

**MOKIHINUI HYDRO PROPOSAL
CONSENT APPLICATIONS
REVIEW OF ASSESSMENT OF ECONOMIC ASPECTS**

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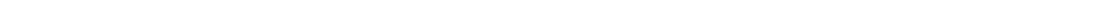


TABLE OF CONTENTS

1 INTRODUCTION AND SCOPE OF REPORT.....1

2 QUALIFICATIONS AND EXPERIENCE.....1

3 ASSESSMENT OF ECONOMIC EFFECTS2

4 ECONOMIC ASSESSMENTS3

5 APPROPRIATE MHP ECONOMIC ASSESSMENTS4

6 SECTION 92A REQUESTS FOR CBA AND EIA6

7 JUSTIFICATION ADVANCED FOR MHP.....8

8 EVALUATION OF AEE MHP JUSTIFICATION10

 IMPLEMENTING CENTRAL GOVERNMENT POLICY 10

 ECONOMIC VALUE OF REDUCED CO₂ 12

 IMPROVED SECURITY OF SUPPLY 14

 REDUCED TRANSMISSION LOSSES AND LOWER WHOLESALE PRICES 15

 SAVINGS IN INTERCONNECTION CHARGES 17

 OTHER POSITIVE EFFECTS 18

9 CONCLUSION18

1 Introduction and scope of report

- 1.1 This report provides a review of the information provided by Meridian Energy Ltd (Meridian) in support of resource consent applications. The consent applications are to take, use and discharge water for hydroelectricity generation, along with associated construction and maintenance related consents which are part of the Mokihinui Hydro Proposal (MHP).
- 1.2 The Mokihinui Hydro Proposal includes a dam located on the Mokihinui River approximately 3 km upstream from the township of Seddonville and 11 km upstream from the river mouth, a new lake upstream of the dam extending to just below the Mokihinui Forks Ecological Area, a new transmission line to carry electricity from the power station to the existing Inangahua-Waimangaroa transmission line at Cedar Creek, and a new substation at Cedar Creek.
- 1.3 This report will provide the decision-makers with information and advice related to the economic effects of the proposed activities. It has been prepared under the provisions of Section 42A of the RMA.
- 1.4 The review has only considered the information that has been made available on economic aspects of the project to date. My conclusions could be changed by information made available at the hearing.

2 Qualifications and experience

- 2.1 My full name is Philip Thomas Donnelly. I am a consulting economist.
- 2.2 I graduated with a Masters Degree in Economics from Canterbury University in 1967. I have around 40 years experience in applied economics. During the last 16 years, I have been an economic consultant and have specialised in regional and resource economics, particularly in matters pertaining to the Resource Management Act 1991 (RMA). As a consultant, I have been engaged by several councils, and the Minister for the Environment, and was a member of the Resource Management Act Reference Group, which advised on legislative changes to the RMA and the implementation of programmes to improve practice and performance in the resource management area.

- 2.3 Prior to my work as a consultant I was employed for six years as regional economist by the Canterbury Regional Council and its predecessor, the Canterbury United Council.
- 2.4 Before working for regional government, I held several senior economist positions in central Government. In two of these positions, I specialised in matters involving analysis of the industrial structure of the New Zealand economy and assessment of the impact of major development projects on it. In addition, for about nine years, I was the Director of Statistics New Zealand, responsible for the development of the New Zealand System of National Accounts and the development and review of price indices.
- 2.5 I have undertaken a wide range of projects for private and public sector institutions. I have also undertaken work for central Government departments, local authorities, quasi-government organisations, a university, business organisations, community groups, local authority trading companies, public listed companies, a State-owned enterprise and private individuals. In particular, those projects have included work for Contact Energy, Mighty River Power, TrustPower, Bay of Plenty Energy and MainPower New Zealand Limited assisting those companies renewing existing consents to generate electricity and/or build new generation facilities in respect to hydro, wind, geothermal and thermal generation.

