WESTPOWER LTD PROPOSED WAITAHA HYDRO SCHEME
ASSESSMENT OF ENVIRONMENTAL EFFECTS
ECONOMIC EFFECTS

Report prepared for Westpower Ltd
Report prepared by: Brown, Copeland & Co Ltd
19 June 2025

Statement confirming compliance with the Environment Court's Code of Conduct for expert witnesses contained in the Environment Court Practice Note 2023

As an expert witness or peer reviewer, I have read, and I am familiar with the Environment Court's Code of Conduct for expert witnesses contained in the Environment Court Practice Note 2023.

I have prepared my, or provided input into, an assessment of effects for the Waitaha Hydro Scheme in compliance with the Code of Conduct and will continue to comply with it in this Fast-track Approvals Act process. In particular:

- my overriding duty is to assist the decision-maker impartially on matters within my expertise;
- unless I state otherwise, my assessment is within my area of expertise, and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express; and
- I have not, and will not behave as, an advocate for the Applicants.

1. INTRODUCTION

Outline of Proposal

1.1 Westpower Ltd (**Westpower**) proposes a run-of-the-river hydro-electric power scheme (The **Scheme**) for the Waitaha River, approximately 60km south of Hokitika[1] on the West Coast of the South Island, New Zealand.

1.2 The Scheme would be run-of-river with no instream storage (i.e. dam). The proposed Headworks include a low weir and intake structure situated at the top of Morgan Gorge that will divert water into a pressurised desander and tunnel. The pressurised tunnel will convey the diverted water down to a powerhouse below Morgan Gorge. Having passed through the turbines the diverted water will be returned via tailrace discharging to the Waitaha mainstem in the vicinity of the confluence of Alpha Creek. The Scheme is to divert up to a proposed maximum of 23 cumecs, while maintaining a minimum residual flow of 3.5 cumecs immediately downstream of the intake. The abstraction reach would include approximately 2,500 metres of the Waitaha River, including Morgan Gorge. Construction access to the headworks above Morgan Gorge would be via an access tunnel, while a construction road would be required from the Waitaha Valley Road to the Power Station.

1.3 The Scheme would have a capacity of 23 MW and generate between 120 and 140 GWh of electricity per annum.

1.4 Westpower has commissioned an independent expert opinion on the economic benefits of the Scheme to inform their application.

1.5 The report author is an economist and their qualifications and experience relevant to this report are provided in **Appendix A**.

[1] Measured using local roads and tracks to the Power Station.

Scope of Report

1.6 This report identifies and evaluates the economic effects of the Scheme's construction and operation.

1.7 Section 2 discusses the relevance of economic matters to statutory frameworks such as under the Resource Management Act 1991 (**RMA**). This is followed in Section 3 by an overview of the Westland District and West Coast regional economies. The economic benefits of the proposed Scheme are identified in Section 4, while Section 5 discusses potential economic costs. Section 6 contains the report's conclusions.

2. ECONOMICS AND THE RMA

Community Economic Wellbeing

2.1 Economic considerations are intertwined with the concept of the sustainable management of natural and physical resources, which is embodied in the RMA. In particular, section 5(2) refers to enabling "*people and communities to provide for their … economic ... well being*" as part of the meaning of "*sustainable management*", the promotion of which is the purpose of the RMA.

2.2 As well as indicating the relevance of economic effects in considerations under the RMA, section 5 also refers to *"people and communities"*, which highlights that in assessing the effects of a proposal it is the effects on the community and not just on the applicant or particular individuals or organisations, that must be taken into account. This is underpinned by the definition of *"environment"* which also extends to include people and communities.

Economic Efficiency

2.3 Section 7(b) of the RMA requires that in achieving the purpose of the Act, all persons *"shall have particular regard to ... the efficient use*

and development of natural and physical resources" which include the economic concept of efficiency[2]. Economic efficiency can be defined as:

> The effectiveness of resource allocation in the economy as a whole such that outputs of goods and services fully reflect consumer preferences for these goods and services as well as individual goods and services being produced at minimum cost through appropriate mixes of factor inputs.[3]

2.4 More generally economic efficiency can be considered in terms of:

a. Maximising the value of outputs divided by the cost of inputs;
b. Maximising the value of outputs for a given cost of inputs;
c. Minimising the cost of inputs for a given value of outputs;
d. Improving the utilisation of existing assets; and
e. Minimising waste.

