PROPERTY ECONOMICS

BURNHAM QUARRY

ECONOMIC ASSESSMENT

PEER REVIEW

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1. INTRODUCTION

Property Economics has been engaged by Selwyn District Council (SDC) to undertake a peer review of the economic assessment for a new quarry in Burnham. The site is located approximately 5km from Rolleston and 20km from Christchurch and will provide aggregates to support the production of infrastructure and other construction activity within the Canterbury Region.

This review looks at the economic significance assessment of the proposed quarry which was submitted as part of the resource consent application of Winstone Aggregates Limited and completed by the New Zealand Institute of Economic Research (NZIER) dated 24 July 2023.

In particular, this review focuses on the appropriateness of the approach, methodology and interpretations of the NZIER assessment. Ultimately, Property Economics forms a view on whether the proposed quarry activity can be supported from an economic perspective under the RMA.

OBJECTIVE

The main objective of this report is to:

Review the NZIER economic assessment report - its assumptions, methodology, the validity of aggregate demand projections and estimated economic impacts, and determine whether the conclusions reached in the NZIER report are appropriate based on the economic research and can be supported from an RMA perspective.

2. ECONOMIC REVIEW

PROPOSED DEVELOPMENT

Winstone Aggregates seeks a consent to enable a 362ha dairy farm in Burnham to be mined for aggregates as a quarry. The site is located approximately 5km east of Rolleston and approximately 500m north from the Burnham Military Base. According to the report, the aggregate resource of the land is estimated to be around 26 to 36 banked cubic metres (this metrics seems extremely light as cited in the report) and annual extraction will average around 500,000 tonnes per year (depending on market demand). A quarry of this size is estimated to employ upwards of 15 people.

How to assess economic contribution

In Section 2 of the report, NZIER outlines the basic economic principles by which they consider an economic assessment should be undertaken based on the principles of the Resource Management Act (RMA). This includes a discussion on different measures of economic welfare and the inclusion of both market and non-market effects.

They identify that an economic impact analysis of a proposed application is often used in RMA context but that this does not cover the full economic consequences of the proposal. Instead, they suggest a cost-benefit analysis comparing the effects of the proposal against the counterfactual of it not occurring. This would include an analysis of the present value of the effects over time and allow non-market effects to be included within the analysis.

In Property Economics view, economic impact assessments are often useful inputs to a wider cost-benefit assessment as it is one of the few economic variables that can be easily quantified. This is not to undermine the importance of discussing qualitative costs and benefits, but Property Economics considers the absence of this impact assessment is a potential drawback in NZIER's report.

Existing environment of the proposed Burnham Quarry

The main purpose of this section is to provide an overview of the economic variables relevant to the quarry industry. It sets out that the cost of transporting aggregate 30km is roughly the same as the price of the raw materials. Consequently, the price of aggregates used in construction is highly sensitive to the distance they need to be transported to the project site.

The report then discusses aggregate as an important resource, that while not scarce has distinct limitations. They state that it is efficient to restrict quarrying only as long as the marginal economic benefits of doing so exceed the marginal economic cost of restrictions.

Section 3.2 discusses the demand for aggregate. The cost of extracting aggregates is relatively small and quarries are able to scale their production output to meet demand. The report outlines how demand for aggregate is correlated with population and income growth,

attributing this to demand for additional streets, commercial spaces and structures to serve this growth.

Although there is undeniably a relationship between these variables, it should be noted that the relationship is not often linear nor consistent. Greenfield subdivisions that promote larger more dispersed development on the edge of Christchurch or Rolleston necessitate additional roads in a way that urban intensification such as townhouses or apartment developments in the City Centre do not.

Christchurch City has already experienced a significant upswing in the development of higher density dwelling typologies following its new District Plan in 2018. According to Stats NZ, attached dwelling typologies have shifted from 36% of Christchurch City's dwelling consents in 2017 to 63% in 2023. Although the vast majority of dwelling consents in the Selwyn District remain primarily standalone, the recently operative (in part) Variation 1 to the Proposed Selwyn District Plan incorporates the medium-density residential standards required by the Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021. Christchurch City is also undergoing a similar process under Plan Change 14. NZIER has not considered the potential effect that this shift in focus to encourage population growth in more efficient existing urban locations with have on the future demand for aggregates in the Canterbury Region.

Section 3.3 discusses aggregate production in Canterbury. The data from New Zealand's 2021 Mineral Production Statistics showed that in 2019 Canterbury accounted for 29% of aggregate production by volume or 26% by value. They suggest that because this share is substantially larger than Canterbury's total GDP (as a proportion of NZ), this implies Canterbury uses more aggregate relative to its economic production than New Zealand at large.

