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Overview of the economic impacts of Barrytown mining extraction proposal

Purpose of note

1. This note summarises the economic impacts of the proposed mining extraction project at Barrytown. My economic assessment draws on:

    a. Mineral production and price assumptions from the Applicant.

    b. Regional economic data.

    c. Current data from Statistics New Zealand on the linkages between industries in the New Zealand economy.

2. The approach taken to estimating these impacts can be found in Appendix A of this document.

3. I understand that the resource consent application is subject to the National Environmental Standards for Freshwater Management 2020 (NESFW), and Regulation 45D requires the Consent Authority to have satisfied itself that the extraction of the minerals will provide significant national or regional benefits in order for the applicant to benefit from a discretionary activity status in relation to activities adjacent to natural wetlands.

4. Based on my economic analysis, I consider the proposed mining operation will deliver significant regional economic benefits to the Grey District and wider West Coast region, and the project meets the regional benefit criteria in Regulation 45D of the NESFW.

Jobs, wages and spending in the local economy

5. By way of context, the West Coast is a region where jobs have been hard to come by in recent years. There are around 1,000 fewer jobs in the West Coast in 2022 than a decade ago. In the past five years, job growth on the West Coast has been 0.7% per year on average, one-third of the national rate of 2.1% per year.

6. Mining is an important industry for the Grey District and wider West Coast region. At the national level, mining accounted for 0.24% of all jobs in 2022. This share is 1.06% for the Grey District and 4.46% for the West Coast region.

7. The proposed mining operation will directly support 57 mining jobs and indirectly support 80 jobs elsewhere in the economy, the majority of which will be filled by local or regional residents.

8. The jobs of those employed by the mining and trucking contractors to be engaged would be additional to these estimates.

9. The 57 direct jobs represent an 81% increase in mining employment in the Grey District and a 9.2% increase in mining employment for the West Coast region.

10. These direct jobs will generate wages averaging $6.6 million per year, much of which will be spent in local businesses, supporting local economic activity and well-being. The

median wage for the mining industry in the West Coast region is more than 50% higher than the median salary for all industries, so these are high-paying jobs.

11. The mining operation will also require non-wage spending (e.g. equipment hire, repairs and maintenance) averaging $27.4 million per year, again largely destined for local suppliers.

12. In my view, the proposed mining operation would deliver a significant increase in local and regional employment and incomes, both directly and indirectly, which will enable economic well-being for the community.

Exports and GDP benefits

13. Based on financial modelling from the Applicant, the operation planned under this consent application will generate around $63.0 million of export earnings per year once fully operational, or $274.4 million over the 5 years of establishment and operations of the mine under the current resource consent application. This export revenue is based on the production and export of Gold (7% of total revenue), Garnet (36%), Ilmenite (48%) and Zircon (9%) and an assumed NZD:USD exchange rate of 0.665.

14. To provide a sense of context, the entire Grey District's goods exports were $137.0 million in 2022, and the West Coast region's goods exports were $761.3 million.

15. So the mine would significantly boost the Grey District's goods exports (by 46% per year) and the West Coast goods exports (by 8.3% per year).

16. This is particularly important at a time when the region's other key source of export income – international tourism – is struggling to recover from COVID-19. International tourism spending was $278.0 million in 2019 but just $9.6 million in 2022.

17. The mining operation would directly generate around $33.7 million of additional GDP per year once fully operational. Across 5 years of establishment and operations of the mine under the current resource consent application, this equates to around $146.1 million of additional GDP.

18. Current Grey District nominal GDP is $963 million. The $33.7 million of additional annual GDP the mine would generate when fully operational would therefore boost District GDP by around 3.6% per year. The equivalent figure for the West Coast region is a 1.4% increase in GDP.

19. This is a significant expansion of the District and West Coast economies at a time when its economic future – especially related to international tourism – is highly uncertain.

