam like Mokihinui, design factors of safety are required to be so much more stringent than for a normal building in which people live[97].

Some people have asked "What is the magnitude of the Maximum Credible Earthquake that has been applied to the design of the dam structure in the case of the Mokihinui site?" The advice from GNS Science is a Magnitude 7.4 earthquake. In making this judgement, the scientists consider a whole range of earthquake sources including nearby faults. For comparison, the 1929 Murchison earthquake was a Magnitude 7.6 event and the 1968 Inangahua earthquake was a Magnitude 7.4. event[98]. Furthermore, building dams on earthquake fault lines is not unprecedented in New Zealand[99].

In terms of evidence of perceptions of such risks, several practitioners in the insurance industry[100] confirmed that there is no history of insurance companies "taking restrictive actions against existing homes" in the form of elevated risk premiums. The insurance industry representatives interviewed unanimously expressed their confidence in the professional and statutory procedures associated with the resource consenting process. Nor does there appear to be community-level behaviour reflecting perceptions of elevated risk downstream of dams on an earthquake fault. For example, since the Clyde Dam was commissioned in 1992, the usually resident population in Clyde[101] has increased from 903 at the 1996 census to 981 at the 2006 census. While the issue of earthquake risk was raised by a number of Seddonville residents interviewed for this assessment, many of these same people also expressed positive sentiments about the proposed dam to be located some 3 km upstream, suggesting that the issue is more about wanting adequate explanations than significantly raised levels of personal anxiety.

In summary, this issue of perceived risk is an important issue to address. Appropriate mitigation would take the form of careful and meaningful explanations. This assessment concludes that while there is a genuine interest in understanding the risks, there is in fact not widespread anxiety about these risks within the community. Furthermore, the likelihood of experiencing risks to life and property are

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96 Peter Amos, DamWatch Services Ltd. Pers.Comm. 22 February 2008.

97 Op.cit.

98 Peter Amos, DamWatch Services Ltd. Pers.Comm. 25 February 2008.

99 For example, the Roxburgh dam is built on the Roxburgh fault and the Clyde dam is built on the Dunstan fault (Owen Burgess, Civil Defence, Central Otago District Council. Pers.Comm. 21 February 2008.)

100 Including AMI which is a major insurer of homes in the South Island. AMI confirm that there were no elevated risk premiums for houses in Clyde (1 km downstream of the Clyde Dam) or Alexandra (9 km downstream of the Clyde Dam). IAG/State Insurance confirmed no experience of exclusions or elevated risk premiums.

101 Taken as the census area unit of Clyde.

extremely low, and highly unlikely to result in significant numbers of existing residents leaving or future residents deciding not to come to Seddonville, and thereby disenabling the community.

Changes in visual amenity and landscape quality

The site of the proposed dam is visible only from Seddonville and its environs. Interviews for this assessment encountered little concern about potential changes in visual amenity and landscape quality. Nevertheless, several local residents in Seddonville raised the issue. They did so with reference both to the construction effects - *"it'll be fine so long as they restore the construction site afterwards"* - and to the visual effects once the proposed dam is in place - *" we don't want our view spoilt with a concrete monster".*

The proposed transmission line will be visible from some sections in the Mokihinui Preserve, from some properties towards the southern end of Seddonville and at certain points across the Stockton Plateau to the upper Waimangaroa valley.

In terms of social wellbeing, these are essentially issues of local amenity value or the attractiveness of the natural environment to tourists and visitors.

Meridian commissioned a specialist visual and landscape assessment[102]. This assessment concluded that there will be *"some loss of naturalness"* and a *"minor visual intrusion from the dam"* for people viewing from the Seddonville Flats[103], including adverse effects on views from sections *"on the lower reaches of the Mokihinui Preserve"*[104]. While there will be some visual intrusion and minor loss of natural character in the area of the Charming Creek Walkway, the assessment concluded that this amounted to *"insignificant visual effects".*

From the perspective of those living in Seddonville, these conclusions would indicate the likelihood of negligible social effects, and certainly not a significant deterrent to the building of new dwellings and consequent increase in local resident population in the future.

From the perspective of those who have built in the Mokihinui Preserve or may do so in the future, visual amenity is strongly protected by the covenants on the titles which seek to minimise the removal of the existing tree and bush cover. Existing downstream views towards Seddonville may be subject to change, but the change is unlikely to affect owners' inclination to build since a road and power lines were already in place at the time of purchase, and these are the same power lines which service the Lodge and the Preserve sub-division. Nevertheless, the visual effects of larger poles and more lines was the principal concern of several property owners in the Preserve. Several factors will help to mitigate these visual effects: the use of poles not lattice pylons; property owners decisions on the precise location and orientation of their dwellings; and their ability to manage vegetation growth in climatic circumstances conducive to rapid growth. Consultation with property owners (particularly those who have built dwellings by that time) over the precise location of poles will be appropriate.

This assessment concludes that visual effects from the proposed dam and transmission lines are highly unlikely materially to affect the extent of future development within the Preserve. Nor are they likely to affect owners' patterns of future use. In any collective or community sense, the visual effects are unlikely to make a difference, given the low level of development so far and the generally sporadic nature of intended occupation.

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102 Peter Rough. 2007.

103 Op.cit. p.80.

104 Two of these sections have views downstream towards Seddonville, one of which already incorporate views of the existing power lines and access road to Rough & Tumble Lodge, and will, if the MHP proceeds, have views of the new transmission line instead, as well as the widened road.

Risks to the identity of Mokihinui and Seddonville as whitebaiting destinations

The potential to impact on the whitebaiting and fishing activities at the Mokihinui River mouth, and to a lesser extent the trout fishing activities on the lower reaches of the River, has been a primary focus of interest for many people in the region and the nearby settlements of Mokihinui and Seddonville. As noted earlier in this report, these activities, particularly over the annual whitebait season and summer holiday season, are major contributions to the social wellbeing of local residents and visitors alike, and have been for generations past.

Besides being very significant recreational activities for many individuals, whitebaiting and fishing have a strong influence on local culture, customs and social relations, they contribute significantly to the livelihoods of people involved in several local businesses; indeed, they are essential elements of the social identity of this locality. Any substantial interruption or decline in whitebaiting and fishing would pose potentially significant and long-term adverse social effects on these local communities.

For this reason, concern about risks to the underlying ecology are of paramount importance in the local communities.

Meridian commissioned specialist assessments of the effects of the proposed MHP on native freshwater fish, including whitebait[105], on trout[106] and on instream habitat and flow regime[107].

The assessment by Bonnet et al.[108] found that *"native fish habitat, water quality, invertebrate production, and sediment transport in the main stem of the lower Mokihinui River will not be significantly altered as a result of the MHP, and thus the scheme is likely to have minor, or less than minor, effects on native fish populations downstream of the dam."*

Hayes et al.[109] concluded that *"It is important that downstream passage is maintained to sustain the lower river trout population. This will be the case with the proposed dam; trout will still be able to pass downstream (over the spillway) and small trout at least will be able to pass through the turbines with low mortality and this is unlikely to cause a detectable reduction in trout abundance in the lower river."*

Jowett[110] concluded that *"The magnitude and timing of daily flow fluctuations would affect whitebaiting below the SH bridge. Although some combinations of flow and tide might improve whitebaiting, others will be detrimental. To avoid adverse effects, it is suggested that no flow fluctuations should occur during the whitebait season from 01 September to 14 November. During this period, the flows are to be kept within +/- 10% of the natural flows coming into the lake i.e. run of the river."* Jowett also concludes that flow fluctuations, either during natural flood events or during daily power station operations, *"will be unlikely to cause stranding of people or livestock because of the relatively infrequent use of the river bed and lack of islands."*

Taken together, these are important findings of the assessments which give confidence that an operating regime for the proposed dam can be established which will sustain the important whitebaiting and fishing activities in the lower reaches of the River.

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105 Bonnett et al. 2007.

