

**BEFORE THE COMMISSIONERS APPOINTED ON BEHALF OF
GORE DISTRICT COUNCIL**

Under	The Resource Management Act 1991 (the Act)
In the Matter	of the Proposed Gore District Plan Rural Chapter
Between	GREENBRIAR LIMITED Submitter (s128)
And	GORE DISTRICT COUNCIL Territorial Authority

BRIEF OF EVIDENCE OF ANDREW SCHOULTZ (ECONOMICS)

DATED 8 JULY 2024



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BRIEF OF EVIDENCE OF ANDREW SCHOULTZ

Introduction

1. My full name is Andrew Mark Schoultz.
2. I graduated from Victoria University of Wellington with a Bachelor of Commerce in Economics and International Relations, a Master of Commerce in Economics, and a Master of Strategic Studies.
3. I am currently employed as a Senior Economist at Sense Partners, an independent economics consultancy. I have been with Sense Partners since June 2021.

Code of conduct

4. I have been given a copy of the Environment Courts code of conduct for expert witnesses. I have reviewed that document and confirm that this evidence has been prepared in accordance with it and that all opinions that I offer in this evidence are within my expertise. I have not omitted to refer to any relevant document or evidence except as expressly stated.

Summary of evidence

Key points

Greenbriar Ltd is seeking an expansion to its mining operation

5. Greenbriar Ltd is seeking resource consent for an expansion to its mining operation at New Vale, in Gore District. Depending on customer demand, this will extend the mine's current operating life by approximately four years to approximately 2038.

6. The mine is on land classified as land use class 3 under the National Policy Statement on Highly Productive Land (NPS-HPL). This means that an expansion of activity has to meet the tests set out in the NPS-HPL.
7. I have been engaged by Greenbriar Ltd to provide an economic impact analysis that tests whether the mine:

“Provides a significant national public benefit that could not otherwise be achieved using resources within New Zealand.”

New Vale provides a \$7.4m boost to local GDP

8. The mine at New Vale supplied nearly 276,700 tonnes of coal, resulting in a \$7.4m gross value added (GVA) in 2023, equivalent of 0.7% of Gore district's GDP.
9. The mine supports 64 jobs in the local economy. This includes 39 people employed on site, and a further 25 jobs supported through a \$6m local spend on inputs – 1.12% of jobs in Gore district.
10. New Vale paid an average wage of \$74,250. Median wages in the mining sector at \$78,045 are the second highest in the Southland region, 42% above the region-wide median.

The mine supports a further \$499m in economic activity

11. The agriculture sector is a major employer across the lower South Island. Many Meat and Dairy processors rely on coal to transform primary sector outputs into products for local consumption and export.
12. By providing this coal, New Vale supports jobs and economic activity in the dairy and meat processing sectors across the Lower South Island.

13. New Vale's customers are likely to remain reliant on coal for some time. Some processors have completed, or are progressing, their transition away from coal. A full transition will take time. The Climate Change Commission has based its emissions pathways on the phase-out of coal in food processing by 2040.¹
14. Based on the mine's estimated market share, I estimate the mine enables 4,980 jobs and \$499m in GDP across the dairy and meat processing sectors.

New Vale is the only operating source of low-cost coal in Southland

15. I have based my assessment on alternative, consented sources of thermal coal. Customers are transitioning away from coal. However, this will take some time in the food processing industry.² In the interim, customers are reliant on coal.
16. Users of coal tend to demand large quantities, making transportation a considerable expense. The viability of alternative sources of coal is highly sensitive to transport costs.
17. Local alternatives may come at a 19% price increase. However, regulatory constraints may mean that local supply cannot meet demand from New Vale customers.
18. Alternative sources of coal on the West Coast are typically exported and are expensive to transport to Southland. I estimate if New Vale customers had to source coal from the West Coast instead, they would face an average 148.4% increase in per-GJ energy costs.

¹ Climate Change Commission (2021) *Ināia tonu nei: a low emissions future for Aotearoa*. Pp. 114. Para 7.5.66

² The Climate Change Commission's emissions pathways are based on a phaseout of coal in food processing by 2040. See: Climate Change Commission (2021) *Ināia tonu nei: a low emissions future for Aotearoa*. Pp. 114. Para 7.5.66.

19. Constraints in other Southland sources mean that the next cheapest available alternative is imported coal from Indonesia. This would still impose an average per-GJ cost increase of 118%.

The extension provides a significant national public benefit

20. I estimate that the extension is a more productive use of land than the current sheep and beef operations it sustains. Given this, and the scale of employment and economic impacts in the context of Gore district, I consider that the extension constitutes a significant public benefit.
21. The mine plays a role in providing key energy inputs into the food processing sectors across three regions. On this basis, I consider the benefit qualifies as a national benefit.
22. Given the cost of and constraints facing local operating coal alternatives, I consider it is likely these benefits would not otherwise be achieved using resources within New Zealand.

Purpose

Greenbriar Ltd aims to expand the New Vale mine

23. Greenbriar Ltd is seeking resource consent for an expansion to its mining operation at New Vale, in Gore District. This will increase the mine operation's current footprint from 175 ha.
24. Depending on customer demand, this expansion will extend the mine's current operating life by approximately four years to 2038. My assessment is based on consistent customer demand, with the extension of the mine's current annual benefits for an additional four years.

My analysis focuses on regulatory tests

25. The focus of my analysis is testing whether the mine provides a significant national public benefit that could not otherwise be achieved using resources within New Zealand. This test is set out in the National Policy Statement for Highly Productive Land (NPS-HPL), clause 3.9(2)(iii).
26. However, the NPS-HPL does not provide an explicit definition of what constitutes a “significant” benefit, a “national” benefit, nor a “public” benefit. It is not clear, for example, how large or certain a benefit needs to be to qualify as significant.

To address this, I split my analysis into two parts.

27. First, I assess whether the mine extension delivers a significant national public benefit. Here, I focus on measuring the direct and indirect economic contribution that the mine operation brings to the economy. I also look at the role the mine plays in providing inputs into the wider economy.
28. I propose that the mine’s contribution toward economic activity and employment constitute a significant public benefit. I propose that the enabling role the mine plays in providing inputs into the food processing sector across three regions constitutes a national benefit.
29. Second, I test whether this benefit could otherwise be achieved using resources within New Zealand. To make the test tractable, I focus on alternative sources of coal which already have resource consent. This excludes consideration of:
 - (a) Unconsented sources of coal. There are other deposits of coal in New Zealand. Determining which sources would be realisable (or commercially viable) within New Zealand’s resource management regulatory framework is a major undertaking.

- (b) Other sources of energy. A transition away from coal is underway, but this will take time for various reasons.³ The proposed extension of the mining operation to 2038 aligns with the Climate Change Commission's phaseout of coal in food processing by 2040.

Economic contribution

Demonstrate a significant public benefit

30. The mine at New Vale delivers a significant national public benefit to the economy. This can be viewed from two perspectives.
31. One the mine has a direct impact on the local economy through hiring staff and purchasing goods and services from other local businesses. This creates both job and business opportunities for local families and firms.
32. Two, as a supplier of coal, New Vale is an important enabler of other economic activity. The agricultural sector is energy intensive and relies on affordable access to energy. By providing such access, New Vale plays a role in supporting economic activity across the region.