3 Assessment of economic effects

- 3.1 This assessment has been confined to matters that are considered relevant to consideration of whether the MHP will promote the enabling provisions of section 5(2), RMA, in respect to economic well-being. In making that assessment regard has been had to other sections of the RMA, namely:

7(b) – the efficient use and development of natural and physical resources;

7(ba) – the efficiency of the end use of energy;

7(i) – the effects of climate change; and

7(b) – the benefits to be derived from the use and development of renewable energy.

- 3.2 An economic assessment of a proposed project or policy is concerned with all matters that give rise to costs and benefits whether they are market or non-market costs and benefits. Thus, an economic assessment is much wider than an assessment of commercial costs and benefits. An assessment should include any resource use or outcome that society values and, therefore, matters such as effects on landscapes, recreational values, river ecosystems that are positively or negatively affected by the MHP can be considered to be relevant to an economic assessment.

4 Economic assessments

- 4.1 Economic assessments can be classified into formal and informal assessments. Formal assessments involve cost benefit analysis (CBA) and economic impact analysis (EIA), whereas, informal assessments are generally ad hoc and do not adopt a formal assessment framework.
- 4.2 CBA is the standard, universally accepted, economic tool for assessing whether a policy or project is efficient. Therefore, CBA is directly relevant to determining whether a project or policy promotes the efficient development and use of natural and physical resources (i.e. section 7(b)).
- 4.3 Economic efficiency and economic well-being are synonymous concepts in economics. This is because efficiency is judged by its impact on society's well-being. Resource allocations (e.g. development projects) that are welfare enhancing are efficient while the converse applies to those that do not. To be efficient the benefits gained by society from a project or policy must exceed the cost to society. Thus, CBA analysis is also directly relevant to determining whether a project or policy promotes the enabling provisions of section 5(2) in respect to economic well-being.
- 4.4 Whenever possible, CBA quantifies both market and non-market costs and benefits. However, the latter can be difficult to quantify. Regardless, it is still very useful to undertake a partial CBA confined to market costs and benefits. Most CBA is undertaken from a national perspective, but it can also be applied at a sub-national level.

- 4.5 EIA shows how proposed projects or policies will impact on an economy in terms of important economic (e.g. output, contribution to gross domestic product or added value) and social indicators (jobs). The assessment includes the multiplier impacts accruing from direct expenditure flows. EIA can be undertaken from a district, regional and national perspective. For projects such as the MHP, the EIA is generally most usefully applied at the district and/or regional level.
- 4.6 EIA is targeted at assessing the impact on socio-economic well-being which is relevant to determining whether a project or policy will promote the enabling provisions of section 5(2) in respect to social and economic well-being. This is because EIA assesses the potential for more jobs (a social benefit) and economic growth. The latter can be considered a prerequisite to the improved well-being of society, improved funding of social services and creating positive community views about the future.
- 4.7 EIA studies are best undertaken in association with CBA as they do not have regard to whether a project is efficient, i.e. welfare enhancing. As the costs of projects/policies rise economic impacts increase, but, all things being equal, as the cost of projects/policies rise their efficiency may fall as the gap between benefits and costs will be less. That is, efficiency and the scale of impacts may move in opposite directions. Thus, projects/policies should be evaluated in the first instance on their efficiency, i.e. how much they improve welfare rather than the level of economic activity they appear to generate. Regard should only be had to the potential scale of the impacts that projects/policies generate if they are efficient.

5 Appropriate MHP economic assessments

- 5.1 The type of assessment that should be undertaken in respect to RMA matters is dependent on the project subject to evaluation. It is a 'horses for courses' approach. Matters that need to be considered in determining the appropriate economic assessment methodology include the size of the project, dependence on publicly owned resources, the potential to cause adverse externalities (i.e. adverse effects on third parties), the reversibility of the project and associated adverse environmental effects, the implications for future generations, and the ability to avoid, remedy or mitigate adverse effects.