Impacts on government revenue

20. TiGa will be required to pay royalties to the New Zealand government at a rate of 2.5% of net sales of the minerals obtained under the permit. Based on the Applicant's revenue projections, these royalties will be around $1.5 million per year when the mining activities covered by this consent are fully operational, or $6.8 million in total across the establishment year and four years of full production.

21. It will also pay business tax averaging $5.5 million per year when fully operational, or $17.8 million across the mine's lifetime under this resource consent.

22. Income taxes paid by the 57 additional FTE workers at the mine will equate to around $1.67 million per annum. This sums to around $8.3 million of additional income tax flowing into the government's coffers over the lifetime of the mine's preparation and operation.

23. This combined $32.9 million of royalties and tax income across the mine's lifetime can be used by the government to deliver important, wellbeing-enhancing public services such as health, education, etc, or to fund infrastructure development across New Zealand, including in the Grey District and West Coast region.

Economic costs

24. Whenever resources such as land change from one type of production (e.g. livestock grazing) to another (e.g. mining), there are opportunity costs to consider. As I understand it, much of the site's 115 hectares of land is current being used for dairy support. Based on indicative per hectare gross revenue estimates from Dairy NZ, and assuming 100 hectares of the site is suitable for farming, this land might generate at most $125,000 per year.

25. Compared to the gross revenue estimates from mining of $63.0 million per year once fully operational, this foregone grazing revenue is very small. As such, I believe the proposed mine represents an efficient use of land resources, relative to its alternative uses.

26. The potential impacts on tourism also need to be considered. In my opinion, the proposed mining activity on a very small parcel of the West Coast region's massive land area is unlikely to have any material impact on the decisions of domestic and international tourists to visit.

27. Even if international tourism *did* decline, the mine will generate more export revenue than any potential losses from lower international tourism. The mine's average export revenue of $63.0 million per year over its lifetime is equivalent to the spending of 173,732 international visitors to the West Coast (25.9% of pre-COVID-19 levels).

28. In my view, any other economic costs associated with the proposal are unlikely to be significant or widely distributed and are limited to potential visual amenity and noise effects which have been addressed by other experts.

Potential future benefits

29. The aspiration of the Applicant is to extend mining operations beyond the site and incorporate a Minerals Separation Plant (MSP). The MSP is not covered by this resource consent application but is a relevant consideration in terms of the future potential benefits to the community of establishing sand mining operations and a growth industry in its district.

30. I estimate the addition of an MSP would drive increased average export earnings of $157.3 million per year. The mine's direct GDP contribution would rise to an average of $84.0 million per year. While this additional future benefit is also regionally significant, I

have not relied on this future benefit when reaching my conclusion that the project itself has significant regional economic benefits.

Conclusion

31. Based on my economic analysis, I confirm my opinion that the proposed mineral extraction will provide significant net economic benefits for the Grey District and West Coast region, and therefore meets the criteria for significant regional benefit under Regulation 45D of the NESFW.

John Ballingall

Sense Partners

23 February 2023

Appendix A: economic assessment methodology

Economics and the RMA

1 The Resource Management Act 1991 (the RMA) directs decision-makers to explore important issues such as:

(a) Section 5's reference to enabling economic well-being for the community;

(b) Section 7(b)'s reference to the efficient use and development of resources; and

(c) Specifically when considering a plan review, section 32's consideration of alternatives, assessment of costs and benefits.

2 Economics tells us that scarce resources (in this case land in the Grey District) are allocated efficiently – and thus in a way that maximises well-being – when the marginal benefits of an additional unit of activity equal the marginal costs.

3 These marginal costs and benefits should take into account positive and negative externalities that are not accounted for in the private market. So we are looking at equalising marginal social benefit (MSB) and marginal social cost (MSC).

4 The most well-known example of considering MSB and MSC relates to pollution. Since there are negative externalities associated with pollution (health issues, climate change, etc.), the societally optimal level of pollution-inducing activity will be lower than the market alone would suggest.

5 But – importantly – the societally optimal level of pollution-inducing economic activity is not zero. If economic activity that generates pollution was banned entirely so that there was no pollution at all, this would come with significant social costs (reduced income, jobs, exports, etc.).