106 Hayes et al. 2007.

107 Jowett. 2007.

108 Bonnett et al. 2007. p.iv.

109 Hayes et al. 2007. p.v.

110 Jowett. 2007. p.v.

Thus this assessment concludes that a potentially significant adverse social effect is highly unlikely to occur, given Meridian's commitment to the flow regime recommended by Mr Jowett.

Riverbank erosion, beach retreat and risks to residential property and gravel extraction businesses

Some residents of Mokihinui reported the riverbank erosion and beach retreat near the mouth of the River which they have observed during their period of residence[111]. The assessments of sediment transfer downstream of the proposed dam[112]and of shoreline change around the Mokihinui River mouth[113] provide science-based input to a discussion of these issues. In the context of considering social wellbeing implications, the issue for local residents is one of potential threats to private property[114], rather than potential threats to personal safety.

Riverbank erosion on left estuary bank

According to the NIWA sediment study[115], the span of the left bank between the Mokihinui mouth road turnoff and the rock groyne further downstream *"is already, and will continue to be, vulnerable to erosion from large floods."* In the past, while whitebait stands are likely to have been swept away in the large flood events which have eroded the riverbank, the subsequent ongoing supply of sediment has resulted in the natural recovery of the riverbank.

In NIWA's assessment, the effect of the MHP is to reduce the ongoing supply of sediments to the extent that the left bank does not rebuild after each large flood event. It is therefore very likely that, if the MHP goes ahead, this span of the left bank will experience some minor scouring[116]. There are no private dwellings or baches along the stretch of bank described by the NIWA report. However, there are three baches slightly upstream of the Mokihinui mouth road turnoff[117]. The NIWA sediment study also noted[118] that the *"groyne located on the south bank and extending to the north-west appears to have kept the river away from the Mokihinui settlement on the southern spit".* Some local residents expressed the view that, in achieving this effect, the groyne may also be affecting erosion of sections of the north bank further downstream.

NIWA further recommend, by way of mitigation, that the physical risk of scouring could be avoided if Meridian carries out bank protection works and then re-establishes the affected whitebait stands - or re-establishes stands lost to floods where bank erosion is clearly evident.

Since the presence of the dam has minimal effect on the frequency and severity of major flood events[119], the recommended mitigation (or remediation) should avoid any adverse social effects on residential property owners.

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111 In some cases this period spans a few years, whilst in others the period spans decades.

112 NIWA. 2007a

113 NIWA. 2007b

114 Either private land, or private licensed whitebait stands - see Figure 6.12 in NIWA 2007a.

115 Hicks et al. 2007a. p.94.

116 Op.cit. p.vi

117 One bach is set back from the bank by a distance of some 20 m, while the other two baches are about 6-8 m from the bank.

118 Op.cit. Section 4.2, p.60

119 Jowett. 2007. p.v.

Beach retreat around River mouth

The West Coast Regional Council's (WCRC) Coastal Plan[120] identifies the stretch of coast from Gentle Annie Point to Miko as a Coastal Hazard Area (CHA2) and states, *"Settlement (Waimarie), farmland and road threatened by beach erosion and wave inundation."* Mokihinui is not alone amongst West Coast coastal settlements in facing significant issues concerning historical coastal development patterns under threat from coastal retreat. Indeed, the Mokihinui settlement has witnessed several previous but largely unsuccessful attempts to stabilise the shoreline over a period since 1978[121].

According to the NIWA study of shoreline change around the Mokihinui River mouth[122], shoreline retreat in the vicinity of the Mokihinui settlement is a well-established phenomenon. The study explains the various contributions to this trend in terms of northward coastal drift of sediments, varying sediment supply from the Mokihinui River itself, and long-term sea-level rise. It notes that *"since 1987, retreat rates averaged approximately 1 m/yr in the area of the Mokihinui settlement".*

NIWA has estimated, as a worst case scenario, that the erosion effect from the MHP would be *"initially rapid, peaking at 2 m/yr just south of the river mouth during the first decade, and would then reduce exponentially."* To this would be added the existing natural retreat rate as above.

With or without the MHP, some landowners in the Mokihinui settlement will very likely be facing the prospect of physical threats to their dwellings from coastal retreat within the next few decades. Based on aerial photos[123], the time frame till coastal retreat begins to impact on existing dwellings in the Mokihinui settlement would appear to be of the order of 30-40 years without the MHP, a period foreshortened to about 15-20 years if the MHP goes ahead. Overall, the cumulative contribution from the MHP (over many decades) would appear to affect about four existing dwellings, two of which are permanently occupied and two which are baches, within a distance of 75 m of the present shoreline. It would also be contributing to the future threat to buildings associated with the Mokihinui campground, which are in this same location. Coastal retreat does not appear to present the same level of risk to dwellings on the north side of the River.

As noted in the NIWA sediment study[124], the WCRC commissioned NIWA to look at coastal hazard management options as a result of large coastal storms in 2006 which led to erosion in the Granity and Ngakawau/Hector areas. A major recommendation from that report was *"that the bid to 'hold the line' should be abandoned in favour of backstop defences to slow erosion while preparing for an orderly retreat."* Since the Regional Council has also indicated that any such works would have to be funded out of a special rate on affected landowners, and given the small number of such ratepayers in the Mokihinui settlement, it seems likely that this policy is influenced as much by cost considerations as by any considerations of technical feasibility. The technical feasibility of any engineering solutions to this problem is the subject of a specific evaluation currently commissioned by Meridian Energy. This evaluation will be presented to a meeting of Mokihinui Ratepayers on Saturday 19 April. Representatives of the Regional and District Councils as well as the Department of Conservation are expected to attend this meeting.

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120 Chapter 14, Natural Hazards

121 Hicks et al. 2007a. p.72.

122 With no MHP, coastal erosion is still expected along this shore. The retreat rates of recent decades are likely to increase by 0.4-0.5 m/yr over the coming century as the level of sea-level rise effect increases. Therefore, even without the hydro dam, parts of Mokihinui settlement are at risk. Hicks et al. 2007b. p.v.

123 Op.cit. Figures 3.6 and 3.8.

124 Hicks et al. 2007a. pp.72-73.

While there is some uncertainty about the full extent of the MHP contribution to this existing process, NIWA states a high level of certainty about the underlying process itself. That there will be implications within 15-20 years for landholders in the Mokihinui settlement, if no technically feasible engineering solutions are put in place, is therefore also very likely.

If the MHP goes ahead, Meridian will be a long-term stakeholder in the local community, with the ability to contribute to any longer-term, community-level responses. In terms of appropriate mitigation, NIWA notes[125] *"It is clear from the record of historical shoreline change that the Mokihinui coastal plain is naturally eroding. This presents an ongoing threat to dwellings and infrastructure around the Mokihinui settlement and, for its own sake, requires a planned response. The additional erosion arising from the MHP will compound this naturally occurring hazardous situation. Thus if the MHP proceeded, measures to mitigate its contribution to future coastal erosion should best be integrated with plans to manage the existing problem. Developing these plans will require the involvement of the Local Authorities, the local community, Meridian Energy Ltd (as the MHP operator), and other interested parties."*

Gravel extraction from the Mokihinui River

The NIWA report[126] concluded that *"there may remain sufficient gravel to sustain an extraction rate similar to the current consent total; however, doing this would effectively stop all gravel delivery to the coast. .... with regard to the predicted effects on coastal erosion in the river mouth area (Section 6.5), it would be prudent to halt all gravel extraction from the lower Mokihinui channel with the MHP."*

Three companies currently have resource consents to take a total of 6,000 tonnes/year of gravel out of the Mokihinui River. Actual extraction rates have tended to be somewhat less than this. For these companies, quantities of gravel taken from the lower reaches of the Mokihinui River comprise between 5% and 10% of their total annual gravel needs. The Mokihinui River affords the largest quantities of river-sourced gravel in the District apart from the Buller River which provides about 100,000 tonnes/year. Principal uses for the Mokihinui gravel are the maintenance of local public roads as well as haul roads at Stockton and Millerton.