Methodology for assessing economic effects

Viewpoint

2.5 An essential first step in carrying out an evaluation of the positive and negative economic effects of a development project is to define the appropriate viewpoint that is to be adopted. This helps to define which economic effects are relevant to the analysis. Typically, a district or wider regional viewpoint is adopted and sometimes even a nationwide viewpoint might be considered appropriate[4]. For the Scheme it is appropriate to consider the Westland District, West Coast regional and national economic effects given:

a. The Scheme's electricity supply effects for residents and businesses of the Westpower supply area (comprising the

[2]See, for example, in *Marlborough Ridge Ltd v Marlborough District Council* [1998] NZRMA 73, the Environment Court noted that all aspects of efficiency are "*economic*" by definition because economics is about the use of resources generally.

[3] Pass, Christopher and Lowes, Bryan, 1993, *Collins Dictionary of Economics* (2nd edition), Harper Collins, page 148.

[4]For example the New Zealand Environmental Protection Authority administers applications under the RMA for major infrastructure projects of national significance.

Westland District, the Grey District and the southern part of the Buller District);

b. The Scheme's expenditure and employment effects for the residents and businesses of the Westland District and West Coast Region; and

c. The Scheme's wider national economic effects of electricity generation and transmission efficiency and use of renewable resources.

Externalities

2.6 There are private or financial costs and benefits associated with the Scheme. If all the approvals are granted, and Westpower gives effect to them, then it can be assumed that these private or financial costs and benefits have been responsibly and properly analysed and that from the viewpoint of those with money at risk, the expected financial benefits exceed the expected costs. Accountability for accuracy of this commercial analysis clearly rests with Westpower.

2.7 However, not covered in any private sector cost benefit analysis are the so-called externalities – i.e. those side effects of the production process, which affect third parties, other than the buyer and seller. A range of economic externalities (both positive and negative) arising from the proposed Scheme are discussed later in this report.

2.8 Because Westpower is 100% community owned, any profits generated by the Scheme will be passed through to the community by way of rebates to local electricity consumers served by the Westpower network. Therefore, as compared to other electricity generation projects, where the shareholders are central government or private sector interests the issue of whether generation and other cost savings are passed on to consumers, is less problematic and the Scheme will provide a significant long-term asset to be owned by West Coast residents and businesses.

3 THE WESTLAND DISTRICT AND WEST COAST REGIONAL ECONOMIES

3.1 Statistics New Zealand data[5] indicate that the resident population in the Westland District increased from 8,830 in 2018 to 9,270 in 2024 – i.e. an increase of 5.0% over the six year period, 2018-2024. Over the same period New Zealand's population has increased by 7.9%. Statistics New Zealand's medium projection is for Westland's population to gradually decrease over the period 2024-2048 at an average annual rate of 0.4% per annum to 8,440 in 2048. Over the same period New Zealand's population is forecast to grow at an average annual rate of 0.6%.

3.2 For the West Coast Region as a whole population increased from 32,400 in 2018 to 34,300 in 2024 – i.e. an increase of 5.9% over the six year period, 2018-2024. Statistics New Zealand's medium projection is for the Region's population to decrease over the period 2024-2048 at an average annual rate of 0.6% per annum to 30,000 in 2048.

3.3 Employment in the Westland District has increased from 4,592 persons employed in 2018 to 4,883 persons employed in 2024 (i.e. growth over the period of 6.3%). For the West Coast Region, employment has grown from 16,057 persons employed in 2018 to 17,187 persons employed in 2024 (i.e. growth over the period of 7.0%). During this same period employment in New Zealand has grown by 12.3%.[6]

3.4 The mainstays for the West Coast regional economy are mining, agriculture[7] and tourism. However, mining is not a significant component of the Westland District economy with only 90 persons (2.0% of the total workforce) employed in 2024. Mining activity on the

[5]Statistics New Zealand website, Sub-national population estimates.
[6] Source: Infometrics; Regional Economic Profile; Westland District and West Coast Region; 2024.
[7] Including milk products manufacture for the West Coast regional economy, and which is undertaken at Westland Milk Product's plant at Hokitika.