New Vale is an important source of well-paid jobs

New Vale boosts Gore district's GDP by \$7.4m each year

33. A key measure of the mine's direct economic contribution is its contribution to gross domestic product (GDP). We can measure this by looking at the business' gross value added (GVA). This is the sum of

³ The Climate Change Commission's emissions pathways are based on a phaseout of coal in food processing by 2040. See: Climate Change Commission (2021) *Ināia tonu nei: a low emissions future for Aotearoa*. Pp. 114. Para 7.5.66

compensation of employees (i.e. wages, the return to labour), and gross operating surplus⁴ (return to capital).

34. The mine at New Vale supplied nearly 276,700 tonnes of coal in the 12 months to June 2023, generating \$17.99m in revenue.⁵ Based on financial data provided by New Vale, this resulted in a \$7.4m GVA.
35. I estimate Gore district, where the mine is located, had a GDP of \$1,018m in the year to March 2023.⁶ This means the mine directly contributed an equivalent of 0.7% of the district's GDP.
36. The mine at present has supply to last through to 2034, depending on customer demand. With an extension of the mine, this economic contribution will be sustained for an additional four years to 2038. That's an extra \$29.5m in economic activity over four years.
37. On top of this, the mine will be rehabilitated once operations cease. This work includes removal of site infrastructure and the processing plant, and the restoration of much of the site to useable agricultural land. The mine pit will be filled with water to leave a lake.
38. Much of the rehabilitation will be carried out alongside the mine's operation. The balance may take an additional 6 months, employing approximately 6 people full time, with ad hoc contractor support.⁷ As well as providing a short increase to the site's employment benefits (assessed below), this rehabilitation will bring environmental benefits as discussed below.

New Vale supports 64 jobs in the local economy

⁴ EBITDA is a good accounting equivalent. The measure is earnings before taxes and depreciation.

⁵ Data on revenue, employment, wages, and supplier spend was all provided by New Vale.

⁶ I estimate this using StatsNZ GDP(E) estimates for NZ, apportioned to the territorial authority level using shares of StatsNZ LEED employment (both employees and self-employed).

⁷ Advice given by New Vale. Email communication dated 30/01/2024.

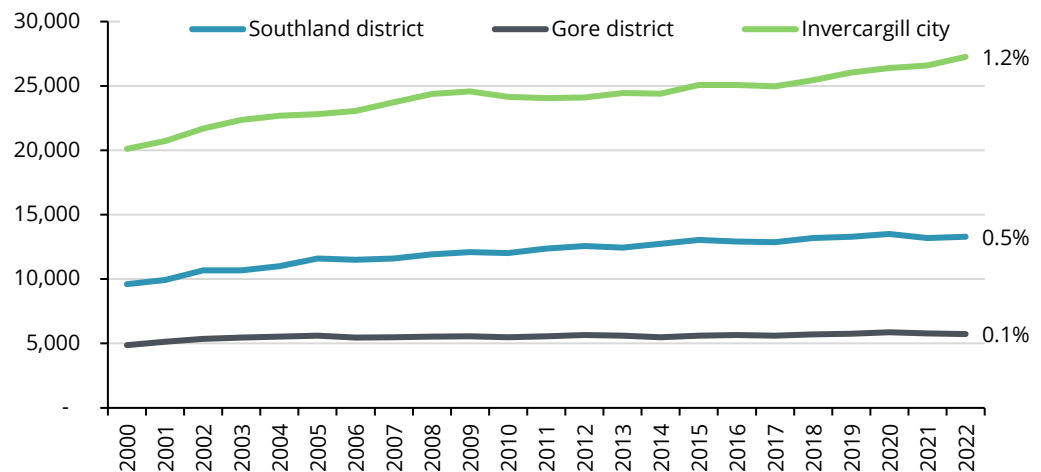
39. The direct contribution of the mine can also be assessed by looking at employment. While this is a component of GVA (via wages), it gives a good sense of the opportunities that the mine brings to the people of the region.
40. The operation at New Vale directly employs 39 people on site and in support roles. In addition, the \$5.98m in spending on goods and services locally⁸ helps to support a further 25 jobs across the economy.⁹
41. Large components of the spend are on imported equipment, like excavators and heavy machinery. Yet these are typically purchased through local suppliers, who may also provide maintenance and support services. This intermediary role means imports also generate local economic activity and jobs.
42. The closest urban areas, Mataura and Gore, are both within Gore District. As these are the areas local employees are most likely to live, we can look at mine employment in the context of Gore District employment. Based on data from Statistics New Zealand,¹⁰ the 64 jobs, what I term “core” employment, represent 1.12% of the ~5,700 jobs in Gore district.
43. This is a material contribution in a district that has seen slow growth in employment over the past decade. Between 2012 and 2022, employment in the Gore district grew at an average annual rate of just 0.1%. Invercargill, by contrast, achieved a 1.2% annual growth rate.

⁸ Data on expenditure was provided by New Vale.

⁹ I estimate this using an average cost of employment of 22.7% of output (from StatsNZ Input-Output tables 2020) and a median wage of \$54,599 (from StatsNZ LEED data for 2021, inflated to 2023 using the StatsNZ labour cost index.).

¹⁰ Statistics New Zealand (2023) *Linked Employer-Employee Database*.

Figure 1: Jobs by territorial authority, year to June, (CAGR 2012-2022)



Source: StatsNZ; Sense Partners estimates

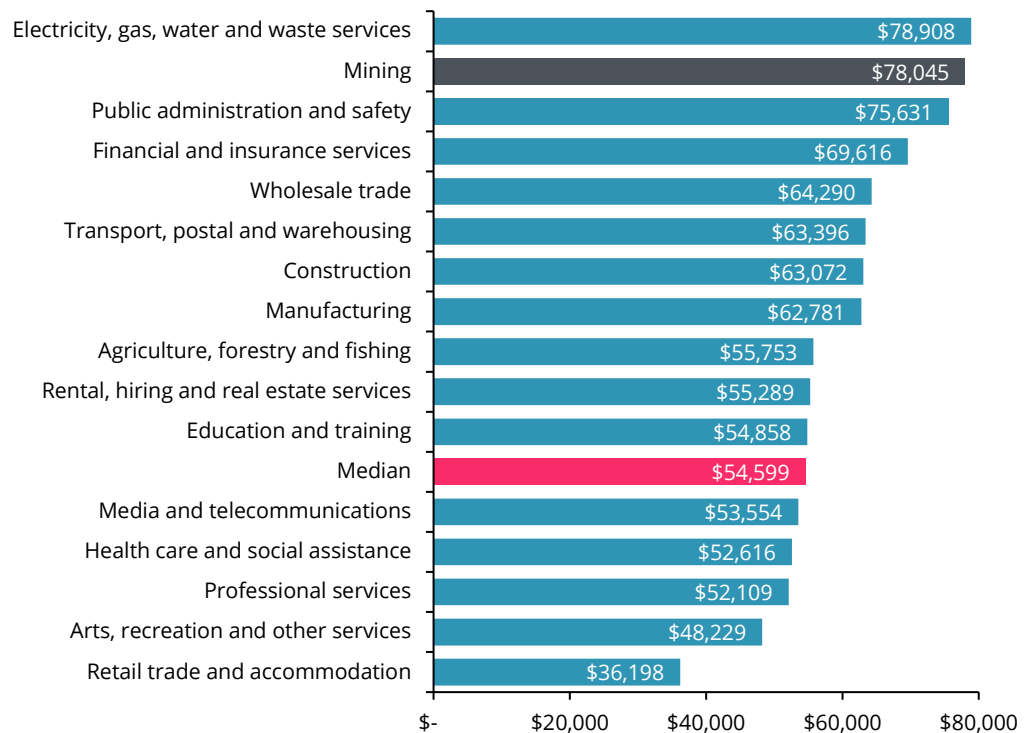
Mining offers high median wages, meaning well paid jobs for locals

44. The jobs at the mine are also well-paid. The average employee compensation at New Vale was \$76,400 in the 2023 financial year. The median wage across Southland region in 2023 was just \$54,599.¹¹ Sustaining these well-paid jobs at New Vale will make a material contribution to local economic wellbeing.
45. Well-paid jobs are characteristic of the mining sector. As Figure 2 below shows, the 2023 median wage in mining, at \$78,045, is the second highest by sector across Southland region.¹² This is 42% above the economy-wide median of \$54,599 for the Southland region in 2023.