Discussions with representatives of each company confirm that existing river sources of gravel throughout the District are showing a downward trend. Gravel extraction from rivers in the northern Buller District have been drawing down progressively on gravel supplies generated upstream by the 1968 earthquake. Alternative sources of gravel to substitute for the 5-6,000 tonnes/year currently taken from the lower reaches of the Mokihinui River will have to come from other gravel pit sources or the Buller River, resulting in increased cartage costs[127]. However, all companies confirmed that this kind of future uncertainty is not unusual, and constitutes a minor business risk. Between them, these three companies employ between 80 and 85 staff at the present time. All companies confirmed that the MHP would have no implications for employment levels. Thus, the cessation of gravel extraction from the Mokihinui River is not expected to result in any adverse social effects in the District.

All three companies also expressed their interest in sub-contracting for work associated with the dam construction activities, a specific example of the potential business opportunities discussed in the next section.

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125 Hicks et al. 2007b. pp.33-34.

126 Hicks et al. 2007a. p.96, section 6.4.8.

127 Estimated at $12/T compared with the present $5/T, which constitutes ~8% of the current total delivered cost.

4.6 Construction-related effects

The preceding three sections have assessed the range of long-term and cumulative social effects to be expected once the MHP is in place and operating, should the proposal go ahead. This section assesses the range of temporary social effects to be expected during the three-year period of construction activities.

The construction-related effects include:

- employment and business opportunities for individuals and firms throughout the District as well as elsewhere in the country, and the support for people's livelihoods that results from these opportunities;
- the demand for accommodation for the incoming construction workforce;
- the potential risks of social disruption resulting from an influx of single construction workers;
- the potential for enhanced social capital in District communities resulting from an influx of partnered construction workforce members and their families;
- effects on the provision of a range of social services within local communities of the District, resulting from increased demands associated with the incoming construction workforce;
- the reduction in residential amenity values for households in close proximity to the principal construction traffic route resulting from the substantial increase in local traffic, particularly heavy vehicles and articulated trucks;
- the risks to personal safety of other users of the local roads which form part of the principal construction traffic route resulting from the substantial increase in local traffic; and
- the risk to human or ecological health of accidental releases of potentially harmful materials such as fly ash or liquid fuels.

Employment and business opportunities

As described in section 2.4 of this report, DamWatch has estimated a peak construction workforce of 310 and a further 45 drivers required during the same period of peak activities. Figure 4 presents the time-wise profile of construction workforce numbers over the anticipated three-year construction period.

Labour market conditions vary over time. At present, unemployment is low and relevant skilled workers are in demand, with most of the large industries in the District relying on recruitment and a degree of long-distance worker commuting from out of the District to satisfy their current needs.

The construction workforce scenarios used in this assessment have been described in the relevant part of section 2.4 of this report, with Table 2.1setting out the peak workforce parameters. Based on these scenarios, it is expected that between 90 and 150 jobs will be taken up by workers already living in the District, with the balance (between 205 and 265) being filled by people who come from outside the District. As noted in footnote 21, this assessment has adopted relatively conservative assumptions about the labour market conditions that may apply at the time[128].

The employment benefits from this construction project will therefore be split between Buller District and other Districts in the country, probably mainly in the South Island. Based on the scenarios used, Buller District residents can expect to fill between 25% and 42% of the jobs required during construction. In the District context, these 90 to 150 jobs (at peak) compare with 850 jobs District-wide in mining, transport and construction at the 2006 census (i.e. equivalent to between 11% and 18% of the relevant labour market at that time).

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[128] Conservative in the sense that we have assumed the current tight labour market conditions continue to apply. Conservative assumptions therefore tend to under-estimate local benefits and over-estimate risks associated with an incoming workforce.

Given the pattern of commuting to work that is well established in the District (see Figure 3.1) and the propensity of people to travel up to an hour or more each way in order to take up jobs, the employment benefits from this construction project are likely to be distributed broadly throughout the District. At the other end of the spectrum, at least four people interviewed for this assessment, with a range of relevant skills and work experience and living in Seddonville, indicated their possible interest in work on the nearby construction site, if the project proceeds. Another local resident suggested there might be half a dozen local residents in this category.

The main issue for recruitment will be the state of the District and national construction labour markets at the time, and the competition for skilled workers that will come from employers like the mines at Stockton, Pike River and Oceana. Employment and construction-sector observers interviewed for this assessment noted also that some people in the mining industry see local mines as a stepping stone to work in the Australian mining industry. The state of the District's coal mining industry at the time will be an important influence on labour demand and this may be influenced by central government policy on matters such as climate change and carbon policy[129]. These observers also pointed out the willingness of some workers to 'migrate' from existing jobs to new construction jobs in response to a desire for change, new challenges or different working conditions. What is certain is that a work regime based on 12-hour shifts is increasingly familiar to people in Buller District. Whether the shift-work regime involves 10 days on and 4 days off, as suggested in the URS construction report, or 4 days on and 4 days off, which is more familiar for those in the District's mining industry, is likely to be an important consideration when trying to attract a workforce to the construction project. The difference in shift-work regime also has implications for accommodation (see next section).

In any event, most observers foresee a constrained labour market for some years ahead. Therefore, in order to ensure that the District gains its share of the potential employment benefits from this construction project, it is likely to require a pro-active employment recruitment effort, collaborating with employment and training agencies in the District and on the West Coast generally, and probably involving an active role for a recruitment company.

Nevertheless, the construction project is certain to provide a measure of social benefit in terms of new jobs or continuing employment, depending on individual circumstances. This will contribute to the social wellbeing of a significant number of households throughout the District in terms of maintaining their household income.

It is also likely that there will be business opportunities for individuals and firms in the District in providing accommodation, food, worker transport and sub-contracting services to construction.

Demand for accommodation

As discussed in the previous section, it is expected that a significant number of workers associated with the MHP construction project will have to be recruited from outside the Buller District. In order to assess the potential effects, assumptions had to be made about the composition of this incoming workforce. These assumptions were set out in section 2.4 of this report. In summary, half the incoming workers are likely to be unaccompanied single people (usually males) while the other half will be accompanied by their partners and many of these will have dependent children with them. It has also been assumed that unaccompanied workers (between 100 and 130 workers at peak) will most likely be accommodated in full-board accommodation, adopting the 'long-distance' commuting pattern, while workers who are accompanied by their partners and families will either buy or rent existing houses (between 100 and 130 houses at peak) somewhere within the daily commuting area - the area between Westport and Karamea.

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[129] Contrasting scenarios might see coal mining in the District either accelerating to open up additional permitted areas, or leveling off if concerns over trends in greenhouse gas emissions take more prominence.

These outcomes have potentially important social implications for social cohesion and for social services in existing communities, as will be discussed in the next three sub-sections of this report.

Renting or buying residential property

The demand for housing, either to buy or to rent, is likely to be of the order of 100 to 130 dwellings during the peak construction period[130]. Two experienced real estate agents who also have responsibilities managing rental portfolios agreed that it is likely that the District's housing market (at the present time) could accommodate about an additional 100 households, distributed two-thirds in Westport and one-third in settlements along the northern Buller coast. This expectation is based on an appreciation of existing latent supply[131]. Housing quality will be a factor influencing the attractiveness of this option to potential occupants. Consequently, when there is greater certainty about whether the MHP project will proceed, it will be important to ensure that information on the likely scale and timing of accommodation demand is publicised in order to trigger the necessary market response.

Nevertheless, the apparent capacity of the District's housing sector to accommodate those incoming workers who may choose to rent or buy a home in the District for several years reinforces the importance of Meridian or its lead construction contractor taking a pro-active approach to recruiting local workers in order to avoid a perceived accommodation scarcity being a constraint to successful recruitment. However, there will be some scope for flexibility over the scale of the alternative accommodation option - a dedicated accommodation facility (see next section).

A full-board accommodation facility

The scale of demand for a facility providing full-board accommodation for housing unaccompanied single workers is likely to be of the order of 100 to 130 persons during the peak construction period. The time-wise profile of the workforce over the three-year construction period suggests that some form of modular facility[132] might be used. There do not appear to be any institutional accommodation options in the District at the present time[133].