6 The same logic applies to potential negative externalities associated with mining development in rural areas, such as reducing the attractiveness of the landscape for tourists. The presence of negative externalities is not a sole justification for stopping the activity that generates them.

7 What matters in an economic sense is whether the MSB of an additional unit of activity is greater than the MSC. For this consent application, the question then becomes: if rural land is converted to mining activity for the period of the application, what are the MSBs and MSCs?

8 The remainder of my evidence focuses on identifying and where possible quantifying the costs and benefits of the proposed mining development.

Assessment of effects

Economic benefits

Direct jobs

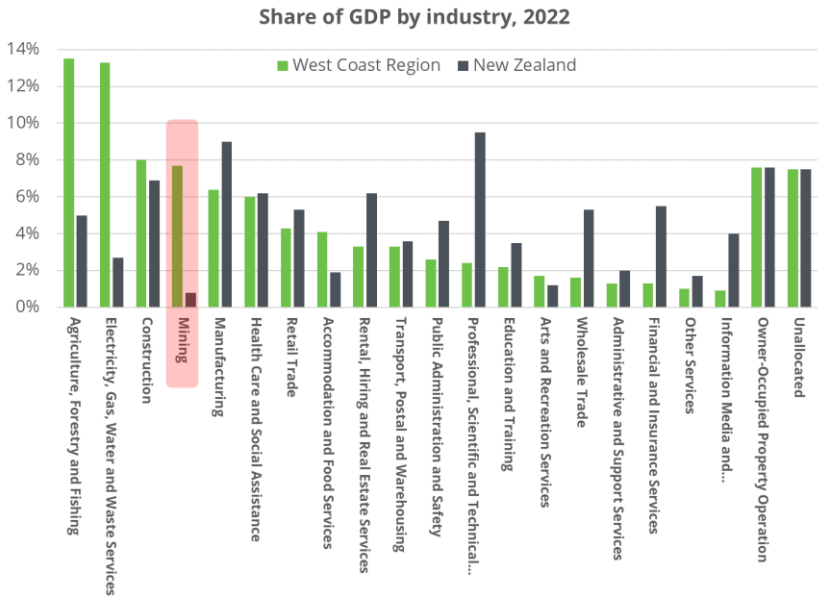
9 Mining is an important industry for the Grey District and wider West Coast region. At the national level, mining accounts for 0.24% of all jobs.[1] This share is 1.06% for the Grey District and 4.46% for the West Coast region.

10 That is, mining is almost four and a half times as important for jobs in the Grey District as the national average, and 18 times as important on a regional basis.

11 A similar pattern emerges when looking at mining's share of the West Coast and national economies (see

12 Figure *1*). Mining accounted for 7.7% of the West Coast region's GDP in 2020, compared to the national average of 0.8%.[2]

Figure 1 Mining is vital for the West Coast's economic health



Source: Infometrics. 2022.'West Coast Region economic profile'.
https://ecoprofile.infometrics.co.nz/West%20Coast%20Region/Gdp/Structure

13 The applicant expects to directly employ an estimated 57 Full Time Equivalent people across the mining site and in a separate office in Greymouth. This "includes the full range of skills and qualifications from qualified engineers, geologists and metallurgists; financial and administrative staff; skilled tradesmen like electricians, mechanics and

[1] All employment data is from: StatsNZ. 2022. Business Demography dataset: 'Geographic units by region and industry 2000-22'. Accessed 15 February 2023.
[2] Infometrics: https://ecoprofile.infometrics.co.nz/West%20Coast%20Region/Gdp/Structure .

welders; transport and machinery operators; as well as labourers requiring specialist training in mining and mineral processing".[3]

14 In addition to these directly employed workers, the applicant will also pay a mining contractor for its services. The mining contractor will use its own employees and contractors to deliver these services. Similarly, the trucking contractor for the project will need to employ enough drivers to facilitate the expected 50 movements per day.