¹¹ I estimate this median wage of \$54,599 from StatsNZ LEED data for 2021, inflated to 2023 using the StatsNZ labour cost index.

¹² Where available, we draw on data at the Gore district level. For comparative measures, like median wages, the data is only available at the regional level. Comprehensive wage data, that includes self-employed persons, is only available through to 2021 at the time of writing, but I use the StatsNZ labour cost index to update this to 2023.

Figure 2: Median wages by sector, Southland, 2023



Source: StatsNZ; Sense Partners estimates

The value of New Vale more than offsets any impacts to farming

46. In all economic activities, there is a trade-off to be made in the form of an opportunity cost. When looking at the direct net contribution of New Vale, we need to net-off the opportunity cost. In the case of this extension, the primary economic cost is in the form of lost farm land.
47. The land the extension is looking to use is currently used for sheep and beef farming.¹³ Data from Beef + Lamb New Zealand indicates that sheep and beef farms yielded an average of \$717 per hectare in the 2022/23 financial year.¹⁴

¹³ Advised by New Vale. Email communication dated 7/11/2023.

¹⁴ Beef + Lamb New Zealand Economic Service (2023) "Class 9 All Classes - Otago-Southland: \$ Per Hectare Analysis," in *Sheep and Beef Farm Survey*

48. The extension at New Vale will draw on two parcels. One is an 89ha parcel to the North West, where the physical extraction will take place. In addition, a 56ha parcel to the east will be used for a wetland and engineered land fill (ELF).¹⁵ This implies a total temporary reduction in farm land of 145ha.
49. With this reduction, we can expect a loss of \$103,900 per annum in sheep and beef farming revenue. This is considerably lower than the \$18m in revenue the mine will generate each year for the four additional years of operation the extension will provide.¹⁶
50. In addition to being a small loss, much of this is also likely to be a temporary loss. The land used for the ELF will have its topsoil and subsoil removed and set aside. Once completed, this will be replaced, and the land returned to productive farming. The western parcel will also be returned to productive farmland.
51. The only permanent losses of farmland will be due to the construction of the wetland (6ha), and the creation of a lake in the mine pit (48ha). The wetland will help to improve water quality and biodiversity. While a technical loss of farming revenue, such improvements provide valuable but unquantified ongoing environmental services, and are increasingly seen as an important part of more sustainable farming practices.¹⁷

New Vale is an important economic enabler

New Vale customers are in economically important sectors

52. The core business of New Vale is the supply of thermal coal. In the 2023 financial year, the mine supplied 276,700 tonnes of coal to five major customers across Southland, Otago, and Canterbury. These

¹⁵ Taylor Planning (2023) *01a Brief for Economist* 6.9.23.

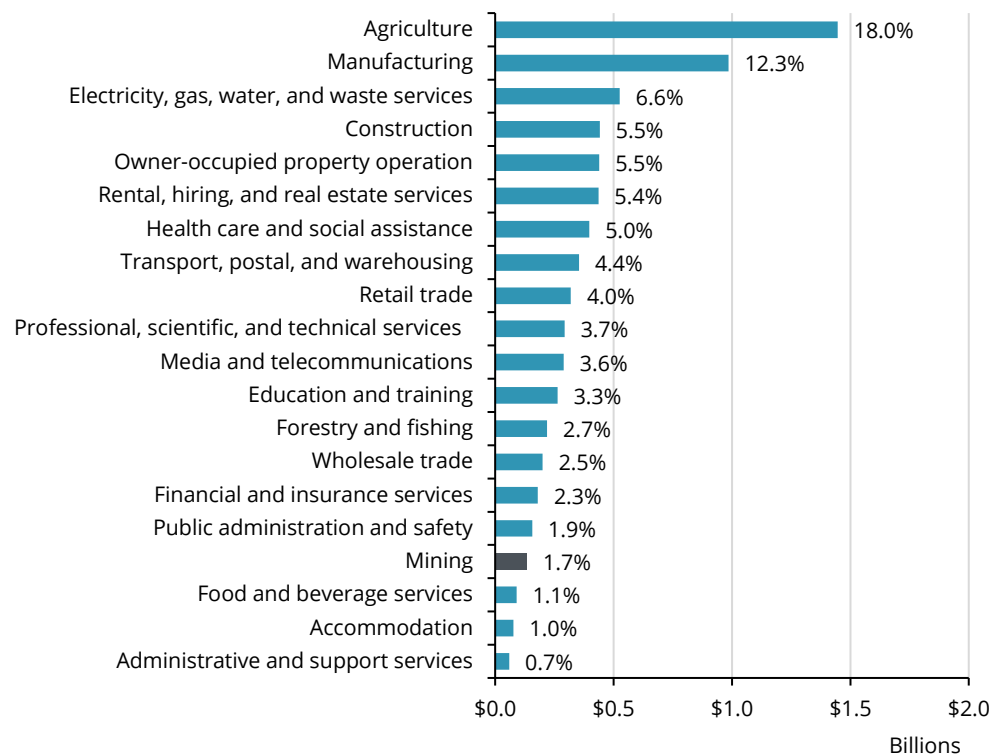
¹⁶ This revenue figure excludes the wider economic impacts set out in this report.

¹⁷ DairyNZ (2023) *Environment topics: Wetlands*.

customers are in the agricultural processing sector and include dairy and meat processing plants.