There are a number of issues which require consideration in determining an optimal location for such a facility. These represent a balancing between the interests of Meridian, the construction workers and the host community. They include:

- the daily travel distance for construction workers to and from the construction site, noting that proximity to the construction site means less travel time while proximity to the social amenity and facilities of a larger settlement means more travel time;

- the size and social characteristics of the host community, noting that larger communities are likely to be more resilient to intrusion from incoming workers than smaller communities;

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130 These numbers would increase somewhat if some of the unaccompanied single workers chose to take up this accommodation option rather than the full-board accommodation. However, this is less likely to appeal as an option for long-distance commuters (paying rent when they are absent for 4 days at a time).

131 Two examples of such latent supply relate to (1) the number of older people still living in large houses who would shift into smaller units if demand arose, (2) the number of currently unoccupied dwellings which have been bought in recent years by out-of-district investors. In the latter case,

132 For example, easily assembled 20-person hostel-style modules which can be added or removed as the scale of the workforce changes.

133 For example, the old nurses hostel in Westport has been taken over by the Fishing School to house its trainees.

- the physical infrastructure requirements of the location, noting the constraints on potable water supplies and waste water treatment capacity in many parts of coastal northern Buller and the opportunity to partner an existing community in upgrading its infrastructure for the long term;

-access for workers to social and community services, noting the potential need for access to services such as medical and dental services which are located mainly in Westport; and

- the subsequent uses of such a facility, noting both the opportunities that may exist for community[134] or commercial uses[135], as well as the difficulties which the existing communities already face in maintaining their community-owned facilities on a limited rating base and volunteer base. There is, of course, always the option simply to remove the construction camp facility at the end of the construction phase, as happened previously in Westport in the 1970s when the NZ Electricity Department built a 'hydro camp' at North Beach for its Kikiwa refurbishment.

Given the uncertainty as to the circumstances which will prevail at the time of construction, should the MHP proceed, and in the interests of achieving effective co-operation with the interests throughout the Buller District, this assessment concludes that it would be preferable for Meridian to engage with community interests at the time when there is certainty about the proposal. Nevertheless, it is important to highlight these strategic issues at the present time, so that they are clearly signalled for future consideration.

The need for a strategic approach by Meridian

The foregoing discussion of issues to do with accommodation demand and how this might be met calls for a strategic approach from Meridian. Indeed, both Councillors and District Council staff interviewed for this assessment made clear their expectation that Meridian should take the lead role in obtaining any construction camp consents. Furthermore, they pointed out that the Seddon Working Group of the BDC could provide an appropriate framework for facilitating community input to such a strategic planning process. Communities in the District wish to see someone taking ownership of the planning process for worker accommodation.

Potential risks of social disruption

There is potential for social disorder, unlawful activity[136] and tensions to arise between incoming workers and members of the resident community outside of working hours. This is particularly so in cases where large numbers of unaccompanied, usually male, single workers are away from their familiar social networks for extended periods of time. It is most likely to be associated with socialising venues such as pubs and clubs.

According to local Police observation, the smaller communities of the northern Buller have five pubs for ~1500 people. The prevailing culture of these local social establishments is that they each have a small but loyal clientele, are well managed and do not tolerate mis-behaviour. They tend to be quiet places these days and the host communities are resilient communities - observant of what is going on.

Nevertheless, with the prospect of such a sizeable incoming workforce, it is prudent to consider what might be done to mitigate the potential risks. Based on experience with the mining workforce in recent

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[134] For example, as an upgraded camp ground facility or an outdoor centre for schools and school camps.

[135] For example, as back packer accommodation for the growing tourism sector, or worker accommodation for future expanded mining activities.

[136] Such as assaults and nuisance

years, the adoption of 12-hour shifts, a 4-days-on/4-days-off shift-work regime and the provision of dedicated worker accommodation means that workers have little time and energy for socialising after hours when they are on shift work. If these workers are required to vacate their lodgings when not on shift-work, they will then be absent from the District during the times when they are most likely to want to visit pubs and run the risk of causing social disruption and engaging in unlawful behaviours. It is casual accommodation arrangements for single men which are most likely to lead to instances of anti-social or unlawful behaviour.

As noted in the previous section on workforce accommodation, larger communities like Westport are likely to be more resilient to social pressures from incoming workers than smaller communities like Seddonville or Granity. If professionals and sub-contractors working on the construction project are dispersed throughout the communities of northern Buller, this will further reduce the risks.

The Police point out that responsibility for patron behaviour in pubs and clubs rests with venue managers as part of their liquor control and host responsibility. Nevertheless, the Police maintain a general liaison with such leisure venues. Another mitigation measure is to ensure liaison between the Police and out-of-district workforce contractors to reinforce a good behaviour code amongst employees.

With this range of mitigation, the potential risks of social disruption can be largely avoided altogether.

Potential for enhanced social capital

The phrase 'social capital' is increasingly being used in the context of discussing social sustainability. In any community, social capital exists in the form of the stock of relationships, organisations, shared values, shared knowledge, and trust between members of the community[137]. Social capital is therefore based on the contributions that individual community members make to collective activities.

It was noted at various points in section 3 of this report on the social environment of Buller District that the shrinking population, the turnover of population and the change in workstyles towards shift-work have lead to a situation where some community groups which have been in existence for a long time are struggling to maintain members and volunteers.

While some incoming partners are likely to seek employment as well, overall an increase in resident population of between 335 and 440 over a three-year period is likely to result in some levels of increased participation in local activities. This scale of population change can be compared with a decline of 78 in the total District population between the 2001 and 2006 census and an increase in the population of Westport over the same period of 273[138]

Numerous observations during this assessment about how people have come to the District for a specific period of work and ended up choosing to stay on and settlement permanently point to the possibility of some longer-term benefits as well.

While this social effect cannot be predicted with certainty, it is potentially a noticeable positive social effect.

Effects on the provision of a range of social services

A project like the MHP has the potential to create additional demands on a range of social services in the District. The incoming workforce may make demands on medical services, schools and the Police, while certain construction activities may make demands on emergency services and the Police. There is the potential for consequential effects on the social wellbeing of local residents if these additional

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137 Sinner et al. 2005. p.8.

138 Statistics NZ Census of Population and Dwellings.

demands affect the capacity of the agencies to deliver services to the existing host community population.

Schools

It has been estimated that the incoming workforce may result, at its peak, in additional dependent children living in the District for a period of time - numbering between 135 and 180 in total (see Table 2.1). When disaggregated by age group, the estimates are for 10 pre-school-age children, 50-60 primary school-age children and 25-30 secondary school-age children.

As noted in section 3.5, there are two secondary schools in northern Buller District, in Westport and Karamea respectively, and five schools catering to primary and intermediate-age children.

During the period between 2001 and 2006, the population of the District aged 0-14 years reduced by 240, implying that there is ample unused capacity in the education services and infrastructure to accommodate the temporary increase in similar aged children associated with the incoming MHP construction workforce. This conclusion is reinforced by the data on school rolls presented in Appendix 6,assuming that the classrooms have not been removed. Indeed, a reversal of recent declining trends in school rolls, even if only temporary, would probably be welcomed by the schools

Medical services

An influx of between 100-130 additional households associated with the incoming construction workforce would be equivalent to about 7% of the resident population between Westport and Mokihinui at the time of the 2006 census. As noted in section 3.5, existing primary health care services are already operating to the limit of their capacity. A substantial increase in the number of households resident over a 2-3 year period would require additional resources if a decline in service levels to existing residents is to be avoided.

Buller District Health notes that such primary health care services are funded through the Ministry of Health. However, it can take as long as six months to recruit an additional locum GP. The most important District Health Board (DHB) need for avoiding adverse impacts on levels of primary health care is for Meridian to signal well in advance the likely scale and timing of incoming workforce numbers, so that the DHB can develop appropriate strategies and access the necessary funding in a timely manner. On-going coordination with the DHB about levels of construction activity, plans for worker accommodation, on-site OSH planning and emergency evacuation planning would also be appropriate. Meridian needs to be pro-active in these matters.