West Coast is concentrated in the Grey and Buller Districts. For the West Coast there were 696 mining jobs in 2024 or 4.1% of all jobs.

3.5 The key employment sectors for the Westland District in 2024 are tourism with 30.6% (1,496 jobs) of the workforce, manufacturing with 16.8% (818 jobs) of the workforce and agricultural, forestry and fishing with 13.8% (676 jobs) of the workforce. Tourism encompasses parts but not all of other sectors such as accommodation and food services (16.4% of the workforce) and retail trade (7.8% of the workforce).

3.6 The key employment sectors for the West Coast Region in 2024 are tourism with 13.3% (2,294 jobs) of the workforce, agriculture, forestry and fishing with 10.4% (1,784 jobs) of the workforce, manufacturing with 11.0% (1,885 jobs) of the workforce and healthcare and social assistance with 10.9% (1,881 jobs) of the workforce.

4. ECONOMIC BENEFITS OF WAITAHA RIVER HYDRO SCHEME[8]

Overview -Increased Economic Activity from Scheme Construction and Operation

4.1 The construction and operation of the Scheme will increase economic activity for the local Westland District and West Coast regional economies and improve the economic wellbeing of the Westland District and West Coast Region by:

a. increasing employment, incomes and expenditure in the Westland District and West Coast economies during the Scheme's construction and, to a lesser extent, during the Scheme's operation;

b. reducing transmission losses and improving security of supply for local residents and businesses and therefore increasing economic efficiency; and

[8]Unless stated otherwise, data in this section provided by Westpower.

c. providing increased confidence for business investment in Westland and on the West Coast through a more reliable and cost effective electricity supply.

Effects during Construction Period

4.2 Construction of the Scheme will use, where practicable, local products and services over its expected three to four year construction period. Goods and services that could be provided locally include concrete, tunnelling, civil construction and labour. The total construction cost is estimated at between $160-200 million[9], of which about 50% or $80-100 million ($27-33 million per annum assuming a three year construction period[10]) could be spent in Westland and 69% or $110-138 million ($37-46 million per annum assuming a three year construction period) could be spent on the West Coast. Employment directly created by this local expenditure is estimated to average 71 full time equivalent jobs over a three year construction period with wages and salaries paid estimated at $8.7 million per annum.[11]

4.3 In addition to the direct economic effects, there are indirect effects arising from:

a. The effects on suppliers of goods and services to the firms directly contracted by the Scheme from within the District and Region (i.e. the “forward and backward linkage” effects);and

b. The supply of goods and services to the employees of firms directly contracted by the Scheme (i.e. the “induced” effects).For example, there will be additional jobs and incomes for employees of supermarkets, restaurants and bars as a consequence of the additional expenditure by employees directly involved in construction at the site.

[9] All monetary amounts in this section of this report are in 2024 price terms.

[10]Assuming a go-ahead for the Scheme is given by August 2025, the main construction period is likely to be August 2026 to August 2029. A small amount of geotech and other exploratory work would also be undertaken in the year August 2025 to August 2026.

[11]Based on annual salaries averaging $122,000 including overtime.

4.4 District and regional multipliers can be estimated to gauge the size of these indirect effects. The size of the multipliers is a function of the extent to which a regional economy is self-sufficient in the provision of a full range of goods and services and the Region's proximity to alternative sources of supply. Using multipliers[12] derived by G V Butcher Partners Ltd in relation to the proposed Mokihinui Hydro Scheme implies total effects (i.e. direct plus indirect effects) for the Westland District, during the three year construction period of:

a. $35-43 million per annum in additional expenditure;
b. 107 additional jobs; and
c. $12.2 million per annum in additional wages and salaries.

If the construction period stretches to four years the annual effects will be smaller but will stretch over a longer period.

4.5 For the West Coast Region, the total (direct plus indirect) effects during the three year construction period are estimated to be:

a. $52-64 million per annum in additional expenditure;
b. 121 additional jobs; and
c. $14.8 million per annum in additional wages and salaries.

Again, if the construction period stretches to four years the annual effects will be smaller but will stretch over a longer period.