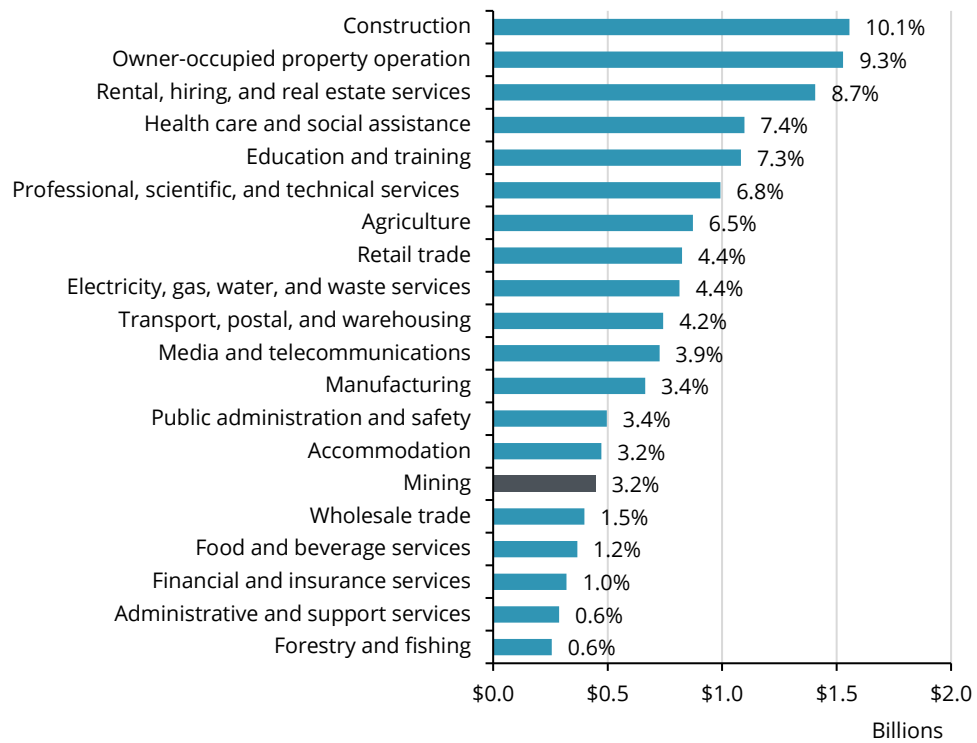
53. As Figure 3 below shows, mining itself is a small component of the Southland economy. The customers supported by New Vale are in food processing, part of the manufacturing sector. For Southland, manufacturing is the second largest sector, with a 12.3% share of GDP.
54. A similar pattern is repeated across Otago and Canterbury, shown in Figure 4 and Figure 5 below. In each region, mining itself is a small component of GDP, but the customers the sector supports make up a material portion of the whole.

Figure 3: GDP by sector in Southland Region, year to March 2023



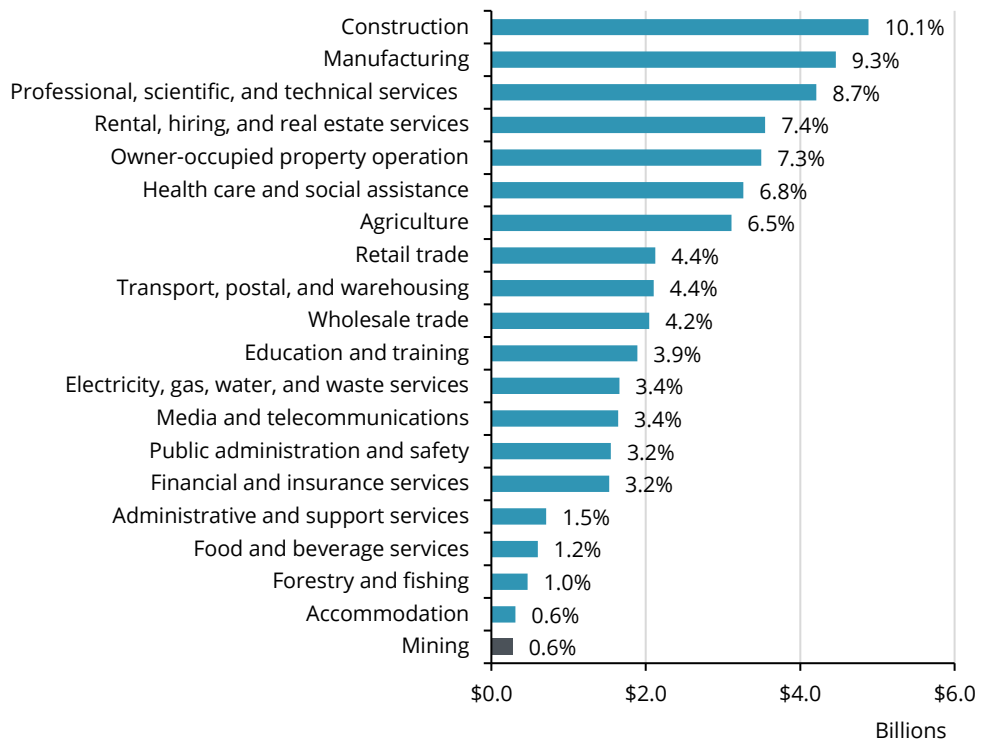
Source: StatsNZ; Sense Partners estimates

Figure 4: GDP by sector in Otago Region, year to March 2023



Source: StatsNZ; Sense Partners estimates

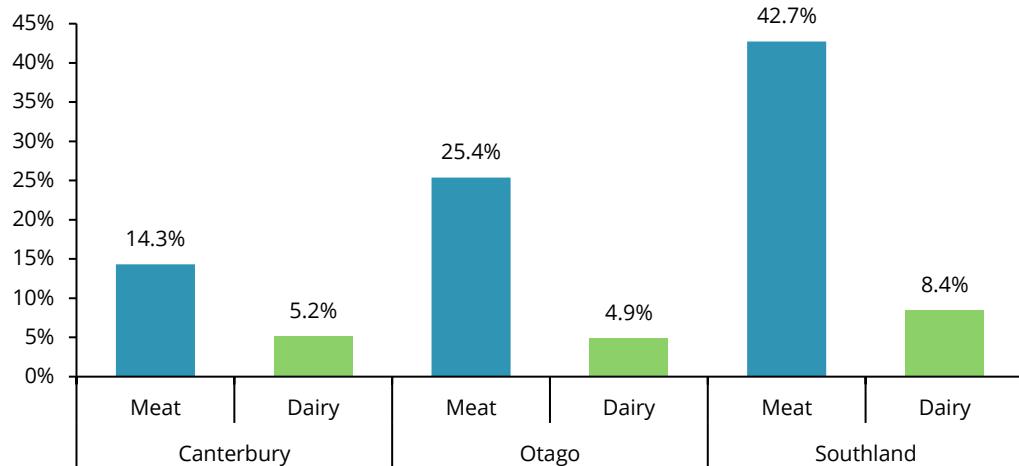
Figure 5: GDP by sector in Canterbury Region, year to March 2023



Source: StatsNZ; Sense Partners estimates

55. When looking at employment, we see that across the three regions, the customers supplied by New Vale are in sectors that make up substantial portions of manufacturing activity. I use this employment data to estimate GDP for each subsector of manufacturing.

Figure 6: Share of manufacturing jobs in meat and dairy processing, 2022



Source: StatsNZ¹⁸

Pastoral agriculture is a valuable component of regional economies

56. By supplying coal to processors, New Vale is enabling jobs and activity in these sectors. The processors are, in turn, enhancing the on-farm value of agricultural products. They achieve this by transforming farm produce into export-ready products.
57. Understanding the role of agriculture and food processors is therefore an important part of measuring the economic contribution made by New Vale.

Table 2: Agriculture and foods processing in the lower South Island

Region	Agriculture	Dairy farming	Sheep+beef farming	Dairy processing	Meat processing
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¹⁸ LEED data provides the best picture of employment by sector as it includes self-employed individuals. However, the data is released with a considerable lag – the latest available is for the 2022 tax year (as at February 2022).