The DHB notes that both Solid Energy and Holcim employ their own Health & Safety Nurses on site, and that Solid Energy assists the DHB with security surveillance for its Hector/Ngakawau clinic. Meridian have pointed out the practices of its predecessor organisations - ECNZ and NZED - in employing on-site nursing staff during the construction of the Clyde Dam and the lower Mackenzie Basin power stations. Furthermore, it has indicated its intention to continue such practices, in the interests of being a good employer.

Emergency services

Emergency services throughout northern Buller District rely substantially on volunteers. As noted in section 3 of this report, some of these groups have difficulty in recruiting sufficient numbers of volunteers. Additional demands on their time, due to call outs to a remote location such as the proposed MHP construction site, would be difficult to meet reliably.

Under these circumstances, Meridian will be making independent provision for emergency services at the proposed construction site. These would cover fire-fighting capacity and medical evacuation

capacity. There may even be the potential for spill-over benefits to local communities for the duration of construction activities[139].

Hence, adverse effects will be avoided and positive effects may even be possible.

Police

NZ Police at Granity, with responsibility for the coastal area from Waimangaroa to Mokihinui, currently reports an above-average workload compared with other one-person police stations. During this assessment, submissions had already been made for additional police resources.

Construction of the proposed MHP has the potential to increase demands on police work even further. Additional heavy vehicles on the road is certain to require additional traffic enforcement work, checking for compliance, while there is uncertainty about the risk of additional road accidents which Police have to attend in all cases. Traffic enforcement work is funded by Transit through road-user charges, so that the additional demand for enforcement services should be resourced via the activity itself. Forewarning and regular liaison with Police should mitigate the risk that such resources are not forthcoming.

Police are also sometimes called out to pubs, when there are incidents associated with too much alcohol consumption, although this does not happen often. Mitigation of this risk has been discussed in the earlier section on 'Potential risks of social disruption'.

Reduction in residential amenity values and risks to personal safety from construction traffic

According to figures provided by URS[140], construction traffic for the MHP will result in changes to the traffic environment along SH67 that become progressively more noticeable going north between Westport and the turn off to Seddonville[141], with the greatest impacts likely to be experienced along the Mokihinui Road to the construction site. Presently, this road is neither a State Highway, nor does it have two-lane capacity for much of its length.

Frequency of construction traffic

The peak daily number of heavy commercial vehicle (HCV) movements to and from the site is estimated at 65 (i.e. this average figure includes inward and outward trips). If these movements were to be spread evenly throughout a 24-hour period, they would result in one movement every 22 minutes[142] on days of peak activity. It is worth noting that such peaks are estimated by URS to occur

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139 For example, if Meridian or its contractors require cell-phone coverage at the construction site, it is likely that this would then be available for access by local residents in Seddonville who currently do not receive coverage. As another example, interviews for another SIA elicited comments from the principal of the primary school in Ashhurst, Manawatu about how Meridian's contractors engaged in constructing the nearby Te Apiti wind farm, assisted in re-opening the flood-damaged bridge on the road which links Ashhurst with Woodville after the severe floods of 2002.

140 URS 2007. Table 7-5, p.7-9.

141 Differences between total traffic flows measured in 2006 and increased traffic flows due to peak daily construction traffic are estimated as follows: at the Orowaiti bridge, 5%; South of Waimangaroa, 7%; South Granity, 11%; Granity, 12%; Waimarie Junction, 33%.

142 For comparison, when Solid Energy was trucking coal from Stockton to Reefton while the railway line to Ngakawau was being refurbished, the maximum number of daily movements along the SH67 was described by Solid Energy as 104, which would correspond to a truck movement every 14 minutes, if spread evenly over a 24-hour period, which was generally the case, due to 24-hour production at the mine.

for about three months during the three-year construction period. URS estimate[143] that daily HCV movements are likely to equal or exceed 20 per day on 11 months of the three-year construction period, with 10 of those months being consecutive from month 9 to month 18 during the period of intensive concrete pouring. Twenty HCV movements/day corresponds to one movement every hour and 12 minutes (72 minutes), if spread evenly throughout the 24-hour period.

In addition to HCV movements, URS estimate 60 light vehicle movements per day associated with the transport of construction workers and other personnel to and from the construction site. These movements are expected to cluster mostly around the change of shifts, typically between 6am and 7am and between 6pm and 7pm.

The source of adverse effects on residential amenity are therefore the number of vehicles and the size of vehicles and the frequency with which they pass. Widening the Mokihinui Road to achieve two-way traffic flow is partly to enable the efficient flow of traffic but also partly to improve road safety.

Concerns of Seddonville residents

The residents of Seddonville interviewed for this assessment expressed the following as their main concerns: additional safety risks on the road - at Chasm Creek and through Seddonville itself; road widening issues affecting adjacent property owners, and noise, dust and vibration from passing vehicles, particularly heavy vehicles. There is also the specific issue of a sizeable dairy herd needing on occasions to cross the Mokihinui Road on their way from grazing land to the south-west of the settlement to milking sheds on the north-east side[144].

Additional risks to personal safety arise due to the combination of additional vehicles, the advent of drivers who are initially unfamiliar with the location but subsequently may become too familiar, the speed and intimidating size of some vehicles, and the established patterns of residents' use of the roads for walking, riding horses and driving. In the case of the dairy farming operation, there would be risks to the safety of people and stock, but there may also be risks to the viability of the farming operation itself and the livelihoods that depend on this. All these risks are very likely to occur unless mitigation initiatives are put in place.

For owners of sections in the Preserve, the extent of exposure to these sorts of effects depends on the amount of time they intend being there during the 3- year construction period. Interviews suggest that this may vary from those wishing to continue their current pattern of relatively frequent visits, or annual visits, to no visits at all over that period.

Road widening issues arise for two reasons: the special character of the heritage area around Chasm Creek, and deficiencies in historical surveying of the Mokihinui Road as it passes through the settlement itself. Residents of Mokihinui, as well as the Department of Conservation staff interviewed for this assessment, expressed a clear preference that road widening and straightening through the Chasm Creek area, in the interests of improved safety on this stretch of road, should as far as possible leave the essential character of the location intact, by concentrating physical changes on the uphill side of the road, away from the Chasm Creek walkway. This preference may result in giving greater emphasis to non-engineering aspects of road safety mitigation, such as temporary lighting controls. Road widening and straightening through the area of bush and forest by the Preserve and Lodge should also be carried out with sensitivity to maintaining the long-term character of the area. The deficiencies in historical surveying of the Mokihinui Road have resulted in most residential sections on the south-west side of the road in the settlement itself having effectively incorporated some of the road

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143 Op.cit. Figure 7-7, p.7-7.

144 In order to avoid the times when the school bus is passing through Seddonville in the mornings and afternoons, these dairy herd movements for milking are usually timed for 7.30-8.00am and 3.30-4.00pm. More occasional herd movements, for example, for the purposes of animal testing, are also necessary.

reserve into their apparent boundary. Road widening strictly within the existing road reserve would likely result in most of these properties losing their front boundaries and the garden enclosures along those boundaries, with detrimental effects on privacy and visual amenity. Such adverse effects are unavoidable, if road widening is carried out in the existing legal road reserve, but could be avoided if road widening could be facilitated on the north-eastern side of the existing road.

Noise, dust and vibration from passing traffic[145], especially heavy vehicles, pose distinct risks of disturbance and annoyance to those living on properties adjacent to the road[146]. Without any mitigation, there would be periods of certain and significant reduction in residential amenity for most of the households located on the level ground within Seddonville, with particularly significant adverse effects for about 10 households living adjacent to the main thoroughfare. Noise from construction traffic passing through Seddonville, while remaining *"within Transit's average noise design levels"*[147], has the potential to be problematic for houses relatively close to the road. URS concludes that *"any significant night-time movements could cause unacceptable sleep disturbance".* Therefore, without any mitigation, the adverse effects for some households would be likely to exceed impacts on amenity values and include potential adverse impacts on personal and household health.