Operational Effects

4.6 Once the Scheme is operational there will be an additional fulltime equivalent staff member required to undertake regular operations and maintenance duties. There will also be additional expenditure within

[12] These multipliers were derived using data on hydro scheme construction costs, Statistics New Zealand data and G V Butcher Partners Ltd models of the Buller District and West Coast regional economies. They are considered to be reasonable estimates to use to calculate the indirect expenditure, employment and income effects for the Westland District and West Coast region from the construction of the proposed Scheme.

the Westland District and West Coast regional economies on other goods and services purchased locally.

4.7 Again, there will be both direct and indirect economic effects associated with this additional employment, income and expenditure.

4.8 Also, improvements in electricity supply self-sufficiency and reliability will help sustain employment in the key sectors of the Westland District and West Coast regional economies by providing increased confidence for business investment in Westland and on the West Coast through a more reliable and cost-effective electricity supply.

Contribution to Economic Wellbeing

4.9 As indicators of levels of economic activity, economic effects (in terms of expenditure, income and employment) are not in themselves measures of improvements in economic welfare or economic wellbeing. However, there are economic welfare enhancing benefits associated with increased levels of economic activity. These relate to one or more of:

a. Increased economies of scale: Businesses and public sector agencies are able to provide increased amounts of outputs with lower unit costs, hence increasing profitability or lowering prices;
b. Increased competition: Increases in the demand for goods and services allows a greater number of providers of goods and services to enter markets and there are efficiency benefits from increased levels of competition;
c. Reduced unemployment and underemployment[13] of resources: To the extent resources (including labour) would be otherwise unemployed or underemployed, increases in economic activity can bring efficiency benefits when there is a

[13]Underemployment differs from unemployment in that resources are employed but not at their maximum worth; e.g. in the case of labour, it can be employed at a higher skill and/or productivity level, reflected in higher wage rates.

reduction in unemployment and underemployment. The extent of such gains is of course a function of the extent of underutilized resources within the local economy at the time and the match of resource requirements of a project and those resources unemployed or underemployed within the local economy; and

d. Increased quality of central government provided services: Sometimes the quality of services provided by central government such as education and health care are a function of population levels and the quality of such services in a community can be increased if increased economic activity maintains or enhances population levels.

4.10 It is reasonable to assume that the anticipated increases in economic activity (i.e. expenditure, income and employment) as a consequence of the Scheme construction and operation will give rise to one or more of these four welfare enhancing economic benefits at the local district and regional level.

Lower Cost Electricity Generation and Supply

4.11 There will be cost savings to the extent that the costs of generation from the Scheme are less than the generation and transmission costs of alternative new generation capacity elsewhere in New Zealand, which is displaced or delayed. These cost savings reflect:

a. Lower or at least comparable average generation costs per kWh compared to alternative new generation options to meet predicted growth in electricity demand in New Zealand (see Erik Westergaard report[14]). Alternatively, if new capacity does not keep pace with growth in demand, there will be increased costs for electricity consumers and for the economy generally;

[14]Westpower Ltd Proposed Waitaha Hydro Scheme Assessment of Environmental Effects – Regional Resilience and New Zealand's Electricity Demand and Supply Scenarios and Electricity Generation Investment; Erik Westergaard; 2025.

b. A reduction in the transmission line losses incurred in supplying local consumers with electricity via Transpower's national grid[15];

c. A reduction in the transmission charges for Westpower and its consumers.

4.12 These various cost savings (or at least reductions in future cost increases, which would otherwise occur) will in the first instance accrue to Westpower as a generator and as the local lines company. Westpower is a community owned company, and lower costs will benefit local business and residential consumers if these lower costs are transferred to them either via lower retail electricity prices and/or larger annual rebates than would otherwise be the case.

Increased Resilience for the Westpower Electricity Supply Network

4.13 Although the Scheme, being run-of-river, will have no water storage capability, increasing the amount of renewable generating capacity on the West Coast improves security of supply for local business and residential consumers by reducing reliance on supply via the national grid network. The Scheme will connect directly to Westpower's distribution network and make West Coast consumers less reliant on electricity imported via Transpower's transmission system. For residential consumers, outages as a result of transmission failures are likely to be sufficiently brief to cause only minor inconvenience. However, for business customers with high electricity reliance or consumption the costs can be more significant – either in terms of lost production or the requirement to invest in expensive back-up sources of electricity supply. The Scheme will therefore provide some protection against situations when no or restricted external transmission capacity into the Region is available (see Erik Westergaard report).