5.2 While the MHP can be considered to be a medium-size hydroelectricity scheme, it is very large in terms of capital expenditure and the ongoing revenues it will generate. The cost of hydro schemes can vary significantly and, therefore, it is not possible to apply a recognised rule of thumb to estimate the likely cost of the scheme. However, in my opinion, the “construction” cost of the MHP could lie in a range of \$230 million to \$340M, if not higher. Annual gross generation revenue could be around \$25M, increasing in real terms over time.

5.3 The MHP involves the damming of water. Some of the effects of this are probably irreversible. As a consequence, future generations will not be able to appreciate the river in its natural state. In addition, my understanding is that a number of MHP effects that may not be able to be avoided, remedied or mitigated have been identified. These include:

- loss of opportunity with regard to white water activities, (kayaking and rafting) associated with flooding of the 14km section of gorge which currently includes flat-water sections and white water sections, to one of flat water only;
- loss of blue duck habitat (14km) and uncertainty about the ability of the suggested offset environmental compensation measures (predator control and others) to adequately compensate for this loss;
- other effects on aquatic and terrestrial ecology including direct loss of habitat and vegetation within the inundation area and other effects which are not currently fully known, such as potential impact on regional whitebait stocks/eels etc., which are dependent on the successful implementation of adaptive management plans;
- loss of backcountry remote setting as a consequence of creating a lake and opening up access to the area, which may be partly offset by the positive gain of a lake;
- benefits in terms of discovery, survey, recording, salvage/restoration and interpretation of heritage items, however; loss of heritage values associated with the flooding of part of the pack track, and removing heritage items from their existing setting;
- fear of the potential for dam break;

- changes to landscape and visual amenity from wild gorge to a lake setting; and
- loss of source of local gravel supply.

5.4 For those reasons, I consider that it is appropriate in the case of the MHP to apply both formal and informal economic assessment methods. This is in order to evaluate whether the MHP scheme will promote section 7(b) – efficient use and development and the enabling provisions of section 5, in respect to economic and socio-economic well-being. The CBA is most useful if applied on a national basis while EIA would be most useful if applied on a district and/or regional basis.

6 Section 92A requests for CBA and EIA

6.1 The applicant has not applied formal economic assessments. Rather, a number of local, regional and national benefits are cited without any quantification to assist in the evaluation of their relative importance or the costs incurred in producing them. However, given the potential irreversibility of the proposed MHP, the potential for effects that may not be able to be avoided, remedied or mitigated and the cost of the proposed development, I consider it is important, through the application of formal economic assessment methodology, to be able to show that the proposal will promote the efficient use of resources and the enabling provisions of section 5(2), in respect to economic well-being.

6.2 For those reasons, further information requests were made to Meridian Energy Limited to supply a CBA and EIA.¹

6.3 The requests stated:

“Please provide a cost benefit analysis from a national perspective. Where practical, please include an estimate of non-market costs and benefits and where this is not reasonable please identify the non-market costs and benefits not valued in the cost benefit assessment.”

And:

¹ Economics WCRC Request 13.1 and 13.2.

“Please provide an economic impact analysis from a local and/or regional perspective.”

6.4 The stated reason given for the requests were that the application does not demonstrate the economic efficiency of the proposal and that to effect a balance with all other matters, tangible details on the benefits arising from the efficient use of the resources are required.

6.5 Meridian’s responses to those requests were as follows:

“A cost benefit analysis such as has been requested is not considered necessary to support the application. There is nothing that Meridian is aware of in the RMA which requires such an analysis before a determination as to whether or not a proposal promotes sustainable management can be made. In particular, Meridian has identified and described in the AEE a range of local, regional and national benefits. These are summarised at section 6.1 of the AEE. Meridian has also described the actual and potential adverse effects of the MHP and how they are to be avoided, remedied or mitigated. Meridian does not agree that all these factors need to be quantified in order for a judgment be made as to whether the MHP promotes sustainable management.”