Taken together, and in the absence of any mitigation, these effects constitute substantial adverse effects on several elements of wellbeing for people living along this stretch of road (i.e. particularly those with homes close to the road). For this reason, it is not surprising that traffic-related issues are central to the concerns of Seddonville residents. Similar types of concern were expressed by several property owners in the Preserve. However, most Preserve properties have considerably more protection from traffic-related nuisances due to intervening vegetation and substantial elevation.

Some Preserve landowners indicated that loss of access to the existing track in the Gorge would be a significant loss. However, the construction site plan map[148] indicates the intention to maintain pedestrian access to the existing walking track during the construction period to avoid such loss of access.

The responses encountered to the prospect of such impacts point to a general acceptance that these social effects cannot be completely avoided but they can be mitigated to acceptable levels, particularly in view of the fact that they are not permanent effects. There is a clear expectation that Meridian will take considerable practicable steps to reduce adverse effects on local residents and to demonstrate good faith in its ongoing efforts to be responsive to their concerns.

Mitigating the adverse effects

URS has recommended a number of measures to mitigate these adverse effects. This assessment supports such recommendations and makes additional recommendations for mitigation, taking into account some non-technical considerations, as well as experience from the Solid Energy coal-truck episode referred to previously.

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145 Note that noise modeling by URS of the noise sources at the construction site itself indicate that neither daytime nor night-time noise standards will be breached at the closest residential site in the Preserve. URS NZ Ltd 2007. p.4-13.

146 In some cases, dwellings are located within 5-10 m of the road.

147 URS 2007. Section 4.4.8.

148 URS NZ Ltd 2007. Appendix A Figure 1 - Site Plan

URS recommends a range of roading improvements along the Mokihinui Road and at its intersection with SH67[149]. For Seddonville residents adjacent to the main thoroughfare, satisfactory mitigation should involve road widening in a manner which does not detract from their existing front boundary arrangements. Widening, strengthening, smoothing and sealing the road would reduce some aspects of noise, dust and vibration effects.

Managing the timing of construction vehicle movements through the settlement will also be critical to successful mitigation. URS has already recommended avoiding truck movements at night[150]. Residents interviewed for this assessment expressed a clear preference that heavy vehicle movements through Seddonville should be concentrated as much as is practically possible between 8.30am and 3.30pm to minimise the associated disturbances[151]. This will involve the provision of adequate materials storage space at the construction site. Following the same principle, when there are periods of fewer HCV movements during the construction programme, residents expressed a preference for a similar management of movements so that there might be days which are totally free of HCV movements.

The risk of dust escaping from trucks carrying aggregate should be avoided by the use of covered vehicles.

To complement the recommended road upgrades, controls on vehicle speeds within Seddonville have been recommended, particularly when close to homes, for safety and noise-reduction purposes. Similar controls should apply in the vicinity of the Preserve.

Mitigation is not merely a technical matter; it involves appropriate behaviours and requires that people are well informed. For mitigation to be successful, there must be confidence that the recommended measures will be effective. There must also be scope to adapt mitigation measures in light of actual experience, and that residents in the host community have the opportunity to influence such decisions.

While this assessment supports the principle that mitigation should follow on from identified effects, it also acknowledges that it is not always possible to anticipate the extent of specific effects for every individual household. For example, there may be cases of noise nuisance[152] which warrant the installation of double glazing for homes closest to the main Seddonville thoroughfare. Thus there may be situations arise where negotiated agreements with individual households according to circumstances are appropriate to avoid any individual households shouldering an undue burden of adverse effects.

This assessment therefore recommends several additional mitigation measures as a matter of good practice, drawing on the experience from other projects. These include:

- the establishment of driver protocols for drivers involved in the construction traffic;
- the establishment of a Community Liaison Group to complement other methods of communication with the construction contractors;
- the establishment of a formal complaints procedure;

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149 URS 2007. Section 2.4.2. These include permanent physical works in the vicinity of Chasm Creek and temporary options such as traffic lights; strengthening, widening and sealing the road through Seddonville, and bridge replacements and road widening further east.

150 URS. 2007. Section 4.4.8.

151 This would avoid conflicts with Seddonville commuting traffic, school bus movements and most dairy herd movements.

152 For example, where homes are particularly close, or where shift workers might be sleeping during daylight hours.

- the requirement for the construction site manager (or similar senior representative) to live locally in northern Buller[153].

Experience of heavy traffic situations elsewhere suggests the following are important elements of a driver protocol:

- the establishment of agreed procedures covering such matters as the covering of trucks, speed of trucks passing through settlements, timing restrictions, and so on, which are documented in a procedural booklet for all drivers;
- the requirement that all drivers go through a formal induction process to familiarise them with the procedures and their personal responsibilities;
- enforcement provisions involving the easy identification of individual vehicles and serious sanctions for non-compliance, including the risk of dismissal in cases of repeated non-compliance;
- a widely publicised 0800 complaints facility.

A Community Liaison Group (CLG), comprising a number of local residents as well as representatives from the construction contractor, the regional council and Meridian, would have the following functions:

- to build effective working relationships and mutual trust;
- to promote the flow of information between the community and the construction project management, and vice versa;
- to oversee a pro-active Community Complaints Procedure, ensuring that appropriate responses to complaints are forthcoming and thereby maintaining the confidence of all parties in the effectiveness of such a procedure;
- to evaluate monitoring activities of interest to the local community during the construction period;
- to recommend changes to mitigation arrangements that might be appropriate in light of evolving experience.

Such a Community Liaison Group could be considered a logical progression from the Community Consultation Group which Meridian has already established during the consent application activities.

The recommendation that Meridian requires the construction site manager (or similar senior representative) to live in northern Buller for the duration of the construction project is intended to enhance accessibility to the construction management and confidence in its responsiveness to local issues and concerns.

Collectively, these recommended mitigation measures, built into the conditions of resource consent, are intended to be a clear demonstration by Meridian that it takes the issues and concerns of residents of Seddonville and Mokihinui seriously. With such mitigation in place and working effectively, this assessment concludes that the social effects due to construction traffic can be managed to a level acceptable to the local community.

The risks to human or ecological health from accidental releases of harmful materials

Quite apart from the passage of vehicles close to dwellings, concerns have been expressed about the safe and secure transport of potential harmful materials and their storage and use at the construction site. These include materials such as fly ash[154] and liquid fuels.

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153 This recommendation is not prescriptive of location. The basic principle being espoused is that living "locally" would enable the construction manager to get to the scene of a complaint in reasonable time, if this was warranted.

154 A dry material used in making concrete.

These risks will be avoided by ensuring that such materials are transported and stored on the construction site in sealed containers.

4.7 Effects during the resource consenting process

Any major development project has the potential to be contentious in local communities, particularly if the project is being pursued by an organisation that is not previously strongly associated with the District and its communities. As discussed in the preceding sections, Meridian Energy's MHP has the potential to affect a large number of people in the District in a variety of ways. Although Meridian Energy is an existing electricity retailer in Buller District, at the present time it operates no significant infrastructure in the District.

A contentious project has the potential to elicit polarised views. In small communities this can sometimes result in significant social divisions[155] which challenge local social relationships and social cohesion.

At the time of writing, and based on a range of interviews throughout the District, noticeable social division does not appear to be occurring in the case of MHP. However, this does not imply absolute unanimity of views about the MHP amongst local residents. Interviewing for this assessment, as well as observations at several project open days, has identified a range of concerns (discussed previously) and some individuals who are opposed to the proposal.

The absence of significant social tension can be attributed to several factors: perceptions in the communities of the overall balance between social benefits and adverse social effects associated with the proposal, particularly when viewed over the long term; the perception that social benefits will be experienced across many communities in the District; the values expressed by many community members who recognise the inter-dependence between the future prosperity of their community and balanced approach to resource development and environmental protection; and the consultation initiatives by Meridian which have provided numerous opportunities for local residents to become informed about the proposal and to ask questions of Meridian project staff.

[155] For example, the Central Plains Water irrigation proposal in Canterbury (The Press. 2008a), or the Wairau Valley hydro-electric proposal in Marlborough (The Press. 2008b).