However, Table 1 of their report shows that Canterbury's production of aggregates in 2020 and 2021 were 11% and 5% of total value respectively (which is lower than Canterbury's share of GDP). Although they seem to imply that the majority of this drop is the result of COVID-19, nationally the volume of aggregate production actually increased during the COVID-19 years (2020-21).

If COVID-19 did not have a negative impact on aggregate production nationally, a large portion of which would include Auckland which was hit harder by COVID-19 than Christchurch due to a second sustained lockdown, it would seem unlikely to be the cause of Canterbury's drop in production. It would appear more likely that the high demand in Canterbury during 2019 was either a once-off, the result of a large infrastructure project, or part of Christchurch's post-earthquake rebuild and is unlikely to be a predictor of future demand.

In Property Economics opinion this section does not provide certainty that Canterbury has higher than the national average demand for aggregate.

Section 3.4 suggests the Greater Christchurch area is experiencing strong growth by comparing the projected growth against other locations in the South Island. Strong growth or not, the projected population growth and resulting infrastructure requirements would

presumably be accounted for in the region's aggregate demand projections, making this largely irrelevant.

The section then goes on to discuss some of the constraints facing the development of new quarries and how continued urban expansion limits options due to the "reverse sensitivity" effects making it incompatible in close proximity to residential areas. While all of this is true in principle, most of the required future urban expansion areas for the next 30 years have already been identified in planning documents. Given the increasing focus on urban intensification over greenfield, this urban expansion is expected to slow compared to historical trends.

Ideally, the report would have quantified the risk of continued urban expansion, even at a very high level. In the absence of this, Property Economics questions the extent to which the identified urban expansion plans for Greater Christchurch will materially constrain aggregate quarry opportunities.

Effect on community well-being and efficient use of resources.

This section discusses the economic impact of quarry activities in Christchurch.

Section 4.1 discusses how the Canterbury region produced $103m worth of non-metallic minerals in 2019 and this dropped to $33.2m in 2021. NZIER then uses this to show that quarrying's contribution to Canterbury's GDP would have been $43.1m in 2019 (0.11% of regional GDP) but only $13.9m in 2021. Ideally, their assessment would have looked at the average annual output over a longer period of time and discussed the expected future average contribution rather than two extremes.

NZIER estimate the combined economic multiplier effect on input supply and added consumer expenditure is 3 and 5.14 in value-added and employment respectively. However, they discuss how data limitations make these multipliers unreliable and likely overstated for local economies.

They suggest that although this contribution is small, quarrying creates value and employment from an otherwise unused natural resource. Most importantly, they suggest that the significance of quarrying is in its contribution to supporting economic activity. A restriction in aggregate supply would see significant increases in the raw material cost due to the need to import the materials from outside of the region, thereby disrupting infrastructure development. This would have negative flow-on effects and reduce well-being through outcomes such as increased traffic congestion (roading) and increase flood risk (stop-banks).

Property Economics agrees with the economic principles discussed in this section and has no issue with the calculations on GDP contributions of the quarry industry as a whole. However, as outlined in detail in Section 2 of the NZIER report, the basis of assessment is the economic impact of the proposal itself compared to the counterfactual of the proposal not being accepted. Although this section has gone into great detail as to the economic contributions

and benefits of the quarrying industry as a whole, this tells us little about the economic contributions or impact of the proposal itself.

It is true that quarrying and access to raw construction materials are vitally important for the economic development of the Canterbury Region, but only as far as to ensure they are readily available and competitively priced. As outlined by NZIER previously, aggregates are produced to meet demand and can be scaled up to the limits imposed by the consent. Furthermore, NZIER's report suggests that there are sufficient remaining resources in the existing 20 or so quarries to provide for between 14-20 years of average annual demand levels.

If the report had shown that there was a long lead-time to set up a quarry or that the existing quarry's productive capacity was constrained in its ability to meet future cyclical demand peaks, then some of the aforementioned economic benefits might apply to this development. However, the report has done neither, therefore leading us to query the extent to which the proposal will actually deliver or enable any additional infrastructure over and above what could be built with the existing aggregate supplies. In Property Economics view, until such time as an additional quarry is needed to meet demand, the aforementioned net economic benefits to infrastructure are likely to be minimal.

The efficiency of extending quarry resources and providing for new development

In this section, NZIER argues that regardless of whether there is sufficient capacity, this is not a reason to restrict new quarries from entering the market. They argue that additional market competition benefits consumers by lowering prices. In contrast, barriers to entry give the existing suppliers market power, allowing them to increase prices risking supply shortfalls during demand spikes.

They also argue that there are economic benefits to providing more choices in the aggregate market. More choices mean customers have more options in choosing the supplier with the type of product they want closest to their project to minimise the transportation costs noting that in the case of aggregates, transport costs can often exceed the cost of the raw materials.