6.6 Due to the lack of information supplied by the applicant, I do not consider that it is possible to make an informed judgment about whether the MHP will promote the efficient use of natural and physical resources and, thereby, promote the enabling provisions of section 5(2), RMA. The fact that the MHP may be considered commercially desirable from the applicant’s perspective and that it may give rise to a number of positive effects and/or benefits without having regard to cost is not adequate in my opinion to conclude that the MHP is efficient and, therefore, welfare enhancing (i.e. the social benefits produced by the MHP will exceed the social cost). Nor is it possible to assess whether the MHP should displace some other electricity generation development that may proceed if consent is not granted. In my opinion, the alleged benefits of the scheme should be evaluated in a national CBA framework and supported by EIA at the district and/or regional level, otherwise the judgment as to whether the MHP promotes sustainable management is very speculative.

7 Justification advanced for MHP

7.1 Section 6.1 of the AEE summarises the perceived positive effects of the MHP at the local, regional and national level.

7.2 National, regional and local benefits are summarised as follows:

- Help meet the energy needs of a growing economy.
- Assist in the reduction of greenhouse gas emissions.
- Provide a substantial renewable energy supply to the West Coast which has very low levels of electricity generation at present.
- Improved security of supply for West Coast electricity users.
- Improve energy efficiency via substantially reducing the transmission losses, which currently occur, transmitting electricity to the West Coast.
- Help achieve Government's energy targets with respect to renewable energy.
- Help meet the West Coast's growing demand for electricity.

7.3 The AEE also identifies a number of direct benefits to the local area as a consequence of creating a lake and the associated potential for recreational activity. The AEE also states that proposed mitigation measures will give rise to a number of "significant" local benefits, such as an integrated predator control programme for blue duck and snail. The AEE adds that benefits will include: dam and lake attractions; the creation of a lake ecosystem, providing habitat for fish and invertebrates; new potential recreational activities; improved interpretation and access to historic sites, providing a boost to the local economy and creating job opportunities; roading network upgrades; and an upgrade of the cell phone communication system.²

² Pages 86 and 87.

- 7.4 Reference is also made to the West Coast Regional Policy Statement and its consistency with the MHP (e.g. Policy 14.1, - the importance of an adequate supply of electricity, Policy 14.3 – regional co-operation with the Crown’s energy conservation and efficiency initiatives).
- 7.5 The justification provided by the applicant in support of the MHP is two-fold, namely, implementing central Government policy and other perceived positive effects/benefits at the local, regional and national level.
- 7.6 In respect to the former, the AEE states that the Government has recently articulated and set clear directions with regard to the future of the sustainability of energy, and climate change, in New Zealand. The AEE outlines how MHP will help to implement central Government’s intentions by reference to the Government’s commitment to renewable energy through the Climate Change Response Act (2002), 2004 amendments to the RMA, 2007 New Zealand Energy Strategy and the 2007 National Energy Efficiency and Conservation Strategy.³
- 7.7 The AEE refers to section 7(i) – effects of climate change, and section 7(j), - benefits to be derived from renewable energy, RMA, and states that the MHP will assist New Zealand in achieving the climate change objectives. This will be achieved by avoiding greenhouse gas emissions that would otherwise occur from generating energy from fossil fuels while the use of renewable energy in the project will have a significant number of benefits.⁴ The AEE refers to assisting mitigating the problem of increasing greenhouse gas emissions in the electricity sector and the Emission Trading and Renewable Preference Bill which aims to prohibit construction of new thermal plant for 10 years, unless approved by the Electricity Commission for security of supply reasons.
- 7.8 The AEE also asserts that the MHP 310-360GWH will play an important role in meeting the Government’s target of 90 percent renewable energy by 2025 while it will improve security of supply. It is stated that this will be brought about by the generation being in a different catchment to other hydro schemes. Also, by increasing New Zealand’s self-sufficiency, by avoiding reliance on

³ Pages 19 to 21.