5 SUMMARY AND CONCLUSIONS

This section draws together the findings of the social impact assessment and makes some final conclusions as to overall and cumulative social effects.

As with any major project, there is a mix of positive and adverse social effects. Furthermore, the distribution of effects and the types of effects likely to be experienced differ from one community to another, depending on location.

For the immediate host community of Seddonville, the long-term outcome is likely to be a consolidation and steady but not spectacular growth of the residential community. Given the broad base of community support, it is likely that this community will be positively enabled to enjoy an expanded range of livelihood and recreational options without adversely affecting existing core qualities of the place. However, in the short term, it is the issues associated with construction activities (particularly the traffic-related issues) which will have to be managed effectively so as to avoid the risks of potentially significant adverse social effects for this community.

For the nearby host community of Mokihinui, the central concern about protecting the future of recreational activities associated with whitebaiting, fishing and holiday making have been secured. However, the existing long-term problem of shoreline retreat will not cease to exist; in fact the MHP is likely to bring forward the need for property owners and the relevant authorities to address this issue. This existing problem is reflected in the historical decline in population and local infrastructure reported in Section 3 of this report. In social terms, the future of the permanent Mokihinui settlement already appears to be trending towards closer associations with Seddonville and the coastal settlements of Hector/Ngakawau and Granity.

For the coastal settlements of Hector, Ngakawau and Granity, the MHP supports an emerging long-term trend towards local economic diversification by enhancing future tourism and holiday-making opportunities for a larger potential market, thus enabling these communities to make progress towards a more sustainable form of development. However, in the short term, it is the issues associated with accommodating the incoming workforce which will have to be managed effectively in order to enhance the potential opportunities and avoid the potential adverse social effects.

At the District level, the MHP will in the long-term support the resurgence of Buller District through more competitive and reliable future electricity supplies and substantial net gains in the range of recreational opportunities the District can offer its residents and visitors. In the short term, the MHP will create a significant increment and continuity in employment through the demands for construction labour and services. Successful implementation of the MHP would reflect the sentiment that the West Coast should be allowed to determine the balance between economic development and environmental protection.

At a national level, the MHP would tangibly increase levels of renewable electricity supply, inline with central government policy and provide more accessible recreational opportunities for visitors to the District, balanced against ecological protection.

It is evident that a range of mitigation measures will be essential in order to ensure that potentially adverse social effects are either avoided altogether or reduced to a level that is acceptable to the communities concerned. Many of these mitigation measures have already been anticipated and proposed in various effects assessment reports, including this social impact report. Mechanisms for updating and adapting mitigation measures have also been recommended such as the Community Liaison Group recommended in this report and the monitoring and reporting provisions of the Environmental Construction Management Plan recommended by URS[156].

[156] URS. 2007. Section 9.

Overall, this assessment concludes that the long-term cumulative social effects of the MHP are significantly positive and enabling for communities at all geographic levels - from the immediate host community of Seddonville, to the coastal communities of northern Buller and residents and businesses in the wider Buller District, as well as electricity consumers and recreational enthusiasts further afield.

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APPENDICES

Appendix 1: Summary of consultation activities associated with this social impact assessment.

Appendix 2: Comparison of residents' age-group distribution between Buller District and New Zealand - 2006

Appendix 3: Employment by industry sector in Buller District - 2006

Appendix 4: Changes in sectoral employment levels in Buller District: 2001-2006

Appendix 5: Educational achievement, unemployment rates and income levels - comparing Buller District with the rest of New Zealand.

Appendix 6: School annual funding rolls: 1995-2007

Appendix 7: Extracts from Community Outcome Statements on Identity, Economy and Environment.

Appendix 8: Wholesale market prices for electricity in the South Island by location - August 2005

Appendix 1: Summary of consultation activities associated with this social impact assessment.

During the scoping visit (14-16 February 2007) interviews were held with representatives of the following organisations or local residents of selected communities:

14 Feb:	Buller District Council - planning staff and ward councillor Dept of Conservation Two residents of Seddonville and two residents of Mokihinui
15 Feb:	Resident of Ngakawau Tourism business owner in Granity Four tourism and farming business owners in Seddonville
16 Feb:	Rural Clinic Ngakawau Granity School (Board rep.) Tourism business owner in Granity West Coast Tourism Board Solid Energy

During the main assessment phase (including a visit to Buller District 12-15 November 2007) interviews were held with representatives of the following organisations or local residents of Seddonville and Mokihinui communities:

9 Oct:	Tai Poutini Polytechnic
10 Oct:	Development West Coast Work and Income, Greymouth
12 Oct:	Buller District councillor and Seddon Ward member
12 Nov:	Two real estate agents Resident of Seddonville Buller Business Association
13 Nov:	Construction contractor Buller District Council - planning staff Rural Delivery Service contractor Westport business consultant Two former residents of Seddonville and one current resident
14 Nov:	Nine residents of Seddonville Four residents of Mokihinui
15 Nov:	NZ Police, Granity Tourism business owner in Granity (followup) Seddonville camp ground Three residents of Seddonville Buller Electricity
21 Feb:	NZ Insurance Council Robins Insurance AMI Insurance Central Otago District Council, Civil Defence
25 Feb:	Solid Energy, Ngakawau

25 Mar:	Two gravel extraction contractors
26 Mar:	One gravel extraction contractor Two property owners in the Mokihinui Preserve
1 Apr:	One property owner in the Mokihinui Preserve
3 Apr:	Buller District Health
9 Apr:	One property owner in the Mokihinui Preserve

Appendix 2: Comparison of residents' age-group distribution between Buller District and New Zealand - 2006

Age group	Buller District	New Zealand
0-14years	20%	23%
15-19 years	4-5%	7%
20-29 years	8%	16%
30-39 years	12%	16%
40-64 years	38%	27%
65+ years	16%	12%

Source: Statistics NZ, 2006 Census of Population and Dwellings

Appendix 3: Employment by industry sector in Buller District - 2006

Industry sector	Numbers employed	% of total employed
Retail & Wholesale trade	705	15%
Agriculture/forestry/fishing	687	15%
Manufacturing	372	8%
Accommodation/cafes/rest.	369	8%
Mining	351	8%
Health & Community serv.	321	7%
Construction	303	6%
Education services	282	6%
Property & Business serv.	270	6%
Transport & Storage	195	4%
Government administration	96	2%
Personal services	96	2%
Cultural & Recreational serv.	93	2%
Finance & Insurance	51	1%
Communication services	33	1%
Electricity/gas/water supply	30	1%
ALL SECTORS	4680	100%

Source: Statistics NZ, 2006 Census of Population and Dwellings

Appendix 4: Changes in sectoral employment levels in Buller District: 2001-2006

Industry sector employment	# in 2001	# in 2006	% change 01-06
Mining	186	351	+89%
Property & business services	186	270	+45%
Transport & Storage	156	195	+25%
Construction	249	303	+22%
Manufacturing	318	372	+17%
Wholesale and retail trade	639	705	+10%
Education services	261	282	+8%
Accommodation, cafes and restaurants	351	369	+5%
Agriculture, forestry and fishing	666	687	+3%
Personal and other services	96	96	n.c.
Health and community services	330	321	-3%
Government Administration	105	96	-9%
Cultural and recreational services	114	93	-18%
ALL SECTORS	4014	4680	+17%

Source: Statistics NZ, 2006 Census of Population and Dwellings

Appendix 5: Educational achievement, unemployment rates and income levels - comparing Buller District with the rest of New Zealand

While working-age residents of Buller District typically have fewer educational qualifications than the national average, this does not appear to translate into markedly lower hourly wage rates. For example, in 2006, 35% had no qualifications compared with 25% nationally; 6% have Level 5 or 6 diploma qualifications compared with 10% nationally; 4% have bachelors degrees compared with 11% nationally. Average hourly earnings on the West Coast in June 2007 were $23.84 for men and $20.17 for women compared with national averages of $24.29 and $20.99 respectively Outside the metropolitan centres of Auckland and Wellington, West Coast average wage rates are higher than in many other parts of the country.