[15]The closer the electricity plant is to the point of demand, the less the transmission losses.

4.14 Also, in relation to security of supply, the Scheme will provide geographic diversity of supply of electricity from hydro generating stations, which in the South Island are heavily dependent upon water catchments and climatic conditions in South Canterbury and Otago.

4.15 At the national level the Scheme will improve resource use efficiency by:

a. Increasing the level of competition in the market for electricity generation supplying West Coast consumers;
b. reducing transmission line losses;
c. increasing the geographic diversity of supply of electricity from hydro generating stations; and
d. potentially reducing New Zealand's climate change liabilities.

Climate Change Benefits

4.16 The Scheme will contribute to New Zealand meeting its emission reduction targets and climate change goals through the replacement of thermal electricity generation and increasing the supply of electricity generation to help with the replacement of fossil fuel use in other sectors of the regional and national economy. In his report, Mr Eric Westergaard under the heading 'Climate change benefits' states:
"There are two potential climate change benefits arising from construction of the Waitaha Scheme. The key benefit is that it will help displace thermal generation in New Zealand – currently approximately 5,000 GWhs in 2023.The Genesis Energy Huntly plants emit approximately one tonne of CO_2 for each MWh of electricity produced. Assuming Waitaha Scheme production of 130GWhs (130,000MWhs) displaces thermal generation, this is equivalent to a reduction in CO_2 emissions of 130,000 tonnes from electricity production annually. This is comparable to removing approximately 69,500 internal combustion cars from NZ roads.
As electricity generation using fossil fuel is captured by the New Zealand Emission Trading Scheme, at a NZU CO_2price of $60/tonne this is equivalent to a benefit of $7.8 million per annum to electricity

consumers. However, given the complexity of wholesale electricity market pricing the actual benefit may be less. This occurs because increasing intermittent renewables may increase price volatility, negating some of the benefits of reducing thermal generation.

The second benefit is that because the Waitaha Scheme reduces the price differential between the Benmore generation hub and the West Coast, and improves regional security of supply, it may encourage greater electrification in the Region. This may be from the greater uptake of electric vehicles, an increase in the use of electricity for space heating, or greater and quicker electrification of process heat. These will lead to further reductions in CO_2 emissions."

5. ECONOMIC COSTS OF THE WAITAHA RIVER HYDRO SCHEME

Tourism Expenditure[16]

5.1 The Waitaha River Catchment area is used for kayaking, angling, jetboating, hunting, tramping, hot spring use and canyoning. Whilst the area has been assessed as having internationally and nationally significant values for extreme kayaking and canyoning and regionally significant values for other recreational activities, the economic effects of the Scheme, in terms of reduced expenditure for the local tourism industry, will be negligible because:

a. There is a low level of recreational use on or near the Waitaha River and this is likely to continue in the future with or without the Scheme;
b. There are a range of alternative locations on the West Coast for all recreational activities affected;
c. All land based recreational activities in the Waitaha River catchment will be able to continue after the Scheme is built with only visual and perceptual effects;

[16]This section is based on the findings of *Westpower Waitaha Hydro Investigations Recreation and Tourism Assessment of Effects*; Prepared for Westpower Ltd by Rob Greenaway and Associates; December, 2024.

d. Because of the high level of skill required to paddle the Waitaha River, the number of kayakers able to paddle it are small – only around 50 persons per year kayak the Waitaha Gorge section of the river and most portage the Morgan Gorge section. In any one year, fewer than 10 individuals might kayak the upper Waitaha Gorge (above Moonbeam Hut) and/or Morgan Gorge. Also, these sections of the river might not be run at all for long periods and for these sections there is a very small pool of suitably skilled kayakers. It is important to note that these estimated numbers of usage are conservative because they reflect the peak in kayaking activity estimated prior to 2011 rather than actual current use which has significantly reduced since 2011 with an estimated fewer than 10 individuals kayaking the upper Waitaha River Gorge over the past decade.