⁴ Refer 1.6.1.2, page 21.

importation of LNG and CNG and other fossil-based fuels, with their associated security pricing issues linked to global commodity process and supply risk.⁵

- 7.9 The AEE also refers to improved security of transmission supply. It states: “The 28km transmission line will assist with improving the security of supply from the national transmission grid.”⁶ It is also claimed that provision of power to the West Coast will be more efficient if power is produced locally by reducing transmission losses which have been of the order of 50 percent along the relevant transmission path at peak times. It is also claimed that the MHP will avoid potential co-ordination problems between required transmission investment to support new generation.

8 Evaluation of AEE MHP justification

- 8.1 While the potential positive effects of the scheme are not disputed, nor are their relevance to the RMA, the AEE does not, in my opinion, provide adequate information to make an informed assessment of whether the scheme is efficient and, therefore, potentially welfare-enhancing. Because of the general lack of quantification of the matters raised in support of the MHP, and the associated costs involved, it is impossible to assess the potential importance of the positive effects claimed in support of the MHP.
- 8.2 I accept that it is difficult to quantify some of the identified positive effects. However, in other cases quantification is possible and should be provided to reduce the number of subjective assessments that the Hearing Panel will be required to make in judging whether the MHP promotes sustainable management of natural and physical resources.
- 8.3 The following specific comments are made about the matters advanced in justification of the proposed scheme from an economic perspective.

Implementing Central Government Policy

- 8.4 Considerable emphasis is given to the MHP implementing renewable energy and climate change objectives. In this respect, the AEE correctly refers to sections 7(i) and 7(j) in support of that justification, as my understanding is that the RMA requires particular regard to be had to those matters.

⁵ Refer page 24.

⁶ Page 24.

- 8.5 The SKM report titled “Renewable Energy Assessment West Coast Region” (SKM report) notes that apart from hydro, the region has limited renewable energy potential from other sources. It notes that about 12 GWH/year of electrical energy could be derived from municipal solid waste combustion and 10 GWH from woody biomass, but that it is unlikely to be economic. The potential for wind power generation is assessed as limited, due to low wind power densities, as is the potential for commercial wave and tidal power. There is no potential for geothermal power.⁷ Therefore, in relation to electricity generation, hydro is the main means by which the West Coast can promote central Government policy in respect to use of renewable energy and climate change objectives.
- 8.6 However, the potential benefit of the MHP still needs to be put into context, especially as there is little project-specific information provided by the applicant to assist. There are several points I wish to make.
- 8.7 First, the electricity industry is part of a fully integrated national system where demand (i.e. load) must at all times be balanced by supply (i.e. generation). Failure to balance demand and supply would cause catastrophic failure of the system and serious damage to the integrated network and to user equipment connected to the grid at the time of failure. Consequently, if the MHP does not go ahead for any reason, it will be necessary to provide an alternative electricity generation plant elsewhere to meet growth in consumer demand. Therefore, it is the marginal benefits of the MHP compared to alternative schemes that is relevant to have particular regard to, rather than considering the proposed scheme in isolation.
- 8.8 Therefore, there are two ways that the proposed scheme may assist in promoting Government policy objectives on energy and climate change. The first is by replacing the need for a new fossil fuel-electricity generating plant. However, the potential for this will depend on whether the Emission Trading and Renewable Preference Bill becomes law. If this is passed then it will, generally, not be possible to build new fossil fuel generating electricity plants. If that is the case, the potential for MHP to reduce CO₂ emissions will be limited to replacing renewable energy which has higher emissions, namely, biofuel or geothermal energy.

⁷ Page 2.

- 8.9 The second method is by way of reducing or displacing the need to operate an existing gas or coal-fired thermal plant. At the moment, these plants operate when there is inadequate hydro, wind and geothermal generation offered to the market to meet peak demand or there is a need to save water for peak demand periods.
- 8.10 There would need to be a substantial increase in renewable energy generation capacity for it to replace the need to use generation based on fossil fuels, as the latter currently contributes around 30 percent of total generation. In addition, power and energy margins have been declining over recent years due to electricity demand growing faster than new generation capacity. This has led to dry-year events occurring in 2001, 2003, 2006 and 2008 with the potential for brown-outs and black-outs, due to potential generation shortages. Thus, the most likely probability is that a substantial increase in renewable electricity generation will displace some fossil fuel-generated electricity. The MHP would help in this respect.