15 Therefore the 57 FTE direct jobs referred to above is an underestimate of the total number of direct FTE jobs that will be generated by the proposed mining operation.

16 Using the conservative estimate of 57 direct FTEs, this would see direct mining employment in the Grey District increase by 81% from its February 2022 level of 70 employees.

17 Given total employment in the Grey District was 6,600 at February 2022, the mining operation would directly increase the number of jobs available in the District by 0.9%.

18 The new mining operation would increase the number of direct mining jobs in the West Coast region (620 in February 2022) by around 9.2%.

Jobs supported elsewhere in the economy

19 Fleming and Measham[4] explore in an Australian context the extent to which an expansion in direct mining employment leads to downstream multiplier effects on employment in local economies which already have mining operations present.[5]

20 While it would be preferable to draw on a New Zealand-specific version of this report, I am not aware of any that exist. In my view, drawing inferences from the Australian study is a reasonable approach to exploring the flow-on effects of the proposed Barrytown mining operation, as the upstream and downstream industry linkages of Australian and New Zealand mining operations are broadly similar.[6]

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[3] p.24 of 2021 Application. 'Grey District Council – Resource Consent Application: Mineral Sand Mining & Associated Activities – Non-Rural Activity', 12 December 2020.
[4] Fleming, A. and D. Measham. 2014. 'Local job multipliers of mining'. *Resources Policy 41 (214) 9-15.*
[5] Their econometric approach to estimating mining multipliers is more robust than the traditional 'input-output' approach, since it is based on time series data recording actual employment patterns after mining project commence. It also considers any potential negative flow-on employment effects, such as job displacement, which an input-output multiplier cannot capture.
[6] This can be seen by looking at the latest input-output tables for New Zealand and Australia, which summarise the upstream and downstream industry linkages in an economy. While the Australian mining sector spends proportionately more than the New Zealand mining sector on accommodation services due to the need to house workers in more remote locations, the remainder of supplying and using industries are broadly similar.

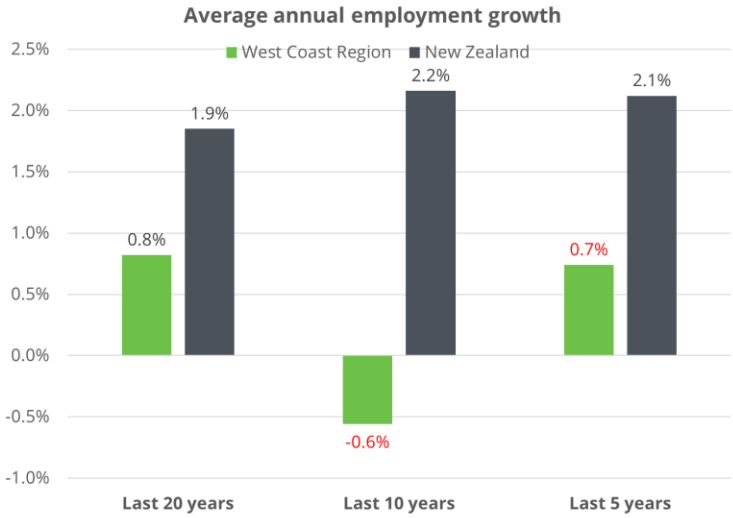
21 They find statistically significant impacts of mining employment on jobs in four broad sectors: 'Accommodation and food services', 'Rental hiring and real estate services', 'Wholesale trade' and 'Transport, postal and warehousing'.

22 They estimate that for the average region with existing mines (as is the case here), every additional mining job generates around 1.4 further jobs in the local economy. This implies the 57 direct jobs at Barrytown could support a further 80 jobs in the wider local economy during the mine's operation.

23 Therefore the mine will support ongoing employment growth in a region where jobs have been hard to come by, as shown by Figure 2. There are around 1,000 fewer jobs in the West Coast in 2022 than a decade ago. In the past five years, job growth on the West Coast has been 0.7% per year on average, one-third of the national rate of 2.1% per year.