Table A: Buller District residents drawing unemployment benefit: trends 1996-2006

Area	No. (1996)	% (1996)	No. (2001)	% (2001)	No. (2006)	% (2006)
Mokihinui	48		24	21%	15	11%
Hector-Ngakawau	51		51	22%	21	11%
Granity	57		60	31%	30	17%
Buller District	1026	13%	858	11%	477	6%
West Coast		10%		8%		4%
NEW ZEALAND		8%		6%		3%

Source: Statistics NZ, Census 2006. % = number of unemployment beneficiaries as % of working age population

Table B: Index of median personal income levels compared with New Zealand median value (=1.00): trends 2001-2006

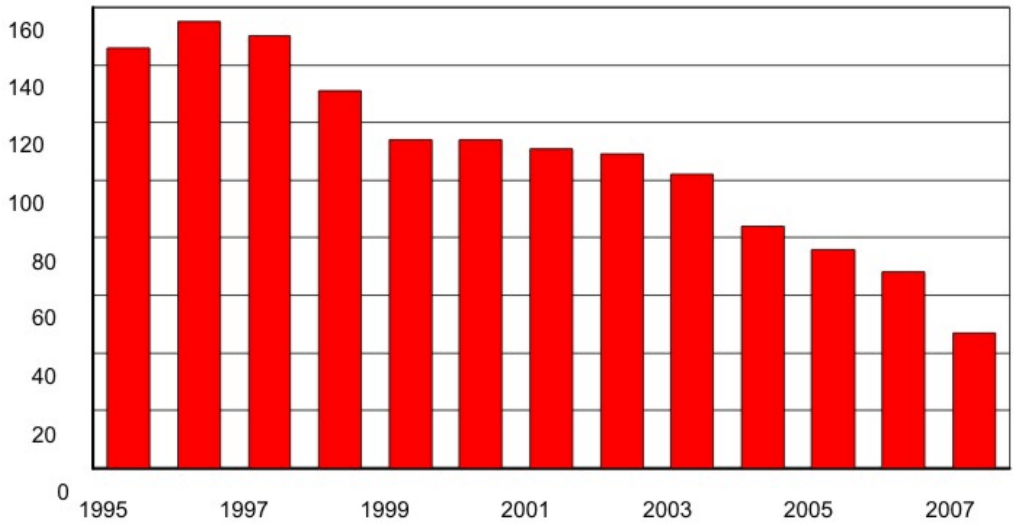
Area	$2001	$2006	2001 index	2006 index
Mokihinui	$9,600	$15,300	0.52	0.63
Hector-Ngakawau	$10,600	$14,000	0.57	0.57
Granity	$9,900	$13,500	0.54	0.55
Buller District	$13,300	$18,000	0.72	0.74
West Coast	$14,600	$20,400	0.79	0.84
NEW ZEALAND	$18,500	$24,400	1	1

Source: Statistics NZ, Census 2006. Median = 50% incomes below and 50% incomes above this figure. Index = NZ median value = 1.00

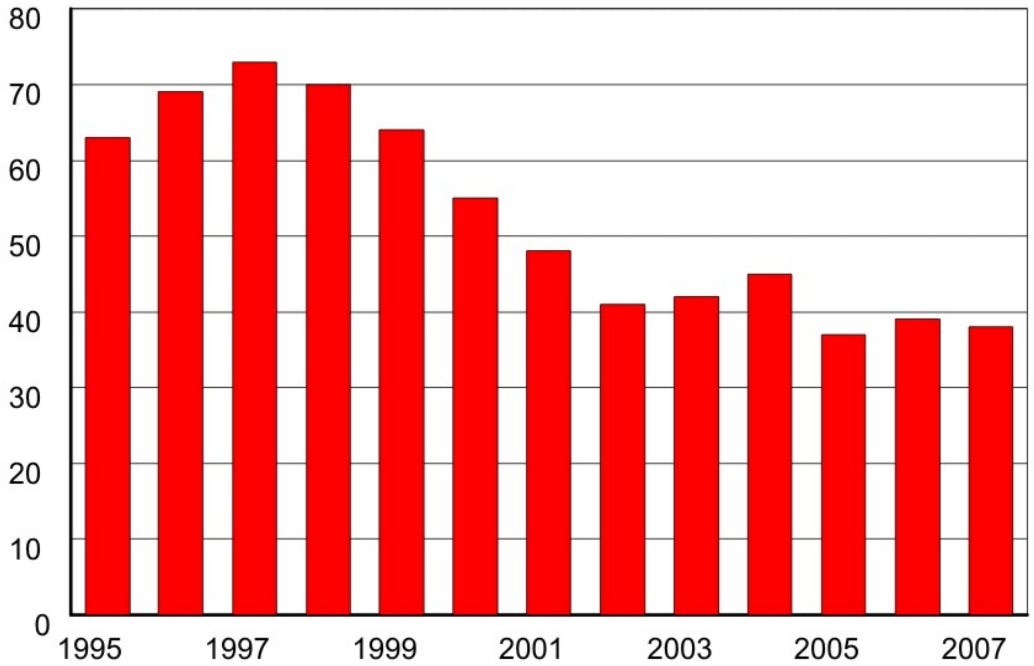
The comparative income increases in Hector, Ngakawau and Granity are amongst the smallest. This is probably due to the fact that many of the new generation of property buyers with more capital have not taken up residence but own the property as a holiday home or investment property.

Appendix 6: School annual funding rolls: 1995-2007

Granity *(Source: Ministry of Education)*



Waimangaroa



Appendix 7: Extracts from the Buller District's Second Long Term Plan on community outcomes for Identity, Economy and Environment

Identity:

WHAT DOES COUNCIL WANT TO ACHIEVE?
• An increased awareness of and participation in cultural, social, recreational, community activities
• Provision of high quality community spaces and facilities
• Promotion of Buller, history and environment
HOW WILL COUNCIL CONTRIBUTE TO ACHIEVING THESE OBJECTIVES?
• Support and encourage community groups and organisations providing events within the region
• Provide a range of arts, cultural, recreation and social facilities throughout the district
• Encourage and support other organisation sin providing arts, cultural, recreational and social facilities throughout the district
• Provision of appropriate infrastructure to support a vibrant community
• Facilitate community grants process to assist in the provision of events and services that support a vibrant community

Economy:

WHAT DOES COUNCIL WANT TO ACHIEVE?
• Provide an environment that supports the retention of current businesses and attracts new business and investment to the region
• Provide support for attracting and developing an available skilled workforce
• Support sustainable, responsible development
HOW WILL COUNCIL CONTRIBUTE TO ACHIEVING THESE OBJECTIVES?
• Improve communications between the Council and the business community
• Continue to develop and advocate for district-wide infrastructure that supports business and tourism growth
• Access central Government funds and programmes that can support development of infrastructure, tourism, employment, business and training
• Assist in strengthening links between schools, training opportunities and the business community
• Develop within a regulatory framework that supports sustainable economic growth without compromising the environment

Environment:

WHAT DOES COUNCIL WANT TO ACHIEVE?
• An appropriate balance between development and protection that promotes the diversity and sustainability of our natural environment
• The provision of services and infrastructure that support the district's environmental goals
• A built environment considered to be attractive, sustainable and healthy
HOW WILL COUNCIL CONTRIBUTE TO ACHIEVING THESE OBJECTIVES?
• Develop policies and implement practices that enhance our environmental sustainability and natural diversity
• Recognise and preserve the essential elements of the district's landscape that contribute to Buller's unique natural identity
• Ensure that planning processes enable effective public consultation over an appropriate balance between the natural and built environment

• Develop practices that help to improve the cleanliness and sustainability of the district's infrastructure
• Access central Government funds to support infrastructure development and improvement

Appendix 8: Wholesale market prices for electricity in the South Island by location - August 2005

Location	wholesale price c/kWh
Waitaki Valley	9.7
Christchurch	10.8
Kikiwa (distribution node near Murchison)	11.8
Westport	12.1
Greymouth/Hokitika	12.9

Source: Meridian Energy Limited