Economic value of reduced CO₂

- 8.11 A wider issue is the economic benefit that would accrue from reduced CO₂ emissions in terms of avoiding the economic losses caused by climate change. That benefit is indeterminable as not enough is known about the relationship between changes in greenhouse gas emissions, changes in temperature and the associated damage avoided. My understanding is that New Zealand contributes between 0.2 and 0.3 percent of total global emissions while the MHP contribution to reducing those emissions would be very small. Therefore, the MHP marginal contribution to climate change avoided damage would probably be infinitesimal.
- 8.12 Regardless, the Kyoto Protocol, which New Zealand ratified in December 2002, commits New Zealand to reducing its average net emissions of greenhouse gases over the period 2008-2012 to 1990 levels, or to take responsibility for the difference, i.e. by purchasing carbon credits from overseas markets. The New Zealand Treasury's estimate of this obligation at 31 May 2008 is \$480M.⁸ This is a significant reduction in the estimate for March 2008 and is caused by reduced estimates of greenhouse gas emissions. On a population basis the

⁸ New Zealand Treasury website.

May estimate equates to a potential financial liability of about \$4.2M for the West Coast Region.

- 8.13 Assuming the MHP's annual generation is 360 GWh, average carbon price of \$22.13/tonne,⁹ and savings of 465 tonnes of CO₂ avoided¹⁰ per GWh of MHP generation (i.e. in place of natural gas generation), the MHP's contribution to reducing this Kyoto imposed financial liability is about \$3.7M per annum or \$36M net present value at 10 percent discount rate over thirty-five years, the maximum period for a resource consent.
- 8.14 The AEE indicates that the MHP will help meet the energy needs of a growing economy. The report states that electricity demand has been growing consistently over the last 20 years at an average rate of over two percent per annum.¹¹ The report states that Transpower's NZ Ltd's 2007 Annual Planning Report predicts peak West Coast demand will grow from its current level (65MW) to 80 MW by 2011. This is a compound growth rate of more than five percent per annum. The report also states that Transpower engaged an independent review by Covec Ltd of forecast peak demand in the West Coast area that showed that Transpower's estimate is conservative.¹² The reviewer estimated an increase in peak demand to 100MW or more than 11 percent compound annual growth.
- 8.15 No reason is provided in the AEE as to why the West Coast is predicted to have such high growth in electricity demand. However, the SKM report states that demand is likely to be generated by a number of new developments such as the Pike River Coal mine and expansions at the Westland Milk Products dairy factory.¹³

⁹ New Zealand Treasury estimate.

¹⁰ This estimate is based on a report by the Ministry of Economic Development which showed that for the calendar year 2000, carbon dioxide emissions from electricity generation amounted to 5.4M tonnes, including fugitive emissions from geothermal fields. The report stated that 77 percent of those emissions came from natural gas combustion. This indicates that 4.158M tonnes were produced from natural gas combustion while total electricity generated by gas for the calendar year 2000 was 8941GWh. This implies that 465 tonnes of carbon dioxide is produced per GWh generated from natural gas. The report was titled, New Zealand Greenhouse Gas Emissions 1900-2000, Energy Market Information and Services Group, Ministry of Economic Development, June 2001.

¹¹ Page 15.

¹² Page 17.

¹³ Page 1.