24 In my view, the proposed mining operation would deliver a meaningful increase in local and regional employment, both directly and indirectly, which will enable economic well-being for the community.

Figure 2 Job growth on the West Coast has been below the national average for decades



Source: Calculated from Infometrics. 2022. 'West Coast Region economic profile'

Incomes and support for the local economy

25 Mining jobs are well paid, relative to the average wage. In the West Coast region, the median mining salary in 2021 was $77,180, more than 50% higher than the median salary for all industries of $50,420.[7]

[7] StatsNZ. 2021. LEED dataset: 'Table 1.5: Main earnings source, by industry (ANZIC06)'. Accessed 15 February 2023.

26 The applicant has provided estimated salaries for the workers it will require. Based on this information, the 57 new direct jobs will generate $6.6 million per year of additional income in the region.

27 While some of this additional income will be saved and some may go to overseas contractors[8], much of it, plus the operation's non-employment operating expenditure of an estimated $27.4 million per year, will be circulated within the local economy, supporting local businesses.

28 Aside from the initial capital expenditure on imported plant, it is only the returns to capital or profits that will end up leaving the regional economy to overseas owners. This will compensate them for their financial risks.

29 These figures provide an indication of the additional spending injection supported by the proposed mining operation – around $34.0 million per year. In my view, many businesses (such as retailers, accommodation providers, cafes and restaurants and rental businesses) will benefit substantially from the wages and other operating expenditure circulating through the local and regional economies.

Exports

30 Based on financial modelling from the applicant, the operation planned under this consent application will generate around $63.0 million of export earnings once fully operational or $274.4 million over the 5 years of establishment and operations of the mine under the current resource consent application. This is based on the production and export of Gold (7% of total revenue), Garnet (36%), Ilmenite (48%) and Zircon (9%) and an assumed NZD:USD exchange rate of 0.665.[9]

31 To provide a sense of context, the entire Grey District's goods exports were $137.0 million in 2022, and the West Coast region's goods exports were $761.3 million.[10]

32 That is, the mine would significantly boost West Coast regional goods export revenue by around 8.3% per year. This is particularly important at a time when the region's other key source of export income – international tourism is struggling to recover from COVID-19. International tourism spending was $278.0 million in 2019 but just $9.6 million in 2022.[11]

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[8] Barrytown is "confident that the majority of personnel can be found within commuting distance of the mine", p.24 of 2021 Application.
[9] We use the applicant's price assumptions for these calculations: Gold US$1,840 p/oz; Garnet US$188 p/lb, Ilmenite US$200p/lb, Zircon US$1,800 p/lb.
[10] Infometrics. 2022.'Grey District economic profile'. https://ecoprofile.infometrics.co.nz/Grey%2bDistrict and equivalent for the West Coast region.
[11] Infometrics, as above.

GDP

33 The mining operation would directly generate around $33.7 million of additional GDP per year once fully operational.[12] Across 5 years of establishment and operations of the mine under the current resource consent, this equates to around $146.1 million of additional GDP for the region.

34 Current Grey District nominal GDP is $963 million.[13] The additional annual GDP the mine when fully operational would generate would therefore boost District GDP by around 3.6% per year. This is a significant expansion of the local economy at a time when its economic future – especially related to the recovery of international tourism – is highly uncertain.

Royalties, taxes

35 TiGa will be required to pay royalties to the New Zealand government at a rate of 2.5% of net sales of the mineral obtained under the permit. Based on the applicant's revenue projections, these royalties will be around $1.5 million per year when the mining activities covered by this consent are fully operational, or $6.8 million in total across the establishment year and four years of full production.

36 It will also pay business tax averaging $5.5 million per year when fully operational, or $17.8 million across the mine's lifetime under this resource consent.

37 Income taxes paid by the 57 additional FTE workers at the mine will equate to around $1.67 million per annum.[14] This sums to around $8.3 million of additional income tax flowing into the government's coffers over the lifetime of the mine's preparation and operation.

38 This combined $33.0 million of royalties and tax income across the mine's lifetime can be used by the government to deliver important, well-being-enhancing public services such as health education, etc, or to fund infrastructure development.