All this is true from a high-level perspective, but the actual level to which these benefits are experienced in the market is questionable. There is an existing quarry just 4km closer to Christchurch City of the proposal site and most existing quarries appear to be closer to Christchurch City. This means at best; the proposal may provide a minimal locational advantage to any development west of Rolleston which is a small proportion of expected construction activity.

Furthermore, the NZIER report suggests that rock and aggregate have an inelastic demand curve which means any increases in supply would have a minimal effect on price. Therefore, in Property Economics' opinion the likely effect an additional quarry will have on price will be minimal.

NZIER argue that because Winstone Aggregates is seeking consent, this suggests a quarry will be profitable and therefore productive. They suggest that the company incurs all of the cost and risk and that ultimately, there are no economic costs of consenting of a new quarry.

Property Economics disagrees with this assertion. Firstly, the proposal will transform productive dairy farming land into a quarry. Although the authors asserted that the dairy activity could continue on the land not being processed, this still represents a loss of potential grazing land. Although small at first, this will likely increase over time as the quarry expands, eventually reaching the point at which dairy activity becomes unviable on the remaining land.

If this quarry does not result in any additional aggregates being produced in the market due to a lack of demand) , then this proposal could represent a net production loss to Canterbury's total economic output. Although the quarry may represent a profitable venture for Winstone Aggregates, permitting additional quarries prior to the need for additional supply (by upwards of two decades in this case) is likely to represent a redistribution of mining activity across a greater area. This may have a negative effect on other quarries' (in closer proximity to Christchurch) economies of scale, decreasing productivity. While an important principle of the RMA is to not unfairly restrict trade competition, these are mitigating factors that reduce the potential economic benefits of the proposal.

The authors discuss how supply constraints requiring aggregate to be sourced from further afield are likely to be borne by Councils and by extension ratepayers leading to negative economic well-being. As before, this assertion assumes that the new quarry will solve a supply issue that does not appear to exist, nor is expected to occur for at least a decade according to the projected demand and supply levels.

The authors discuss how the closure of existing quarries may result in increased production at remaining quarries causing an increase in adverse environmental effects in those locations. They suggest that this would "*add to the full societal cost of supply resulting from volumes produced in the region or volume made up from more distance sources*." (pg10).

Although Property Economics are not environmental or social experts, we do question the validity of this assertion. Even if there is a material increase in the costs imposed by the additional production volumes of other quarries, this is offset by the reduction in negative externalities imposed by the recently closed quarry. The balance between these two variables is what is important with the opposite (i.e., fewer quarries resulting in lower total societal cost) being equally likely in Property Economics' opinion.

3. SUMMARY

There are inherent difficulties in assessing and estimating the economic impacts associated with a development or activity that has yet to occur. Although Property Economics agrees with many of the methods and high-level economic principles discussed by NZIER in their report, this review ultimately finds that the report has the potential to overstate economic benefits while not fully considering potential economic costs.

Some of the key issues are:

- The report implies that Canterbury has a higher-than-average demand for aggregate despite this "higher than average demand" only occurring in a single year. They suggest that the drop in the following years 2020 and 2021 are the result of COVID-19, despite national production increasing in these years.
- They suggest that Canterbury has strong population growth, and this will translate into high demand for aggregates. However, they have not shown how this "high growth" will change the balance of supply against the projected demand for aggregates, a projection which suggests that additional supply will not be required for 14-20 years.
- The report provides an overview of the quarry industry in Canterbury and the economic contribution of the industry as a whole but does not quantify the economic impact of the proposal itself.
- Many of the economic benefits discussed in this report are economic benefits of an unconstrained supply of aggregates. This includes the effects on price, choice and unconstrained infrastructure development. However, NZIER has not shown that there are any constraints on supply. On the contrary, they report that current supply estimates suggest there is sufficient resource available to support Canterbury's demand for the next 14-20 years. They have also discussed how additional supply can alleviate pressures during demand spikes but there is nothing to suggest that the current supply would be unable to meet these demand spikes.
- The report has not considered the mitigating economic costs such as the loss of dairy production nor the potential effects on economies of scale for other quarries.

There are undeniably significant economic benefits of new quarries being developed where they would meet an otherwise unmet demand. However, the NZIER report has not demonstrated a need for additional supply either to support growth or alleviate the pressures of demand spikes.

Furthermore, although we agree that there are economic benefits to additional market competition and providing more supply locations to minimise transport costs, we question the extent to which these benefits will materialise in this market.

The market for aggregates is inelastic and often transportation makes up the majority of the costs. In regard to locational choices, there is an existing quarry within 4km of the proposed site and it would appear most existing quarries are closer to the main urban areas. Consequently, we consider the additional supply to be unlikely to have any material effect on price.

Ultimately, in Property Economics opinion, the economic benefits of the proposal have not been well established. Although this in itself, is not a reason to restrict competition, the net economic benefits need to be appropriately identified to weigh against any adverse environmental or social costs associated with the proposal.