Improved security of supply

- 8.16 The AEE claims improved security of supply (generation and transmission) as a positive effect resulting from the MHP. The report refers to the historic dominance of hydroelectricity in NZ's energy system, the lack of large-scale storage dams to store water and the risk of shortages this imposes in dry-years. The AEE states that: "The MHP will add to NZ's generation security of supply both in terms of reduced dry-year risks, due to it being located in a diverse and different catchment to other hydro schemes, and by increasing the nation's self-sufficiency (by avoiding reliance on importation of LNG, CNG and other fossil based fuels).
- 8.17 The MHP can assist in improving security of supply in two ways. The first is by adding to the total generating capacity. The MHP would do this. The second is by providing additional hydro capacity in a catchment where dry-year events have a low correlation with the catchments supplying water to the major South Island hydro power stations. Obviously, the MHP would provide improved security of supply if the correlation is low compared to the converse. The AEE infers this second advantage, but does not supply any supporting information.
- 8.18 The amount of new generation at 310 GWh to 360 GWh is comparatively low. At the higher generation figure it is about 1.4 percent of 2006 March-year total hydro generation and 0.9 percent of total generation. The higher generation figure represents about six month's growth in demand. However, those percentages will understate the importance of additional generation capacity, especially in dry-years when small quantities of additional generation can have a disproportional impact on wholesale electricity prices due to their extreme volatility. In dry-years, the savings in national generation cost will be many times larger than the value of MHP generation supplied to the market.¹⁴
- 8.19 The AEE also states that the MHP will improve security of supply for the region as electricity supplied to the West Coast is predominantly via the national grid with total West Coast generated peak output of about 18 MW from nine power

¹⁴ This is because the scheduler (Transpower) uses dispatch offers tendered by generators to schedule generators for dispatch. The scheduler starts with the generator with the lowest price offer for any half-hour period and then selects the next cheapest bid until there is enough generation to meet demand. The last scheduled generator's price sets the price for all generation in each half-hour period. If the MHP generation displaced the marginal bid dispatched it would affect all electricity dispatched in that half hour period and not just MHP generation.

stations.¹⁵ The SKM report states that the West Coast region is dependent on the national grid for about half of its electricity needs. Electricity demand is currently about 220 GWh, therefore, assuming a 50 percent load factor my estimate is that local generation is satisfying about 44 percent of total demand.¹⁶

8.20 A greater level of self-sufficiency would reduce the risk of major failure of the national transmission system. However, the potential benefit to users of increased regional security is difficult to quantify, particularly as the transmission network is designed to cater for a range of potential network outages.

Reduced transmission losses and lower wholesale prices

8.21 Another positive effect stated by the AEE is a reduction in transmission losses, which the AEE notes can be as high as 50 percent at peak loads from power delivered from the Waitaki hydro system. The SKM report states that the biggest challenge to the West Coast transmission system is the accommodation of block load increases for new developments, which are assessed as being around 30MW from 2008. The report also notes that Transpower has proposed various grid upgrade schemes to enhance security of supply,¹⁷

8.22 By itself, I consider the 50 percent transmission loss figure is misleading as it is the marginal change in average transmission losses resulting from the MHP, after allowing for planned Transpower transmission upgrades and other likely new West Coast generation, that is important. A request for further information was made in respect to transmission losses to the West Coast.

8.23 The request stated¹⁸:

“Please provide information on the average existing transmission losses associated with supplying electricity to the West Coast stated as % per annum along with an assessment of the associated reduction in transmission

¹⁵ Page 13.

¹⁶ Page 1.

¹⁷ Page 21.

¹⁸ Request 1.18.

losses as a result of the proposal, and details of the interaction with the Coleridge and Inungahua Nation Grid lines supplying the West Coast.”

8.24 Meridian’s response to that request was as follows:

“As detailed in the AEE, the Buller and West Coast regions experience a location factor of 1.5 during periods of peak demand. On average the location factor at Westport is 1.14 (average losses 14%). Independent modelling has been undertaken on behalf of Meridian to estimate the reduction in location factor as a result of the MHP contributing electricity to the Buller and West Coast regions. The modelling determined that as a result of the MHP, the location factor at Westport would reduce to 1.09 (average losses 9%). The bulk of the power supplying the West Coast and Buller regions comes via Inangahua. It is expected that Mokihinui will have very little impact on the lines via Coleridge.”