Potential future economic benefits

39 The aspiration of the Applicant is to extend mining operations beyond the site and incorporate a Minerals Separation Plant (MSP). The MSP is not covered by this resource

[12] Calculated by multiplying gross revenue by the share of value added in gross output for the 'Metal ore and non-metallic minerals mining and quarrying' industry in StatsNZ's 2020 input output tables. Assumes 1 year of establishment and 4 years fully operational mining activity.
[13] Infometrics, as above.
[14] Using salary estimates from the Applicant and the IRD income tax calculator https://www.ird.govt.nz/income-tax/income-tax-for-individuals/how-income-is-taxed/work-out-tax-on-your-yearly-income

consent but is a relevant consideration in terms of the future potential benefits to the community of establishing sand mining operations and a growth industry in its district.

40 I estimate the addition of an MSP would drive increased average export earnings of $157.3 million per year (see Table 1). The mine's direct GDP contribution would rise to an average of $84.0 million per year.

Table 1 Additional export revenue rises from $63.0 million per year to $157.3 million

Revenue source	Current Application (once fully operational)	Future potential with MSP
Gold	$4.5 million	$12.0 million
Garnet	$22.4 million	$55.5 million
Ilmenite	$30.4 million	$75.3 million
Zircon	$5.6 million	$14.5 million
Total export revenue per year	**$63.0 million**	**$157.3 million**

Source: Barrytown JV financials, author's estimates

41 The operation's direct employment would rise from 57 FTEs to 79 FTEs (plus mining contractor jobs). This would lead to 115 FTE jobs being created elsewhere in the local economy using the same job multiplier of 1.4 as used earlier in my evidence.

42 The mining operation would inject $8.7 million of additional wages into the local economy should the MSP start operating.

Economic costs

43 Whenever resources such as land change from one type of production (e.g. livestock grazing) to another (e.g. mining), there are opportunity costs to consider. These need to be netted off the gross benefits listed above to get a truer picture of net additionality of the proposed mine.

44 As I understand it, much of the site's 115 hectares of land is current being used for dairy support. Based on indicative per hectare gross revenue estimates from Dairy NZ[15], and assuming 100 hectares of the site is suitable for farming[16], this land might generate at most $125,000 per year.[17] Compared to the gross revenue estimates from mining of

[15] Personal communication with G. Doole, DairyNZ, 19 July 2021.
[16] So excluding the house, lagoon areas, etc.
[17] The $1,250 per hectare gross revenue estimate for dairy support land on the West Coast is based on an average milk pay-out.

$63.0 million per year once fully operational, this foregone grazing revenue is very small.

45 As such, I believe the proposed mine represents an efficient use of land resources, relative to its alternative uses.

46 Some may be concerned about the impact of the mine on tourism. While I accept this is a theoretical possibility, it needs to be seen in context. The proposed mining footprint is tiny relative to the West Coast's total land area (23,246km2).

47 I consider that mining works on such a miniscule area of a very large and very beautiful region would not have any material impact on the decisions of domestic and international tourists to visit.

48 However, if you do believe tourists *would* be deterred, it is helpful to think about how many international visitors would have to not come to offset the additional export revenue that the mine would generate.

49 In the year to March 2019, 669,944 international visitors collectively spent $243 million on the West Coast – an average of $363 per visitor.[18]

50 The mine will generate an average of $63.0 million of export revenue per year over its lifetime. This revenue is the equivalent of the spending of 173,732 international visitors to the West Coast (25.9% of pre-COVID-19 levels).

51 Therefore unless you think the proposed mining operation will result in international visitor numbers dropping by almost a quarter from pre-COVID-19 levels, the mine will generate more export revenue than any potential losses from lower international tourism.

Ends

[18] Visitor numbers for Buller District, Grey District and Westland District, from the International Visitor Survey. We use the year ended March 2019 as a measure of pre-COVID-19 tourism activity. Tourism spending data from Infometrics (as above).