Southland	\$1,450m (18% of GDP)	\$953m (66% of Ag.)	\$430m (30% of Ag.)	\$180m	\$253m
Otago	\$872m (5.2% GDP)	\$418m (48% of Ag.)	\$315m (36% of Ag.)	\$139m	\$181m
Canterbury	\$3,100m (6.5% GDP)	\$1,810m (54% of Ag.)	\$901m (29% of Ag.)	\$594m	\$373m

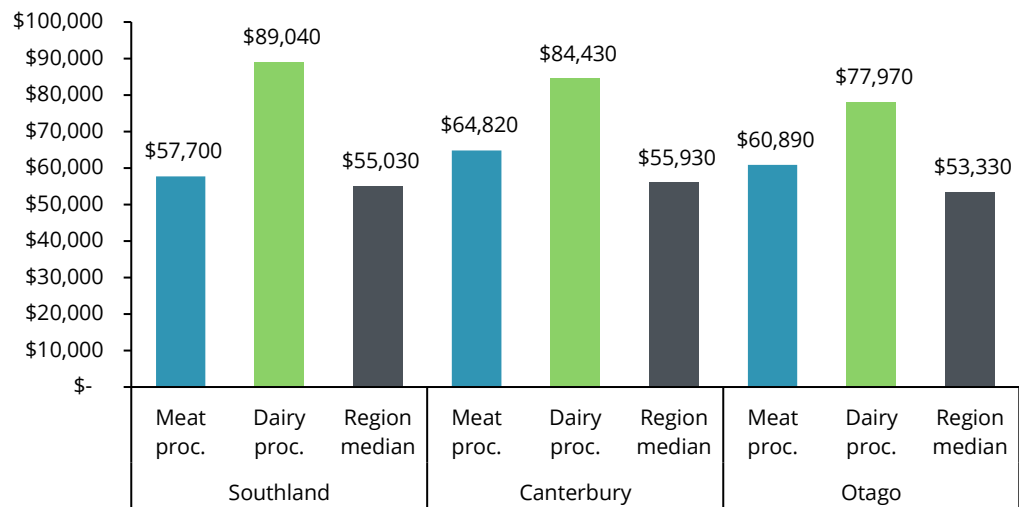
Source: StatsNZ; Sense Partners estimates

The agricultural processing sectors are well paying employers

58. The meat and dairy processing sectors, supported by New Vale, are significant sources of employment in the regions.
- (a) In Canterbury, 5,420 were employed in meat processing in 2022, while 2,700 people were employed in dairy processing.
 - (b) In Otago, 2,530 people were employed in meat processing and 640 people were employed in dairy processing.
 - (c) In Southland, the meat processing sector employed 3,520 people, while dairy processing employed 870.
59. Jobs in both sectors, but particularly dairy, enjoy high median wages relative to other jobs in the region (Figure 7).¹⁹

¹⁹ Several meat processing companies have their head offices in Dunedin and Christchurch. This explains why meat processing median wages in these regions are higher than in Southland.

Figure 7: Median wage by sector and region, 2022



Source: StatsNZ; Sense Partners estimates

New Vale supports their customers' own economic contributions

60. Information provided by New Vale indicates the company supplies approximately 85% of the coal market in Southland, where its largest customers are based. This includes dominant roles in providing energy to the dairy and meat processing sectors in the region.
61. In Otago, New Vale serves a number of customers in the meat processing industry. These customers make up approximately 38% of the meat processing market in the region. And in Canterbury, the mine's customers in dairy processing make up approximately 10% of the sector's employment.
62. Using these shares, I estimate that New Vale's major customers make up 4,980 jobs across the lower South Island. Up to \$499m in annual economic activity is generated by these customers. By providing energy, New Vale plays a role in enabling this economic activity.

Alternatives assessment

There are few viable domestic alternatives

63. Under the National Policy Statement on Highly Productive Land (NPS-HPL), mineral extraction must provide a “significant national public benefit that could not otherwise be achieved using resources within New Zealand”.²⁰ This section focuses on the second part of that test.
64. I demonstrate that due to transport costs, alternatives to New Vale lignite would impose a substantial cost increase on users. Supply constraints and high domestic transport costs mean customers are likely to resort to imports, rather than domestic alternatives.
65. Given this, I conclude that the benefit we estimate in Section 2 would be lower and likely would not be achieved using resources within New Zealand.

We focus our analysis on existing sources of coal

Customers are planning for decarbonisation

66. New Vale’s major customers in the region are planning their transition away from coal towards renewable energy sources, but this will take time. Woody biomass is the most likely carbon neutral alternative.²¹ However, much like coal, the viability of this energy source depends on proximity to supply.
67. The Climate Change Commission’s demonstration pathway is based on the elimination of coal for food processing before 2040.²² Their analysis acknowledges that, due to the cost, time must be given to allow food processors to make the transition.²³ A sudden stop, as noted by the Commission, would run the risk of putting manufacturers

²⁰ Ministry for the Environment (2022) National Policy Statement for Highly Productive Land 2022. Section 3.9 Subclause (2)(j)(iii).

²¹ Fonterra (2021) Submission: Climate Change Commission 2021 Draft Advice for Consultation.

²² Climate Change Commission (2021) *Ināia tonu nei: a low emissions future for Aotearoa*. Pp. 114. Para 7.5.66

²³ Climate Change Commission (2021) *Ināia tonu nei: a low emissions future for Aotearoa*. Pp. 363. Para 22.1.2.27

out of business. We expect such an impact on food processors would reverberate along the supply chain, impacting both agricultural producers and downstream consumers.

68. For dairy processors, there is a short window of time each year during the off-season in which a transition can be implemented. During the milking season, plants are typically running at full capacity, and disruption cannot be tolerated.²⁴ Combined with the complexity of transitioning a plant, this limits the speed at which the sector can decarbonise.
69. In addition, to the extent that woody biomass is the most likely carbon neutral alternative for process heat, it will take time for woody biomass supply chains to be established at sufficient scale to reliably meet the energy needs for New Vale customers.²⁵
70. The proposed extension could sustain current output for an additional four years to 2038. This broadly coincides with proposed timelines for a phaseout of coal by 2040. Given this, the extension could play a role in sustaining affordable access to energy while decarbonisation initiatives are implemented.

New Zealand is a net exporter of coal

The majority of domestic coal is exported for metallurgical uses

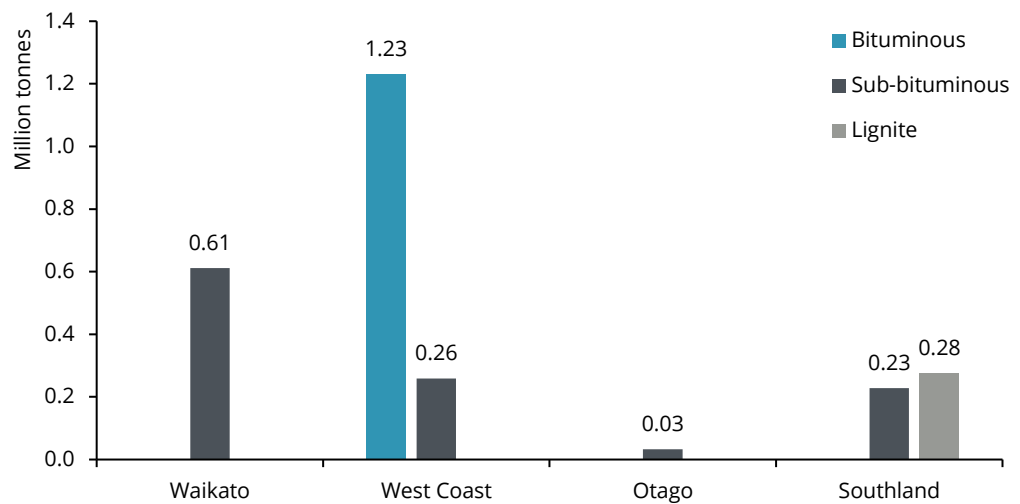
71. In 2022, there were 14 operating coal mines in New Zealand.²⁶ Collectively, they produced over 2.6m tonnes of coal. Production was a mix of bituminous, sub-bituminous, and lignite ranked coal.