Utility Costs

5.2 Externality costs from a project such as the Scheme arise when public sector agencies (local, regional or central government) must provide and fund new infrastructure that is required, without appropriately set levies or charges for such costs to be recovered from the development. However, no such externalities will arise in the case of the Scheme because it will not require any new infrastructure from public sector agencies. Westpower will be required to directly fund road safety and road rehabilitation works to mitigate the effects of heavy traffic using the local road network during the Scheme's construction.[17]

Road Congestion Costs

5.3 The Scheme's construction will lead to additional volumes of traffic on the local road network. However, with the proposed road safety

[17] See Westpower Limited Proposed Waitaha Hydro Scheme Assessment of Environmental Effects Traffic Assessment; Melvin David Sutherland; May 2025. (Traffic Assessment Report)

mitigation works in place, the local road network has sufficient capacity to handle the additional construction traffic. On Westpower's adoption of the traffic recommendations to reduce congestion, the additional traffic will not result in significant congestion effects.[18]

Loss of Biodiversity, Landscape and Recreational Values

5.4 In economics, 'intangible' costs and benefits are defined as those which cannot be quantified in monetary terms. For any project such effects may include amenity effects, landscape effects, ecological effects, Māori cultural and relationship effects and recreational effects. Such effects may be positive or negative – i.e. a benefit or a cost for a particular community of interest.

5.5 A number of non-market valuation techniques (e.g. willingness to pay surveys or inferring values on the basis of differences in property values)for assessing “intangible” effects have evolved over time. However, these techniques are frequently subject to uncertainty and criticism. As a consequence, it is generally better to not attempt to estimate monetary values for these effects but leave them to be part of the overall judgement under s 5 of the RMA. This also avoids the danger of “double-counting” – i.e. including them within the measure of efficiency and treating them as a separate consideration in the overall judgement under s 5.

5.6 The biodiversity, landscape and recreational effects of the Scheme are assessed in other technical reports appended to the Assessment of Environmental Effects.

6. CONCLUSION

6.1 The Scheme will help to enable the people and community of the Westland District and West Coast Region to provide for their economic well-being, by making West Coast consumers significantly

[18] See Traffic Assessment Report.

less reliant on electricity imported via Transpower's transmission system. It will also be consistent with the efficient use and development of natural and physical resources.

Appendix A

CURRICULUM VITAE OF MICHAEL CAMPBELL COPELAND

DATE OF BIRTH	3 October 1950
NATIONALITY	New Zealand
EDUCATIONAL QUALIFICATIONS	Bachelor of Science (Mathematics) 1971 Master of Commerce (Economics) 1972

PRESENT POSITIONS

(Since 1982)	Economic Consultant, Brown, Copeland & Co Ltd
(Since 2017)	Trustee, Trade Aid, Kapiti

PREVIOUS EXPERIENCE

1978-82	NZ Institute of Economic Research Contracts Manager/Senior Economist
1975-78	Confederation of British Industry Industrial Economist
1972-75	NZ Institute of Economic Research Research Economist
1990-94	Member, Commerce Commission
2001-06	West Coast Regional Council Trustee, West Coast Development Trust
2002-08	Lay Member of the High Court under the Commerce Act 1986
2003-11	Director, Wellington Rugby Union
2010-13	Director, Southern Pastures
2010-17	Director, Healthcare New Zealand Holdings Limited

GEOGRAPHICAL EXPERIENCE

- New Zealand
- Australia

- Asia (Cambodia, India, Indonesia, Kazakhstan, Malaysia, Nepal, Pakistan, People's Republic of China, Philippines, Tajikistan, Sri Lanka, Uzbekistan, Viet Nam)
- South Pacific (Cook Islands, Fiji, Kiribati, Tokelau, Tonga, Tuvalu, Vanuatu, Western Samoa)
- United Kingdom

AREAS OF PRIMARY EXPERTISE

- Agriculture and Resource Use Economics (including Resource Management Act)
- Commercial Law and Economics (including Commerce Act)
- Development Programme Management
- Energy Economics
- Industry Economics
- Transport Economics