8.25 Reduced transmission losses are important to the region as they imply potentially lower regional wholesale prices and probably retail prices. The SKM report notes that West Coast retail prices are one of the highest in the country and have increased between 15 percent and 20 percent since 2006 and February 2008.¹⁹

8.26 Because it is measurable, I consider that the Hearing should be provided with estimates of the estimated dollar savings resulting from the five percent average reduction in transmission losses and any likely fall in average regional wholesale prices caused by the MHP in monetary values. Especially, as the five percent transmission loss savings figure will decline as electricity demand increases. In this respect, as previously mentioned, the applicant is quoting compound annual increases in demand of between of 5 percent to 11 percent by 2013.

8.27 It is noteworthy that there is some link between transmission savings and reduced local power prices although the relationship is complex. Energy-traders will only pass on lower wholesale prices if they are forced to by competition and/or they consider it will increase their share of the market and total profit. However, if incumbent energy traders try to charge too much it

¹⁹ Page 20.

would encourage new retailers or unrepresented retailers in a particular area to enter the retail market. It would encourage the offer of lower prices so as to capture a share of the super profits, as reduced nodal prices are available to all existing and new retailers. In addition, if incumbent retailers do not pass on lower wholesale prices, it may encourage some large electricity consumers to buy directly from the wholesale market. Therefore, it is likely that any lower regional wholesale prices caused by reduced transmission losses would be passed on to consumers.

Savings in interconnection charges

8.28 The AEE refers to local lines company benefits and states:

“The local lines company Buller Electricity is charged by Transpower for a number of services which a local power station could partially provide.

Transpower recovers the cost of the main AC grid backbone by charging lines companies ‘interconnection charges’. The interconnection charge is allocated to lines companies based on their peak demand off take.

Meridian, in conjunction with Buller Electricity, has developed a grid connection substation concept, which has the flexibility to enable Buller Electricity to develop a connection directly to the substation. The injection of power from the MHP has the potential to reduce the peak demand off take of Buller Electricity for any future demand connected to the Cedar Creek substation. This could, in turn, reduce Transpower’s interconnection charges to Buller Electricity, the local West Coast community owned lines company.”²⁰

8.29 There is a potential benefit to local electricity from avoided connection charge savings. However, in general, savings in line charges resulting from the ability to hook directly into the local grid is likely to be captured by the applicant and/or the local lines company (probably the former). However, consumers outside the Buller Electricity’s network are likely to experience some minor increased Transpower charges, as any lost revenue as a result of embedded generation will have to be recovered elsewhere.

²⁰ Refer 1.5.5.4, page 18.

Other positive effects

8.30 As previously stated, the AEE advances a number of direct benefits to the region ranging from predator control programmes, dam and lake attractions, lake habitat for fish and invertebrates, new recreational opportunities, access to historic sites, boost to the local economy and jobs, and road and cell phone communication upgrades. I accept that some of those positive effects are difficult to value. However, the boost to the local economy and jobs can be estimated using EIA. Unfortunately, the applicant has declined a section 92A request to do this.

9 Conclusion

- 9.1 It is considered that a CBA from a national perspective and a EIA from a district and/or regional is required for the MHP to enable an informed balance with all other matters as the review of the assessment of effects has identified a number of matters that may not be possible to avoid, remedy or mitigate.
- 9.2 The applicant declined section 92A requests to provide those assessments. Instead, the applicant has supplied a qualitative list of positive effects in support of the MHP. Some of those are generic benefits applicable to any new renewable generation or electricity generation of any kind. Some of the claimed benefits are quantifiable and I consider the applicant should provide that information at least for the Hearing.
- 9.3 While I do not dispute the claimed positive effects for the MHP, I cannot say whether it is efficient and welfare enhancing. That is whether the social benefits resulting from the MHP will exceed the social costs. This makes any judgment on whether the MHP will promote sustainable management difficult and speculative.