²⁴ Fonterra (2021) Submission: Climate Change Commission 2021 Draft Advice for Consultation.

²⁵ Climate Change Commission (2021) *Ināia tonu nei: a low emissions future for Aotearoa*. Pp. 363. Para 22.1.2.27

²⁶ New Zealand Petroleum & Minerals (2023) Operating coal mine production figures.

Figure 8: production by region and coal rank, 2022



Source: MBIE

72. Bituminous coal is the highest grade of coal produced in New Zealand. It is highly valued in export markets for low ash and sulphur content, as well as high swelling, fluidity, and reactivity.²⁷ As a result, bituminous coal is almost exclusively exported and is not available as a substitute for thermal energy.
73. Given this, I exclude sources of bituminous coal from my analysis of alternative sources of coal.
74. Sub-bituminous coal has a lower energy content than bituminous coal. It is typically used for thermal energy, meaning it is a potential alternative to lignite. I include sources of sub-bituminous coal on the West Coast and in Southland in my analysis of alternatives.

Southland has large deposits of coal and lignite

75. In New Zealand, deposits of lignite are concentrated in Southland and Otago. Over 9 billion tonnes of lignite are contained in 10 major

²⁷ Ministry of Business, Innovation & Employment (2023) Coal Statistics.

deposits across the two regions.²⁸ These deposits constitute between 80% – 85% of New Zealand’s total coal resources.²⁹

76. Production statistics for 2022, shown in Figure 8 above, indicate that the only mined lignite deposits are in Southland. The only producing mine in Otago, at Castle Hill/Kaitangata,³⁰ extracts sub-bituminous coal. Of the two operating lignite mines in Southland, New Vale and Waituna, only New Vale produces lignite for thermal uses.³¹

There are few economically feasible alternatives

Transport costs limit the alternatives

77. A core factor in determining viable alternative supply is the cost of transporting the coal. Industrial users consume high volumes of coal and need secure and reliable supply to ensure smooth operations. Most users will favour nearby sources of coal, and proximity to the fuel source is a major determinant of where industrial users choose to locate.³²
78. The total cost of transport is primarily a function of quantity and distance.³³ Coal that is close by ensures lower transportation costs. Shorter supply lines also minimise the risk of disruption to supply. An alternative supply further away may involve higher warehousing costs as a larger on-site reserve would need to be kept to insure against disruption.

²⁸ New Zealand Petroleum & Minerals (2017) Regional Coal Resources: South Island lignite resources.

²⁹ Royal Commission on the Pike River Coal Mine Tragedy (2012) Volume 2, Chapter 19: Coal mining in New Zealand.

³⁰ NZPAM data labels the mine itself as Castle Hill, and the wider coalfield as Kaitangata. Castle Hill is the only currently operating mine on the coalfield.

³¹ Waituna produces lignite, however its value is in the level of humates. Humate is an organic material dense in carbon, humus, humic, and fulvic acids. This makes the product a valuable fertiliser, and not suitable for use as a thermal coal. Advice given by New Vale. Email communication dated 24/10/2023.

³² COVEC (2014) Coal Prices in New Zealand Markets: 2013 Update. Page 12.

³³ Button, K. (2022) Transport Economics, 4th ed.

79. Lignite is particularly sensitive to transport costs, as it has a lower energy density compared to sub-bituminous coal. Lignite from New Vale typically contains 15 GJ of energy per tonne. Sub-bituminous coal is more energy-dense although this varies. Sub-bituminous coal from Rotowaro, in the Waikato, averages 21.08 GJ/t. Australian coal averages 27.6 GJ/t. Indonesian coal 24 GJ/t.³⁴
80. Transport costs are incurred on a per tonne basis. This means that over longer distances, it will become more cost effective to switch to higher energy sub-bituminous coal over lignite. The higher energy content of the former means that a lower tonnage can be shipped for the same energy content, lowering total transport costs.
81. Early market research by New Vale indicates that 70% of their market lies within a 28km radius of the mine.³⁵ Data from MBIE shows that no lignite is exported from New Zealand, and only trivial amounts are imported (61 tonnes in 2022, 0.008% of imports).³⁶ This is due to the higher transport costs making the product uncompetitive outside of a local catchment.

Lignite has a cost advantage over shorter distances

82. Data on transport costs is commercially sensitive, making it hard to find. Previous studies have used a rule-of-thumb of \$0.11/tonne/km.³⁷ This is based on case studies of coal transport primarily by rail, with the coal mine serviced directly by rail and additional trans-shipment costs of trucking from the rail head to the customer.³⁸

³⁴ COVEC (2014) Coal Prices in New Zealand Markets: 2013 Update. Page 8.

³⁵ New Vale marketing research.

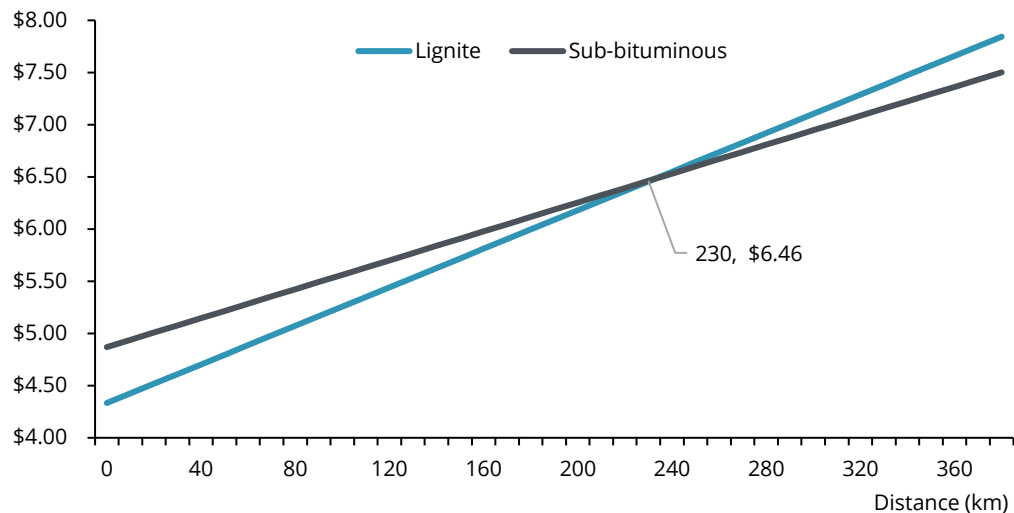
³⁶ Ministry of Business, Innovation & Employment (2023) "2 – Annual Coal Supply, Transformation, & Consumption" in Coal data tables.

³⁷ COVEC (2009) Coal Prices in New Zealand Markets. Prepared for the Ministry of Economic Development.

³⁸ This cost includes fixed costs which do not vary over distances. This means the cost would likely fall over longer distances. Due to transport data being commercially sensitive, it is difficult to come by in the public domain. As a result, we don't have a breakdown of the fixed and variable costs.

83. Based on relative prices of lignite and sub-bituminous coal, I use this transport cost to estimate the point at which a consumer is better off purchasing sub-bituminous coal.³⁹ I estimate the crossover point is approximately 230km. At this point, the price per GJ of energy, inclusive of transport costs, is equal between lignite and sub-bituminous coal, at \$6.46/GJ.
84. Within this distance, the lower price of lignite relative to sub-bituminous is enough to compensate for the higher per-GJ transport costs. Beyond this distance, the higher energy content of sub-bituminous coal means the lower per-GJ transport cost outweighs the higher base price.⁴⁰

Figure 9: Base + transport costs over distance, 2023 estimate



Source: Sense Partners

Sourcing from the West Coast would double energy costs

85. Using our estimated transport cost curve, we can explore the feasibility of alternative sources of fuel via land routes. I start by looking at mines on the West Coast producing sub-bituminous coal in 2022. I exclude

³⁹ Using the StatsNZ Producers Price Index for road transport, we inflate this to a 2023 value of \$0.14/t/km.

⁴⁰ Another complexity is the boilers being used. Boilers are generally designed to burn a particular rank of coal. That is not to say that they cannot burn a range of coal, just that it may affect the boiler life and require a skilled boilerman to operate the boiler efficiently. Blending is also a consideration. Some customers require a blend of New Vale/West Coast coals due to the design of their boiler.

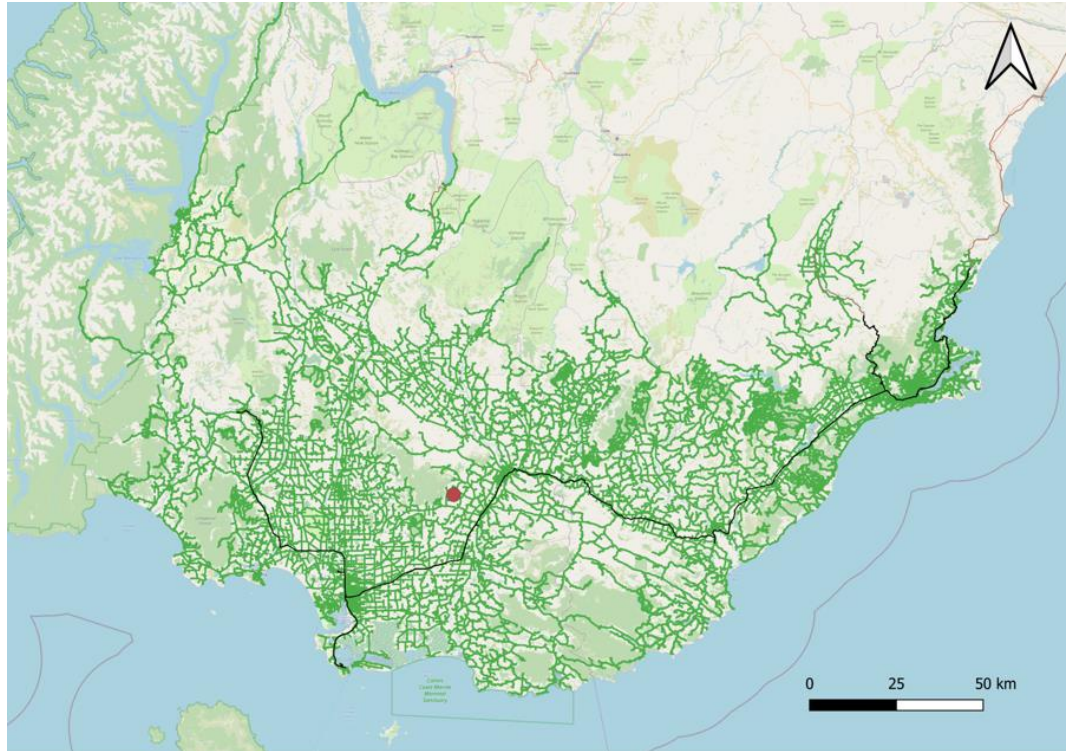
bituminous sources, as this is typically exported for metallurgical uses.⁴¹

86. The distance between West Coast mines and Southland customers ranges between 688km and 812km via the road network. The distance between those customers and New Vale, in comparison, ranges between 24km and 90km. Given this, switching to a West Coast supplier would entail a large increase in transport costs.
87. I estimate this cost increase would range between 127.6% and 172.3% per GJ. The six largest customers of New Vale consume 91.3% of the mine's output. For these customers, the average cost increase per GJ, weighted by their consumption, would be 148.4%. That's a more than doubling of energy costs.

Consented alternatives within Southland are costly

⁴¹ Some coal is classified as lower grades of bituminous coal and is used as thermal coal. Approximately 7.5% of bituminous coal was used as thermal coal in 2022. However, the supply is irregular or incidental. Bituminous coal mined with the intent of being exported may occasionally fail to meet export specifications. On these occasions it will be shifted toward thermal uses, but this is not consistent enough to act as an alternative supply source for industry.

Figure 10: The New Vale catchment – 230km by road (green) and rail (black)



Source: LINZ, Open Street Map; Sense Partners estimates

88. My transport cost curve indicates that within 230km of transport distance, lignite has the cost advantage. We can use this to map out an approximate catchment for the New Vale mine, shown in Figure 10 above. Within this catchment lignite is generally cheaper.
89. Sub-bituminous coal is more expensive than lignite.⁴² Within Southland, it is only in areas in close proximity to Takatimu that the lower transport cost is sufficient to compensate for the higher price. None of New Vale's major customers, making up 91.3% of demand, are close enough to Takatimu to achieve this.
90. If the New Vale mine closes, then New Vale's customers in this catchment will need to pay a higher price for a sub-bituminous coal

⁴² I use an estimate of \$4.87 per GJ (\$97.38/tonne) for Southland sub-bituminous coal, compared to \$4.33 per GJ (\$65/tonne) for lignite.

alternative.⁴³ The only remaining domestic and consented alternative to New Vale currently operating is the Takatimu mine in Southland, which produces sub-bituminous coal.

91. The Castle Hill/Kaitangata mine in Otago produces coal which is not suited to New Vale customers. This is due to the sulphur content of the coal, which means it cannot be burned without exceeding air discharge permits held by coal users.⁴⁴
92. Switching to supply from Takatimu would result in a cost increase. For Southland customers, we estimate a weighted average 19.4% increase in per-GJ energy costs.⁴⁵ This adds to approximately \$2.6m in increased energy costs across New Vale's largest Southland customers.
93. Across New Vale's six largest customers, including those in Otago and Canterbury, the weighted average increase is 16.3%. This totals \$2.9m per year across these six customers.

Regulatory constraints may limit supply from Takatimu

94. I estimate Takatimu is currently the lowest cost existing alternative to New Vale lignite. However, I understand the mine is subject to regulatory constraints that may limit future supply.⁴⁶ These include the possibility of resource consents being required pursuant to the National

⁴³ The other alternative would be to find a new source of lignite in the vicinity. However, without substantial further analysis across a range of disciplines, it is not clear which sites would prove acceptable within New Zealand's resource management framework.

⁴⁴ Advice given by New Vale. Email communication dated 30/01/2024.

⁴⁵ This jump in prices to the next alternative raises the question of why New Vale does not raise prices to take advantage of a strong market position. The likely cause is the implied competition from non-operating and unconsented sources of lignite in Southland. As they are unconsented, and their viability under the resource management framework is unknown, we have excluded these from our analysis.

⁴⁶ Advice given by New Vale. Email communication dated 20/11/2023.

Environmental Standards for Freshwater and provisions in the National Policy Statement for Indigenous Biodiversity.⁴⁷

95. A potentially binding constraint is the National Policy Statement for Indigenous Biodiversity.⁴⁸ Thermal coal mines will be prohibited from expanding into significant natural areas (SNAs) after 31 December 2030.⁴⁹ At present, Southland District has not published details of any SNAs in the district,⁵⁰ and so I cannot be certain of the effects on Takatimu.
96. I have been advised that as a result of these and other regulatory and infrastructure constraints, no expansion of mining operations at or near Takatimu is being pursued at this time.⁵¹ As a result, I have to consider other alternative sources of thermal coal.

The next cheapest alternative is likely imported coal

97. Given the potentially constrained supply from Takatimu, customers may need to look further afield for an alternative to New Vale. The nearest alternative within New Zealand, the West Coast, may increase energy costs by more than double. The next likely alternative is imports.
98. As with domestic transport costs, international transport costs can be difficult to obtain. We compare export data, which gives free-on-board (fob) value, to import data, which gives cost, insurance, and freight value.⁵² The former excludes transport costs, the latter includes them.

⁴⁷ Advice given by Taylor Planning. Email communication dated 30/01/2024.

⁴⁸ Advice given by Taylor Planning. Email communication dated 30/01/2023.

⁴⁹ Ministry for the Environment (2023) National Policy Statement for Indigenous Biodiversity. Clause 3.11(1)(a)(iv)

⁵⁰ As at 11:03am 30/01/2024, neither the Operative nor Draft District plans for Southland District identify any SNAs. The Southland District Council website states that full mapping work is yet to be undertaken:

<https://www.southlanddc.govt.nz/environment/significant-natural-areas/>

⁵¹ Advice given by New Vale. Email communication dated 30/01/2024.

⁵² A complication is that data on trade with our largest coal supplier, Indonesia, is not publicly available. A small number of NZ purchasers of Indonesian coal, possibly a

99. For imports from Indonesia, I estimate a transport cost of \$0.009/tonne/km (a maritime distance of 7,843km) to Port Chalmers. From Australia, I estimate coal transport is \$0.0175/tonne/km (a maritime distance of 2,435km).⁵³ These are similar to past estimates for shipping between Singapore and Auckland of \$0.005/tonne/km (a maritime distance of 9,255km).⁵⁴
100. The maritime shipping costs makes imports of coal from Indonesia a competitive alternative to West Coast supply. We include the land transport cost of moving coal from Port Chalmers, Dunedin. New Vale's Southland and Otago customers could save between 14% and 20% compared to West Coast sources. For Canterbury customers, the cost is almost the same.⁵⁵
101. This means that if New Vale ceased to operate, Southland customers would likely resort to imports. This would still impose potentially onerous cost increases, averaging 118% compared to New Vale lignite.

Higher energy costs may lower investment and reduce employment

102. A comprehensive estimate of the impact of higher energy costs would require general equilibrium modelling, a costly endeavour and beyond the scope of this assessment. However, we can get a sense of the potential implications by looking at StatsNZ's Input-Output tables.

single purchaser, mean it is commercially sensitive and withheld. To overcome this, we use data on Indonesian exports of coal, paired with import data for all other markets, to determine average tonne/km transport costs ex Indonesia.

⁵³ The cost per tonne/km is decreasing in distance. This is because a large portion is the fixed costs of loading/unloading at either end of the journey. The variable cost is much smaller.

⁵⁴ Ministry of Transport (2011) Understanding Transport Costs and Charges: 2011 Freight Charge Comparison Report.

⁵⁵ Depending on the mine, we estimate West Coast sources may be between 2% more expensive and 1% cheaper.

103. In 2020, energy costs made up between 1.6% and 2.0% of total input costs for the meat and dairy processing sectors, respectively.⁵⁶ With a weighted average increase in energy costs of 118%, when importing coal, these shares would rise to 3.5% and 4.5% respectively.
104. This seems low, but an important consideration is the ability for each industry to pass these costs on to consumers. Meat and dairy producers compete in a global market, and have little ability to influence prices. If they cannot pass on price increases, then the higher energy costs will need to be absorbed entirely by the operating surplus (i.e., profits).
105. The operating surplus is between 2.8% and 3.2% of total output for the meat and dairy processing sectors respectively. A 118% rise in energy costs would reduce the operating surplus by 36% for meat and 47% for dairy.⁵⁷
106. Over time, these sectors may adapt to this cost rise by reducing investment, lowering employment, and passing costs back to farmers. There will also be some adaptation in the wider economy that could offset the cost. For example, redundant workers may seek employment in other sectors, giving those sectors a boost.
107. Given the economic prominence of agriculture, particularly in Southland, the negative effect may not be fully offset by changes in other sectors.

⁵⁶ My estimates using Statistics New Zealand Input-Output tables 2020.

⁵⁷ I estimate this by increasing the energy cost by 118%, and subtracting the increase from operating surplus for each sector.

Summary

The extension meets the key regulatory test

New Vale makes a valuable economic and employment contribution

- 108. The mine at New Vale supplied nearly 276,700 tonnes of coal, resulting in a \$7.4m gross value added (GVA). This is equivalent to 0.8% of Gore district's GDP.
- 109. The mine supports 64 jobs in the local economy. This includes 39 people employed on site, and a further 25 jobs supported through a \$6m local spend on inputs – 1.12% of jobs in Gore district.
- 110. The mine represents a more economically productive use of land than the current sheep and beef operation carried out at the expansion site. Mine revenue of \$18m per annum outstrips the \$103,900 in revenue generated by sheep and beef operations.
- 111. The mine supports \$499m in annual economic activity in the region and approximately 4,980 jobs in the agricultural processing sector.

Domestic alternatives are costly and likely constrained by regulation

- 112. Coal is highly sensitive to transportation costs. This limits the feasibility of alternative supplies, both domestic and imports.
- 113. Local alternatives to New Vale's lignite in Southland could come at a cost increase of 19%. This is the cheapest alternative. However, regulatory constraints mean that these local sources may not be able to meet demand.
- 114. The next available source is likely the West Coast, though West Coast coal is typically exported and transportation costs would increase New Vale customers' energy cost by an average 148.4%.

Imports are the most likely alternative

- 115. The significant national public benefit that New Vale provides likely cannot be provided using resources within New Zealand.
- 116. Costly domestic alternatives mean suppliers would likely switch to imports. The cheapest source of coal is likely Indonesia, though this would still impose a cost rise of 118%, on average.
- 117. Switching to imports would see the mine's direct economic benefits, measured through GVA and employment benefits in section 2 of our report, largely shifted overseas.

The extension provides a significant national public benefit

- 118. My analysis has focused on regulatory tests set out in the NPS-HPL. Mining is a more productive use of the land and brings jobs and economic activity. Given this, I consider the extension constitutes a significant public benefit.
- 119. The mine plays a role in providing key energy inputs into the food processing sectors across three regions. On this basis, I propose the benefit qualifies as a national benefit.
- 120. Given the cost of and constraints facing local operating coal alternatives, I consider it is likely these benefits would not otherwise be achieved using resources within New Zealand.

Dated 8 July 2024

Andrew Schoultz