



**BEFORE**

Independent Commissioners appointed  
by Tasman District Council

**IN THE MATTER**

Of the Resource Management Act 1991

**AND**

**IN THE MATTER**

Of an application by CJ Industries Ltd for land use consent RM200488 for gravel extraction and associated site rehabilitation and amenity planting, for land use consent RM200489 to establish and use vehicle access on an unformed legal road and erect associated signage, and for a discharge permit to discharge cleanfill to land RM220578

**REPLY EVIDENCE OF DR WILLIAM HENRY KAYE-BLAKE ON BEHALF OF  
CJ INDUSTRIES  
ECONOMICS**

**21 April 2023**

**1. INTRODUCTION**

- 1.1 My full name is Dr William Henry (Bill) Kaye-Blake. I am a Principal Economist at the New Zealand Institute of Economic Research (NZIER).
- 1.2 The applicant has applied for resource consents authorising the extraction of gravel, stockpiling of topsoil, and reinstatement of quarried land, with associated amenity planting, signage and access formation at 134 Peach Island Road, Motueka:
  - (a) RM200488 land use consent for gravel extraction and associated site rehabilitation and amenity planting, and
  - (b) RM200489 land use consent to establish and use vehicle access on an unformed legal road and erect associated signage.

- 1.3 The applicant has also applied for a discharge permit authorising the discharge of contaminants to land, in circumstances where the contaminants may enter water (RM220578).
- 1.4 My evidence addresses the economic aspects of flooding, significant public benefit, and productive soils with respect to the activities for which land use consent is sought.

### **Qualifications and Experience**

- 1.5 My qualifications and experience were set out in my primary evidence dated 15 July 2022.

### **Purpose and Scope of Evidence**

- 1.6 The purpose of my rebuttal evidence is to respond to evidence that has a bearing on economic matters, specifically the evidence of Jessica Hollis with regard to flooding and its implications for economic viability, and regional public benefits.

### **Code of Conduct**

- 1.7 I have read the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2023 and I agree to comply with it. My evidence is within my area of expertise, however where I make statements on issues that are not in my area of expertise, I will state whose evidence I have relied upon. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in my evidence.

## **2. EXECUTIVE SUMMARY**

- 2.1 Ms Hollis has included statements in her evidence that express economic considerations.
- 2.2 Ms Hollis states that flooding is not a concern when assessing the economic viability of the area of the site outside the stop banks. I show that the compounding probability of losses is a significant factor in determining whether to invest in high-value land uses like horticulture on the site.

2.3 Ms Hollis further states that other resources within New Zealand could be used to achieve the same benefits as the application. I show how this assertion does not account for the specific properties of aggregate, the costs of finding and developing other sites, and the ability of economic activity to make a good allocation of scarce resources.

### 3. EVIDENCE OF JESSICA LEE HOLLIS

3.1 I comment on two statements in the evidence of Ms Hollis. The first is at paragraph 28:

*Based on the evidence of Mr Campbell, I consider that insufficient evidence has been provided to demonstrate that flood risk, in and of itself (as referred to by Ms Bernsdorf Solly and Mr Taylor), is a permanent or long-term constraint that means the use of the highly productive land for land-based primary production is not able to be economically viable for at least 30 years.*

A similar argument is offered by Dr Campbell in paragraph 80 of his evidence, where he suggests that the land outside the stopbank could be used for growing lettuces profitably.

3.2 In her statement, Ms Hollis is making an economic judgment that can be further assessed. Two pieces of background information will help. First, Highly Productive Land is valued for its versatility, especially for the fact that it can be used for horticulture. The obvious contrast is with land that is suitable for only pasture or forestry. However, horticulture as an economic activity depends on both the land resource and improvements made to the land. For example, a vineyard requires vines and trellising, and an orchard requires trees. These things are placed in a location at great expense, and the pay-off on that investment happens only over time. The vines and the trees have to survive in place for years for primary production to be economically viable. Even for annual crops, it needs to be reasonably predictable that they will be able to be grown through to the point of harvest and not destroyed by flooding beforehand.

3.3 The second piece of background information is the economic idea of *expected value*. The expected value of an activity that involves some risk is calculated by multiplying the probability of something happening with the impact of that

something. If multiple things could happen, then all the possibilities are assessed (with all the probabilities adding up to 100 percent) and each one multiplied by the size of the impact or outcome.

- 3.4 This expected value approach can be applied to the site to determine whether primary production would be economically viable. Dr Hill (supplementary evidence at 3.11) says that the land area outside the stop bank is not suitable for agricultural land development due to limitations of an inherent seasonally high water table, flood risk, and variable or shallow soil depth. This agrees with Ms Langford's confirmation that flooding may be viewed as a long-term constraint such that NPS-HPL clause 3.10 (1) would apply to Stage 1 (page 4 of Council's Memorandum dated 14 April 2023).
- 3.5 Hypothetically, we could design a business plan for a productive orchard on this site. All going well, the orchard will succeed and pay back the investment. We can also take account of the impact from flooding. Dr Harvey says that the annual probability of flooding is 100 percent. Mr Aiken disagrees, and says flooding may occur on a semi-regular but not annual basis, and the frequency, duration and magnitude will change because of future climate change (Aitken rebuttal at 3.4). We could assume the area floods every two years for the purpose of this hypothetical analysis. We do not know the impact of flooding, but we can do an economic analysis to help decide the value of the investment. For example, we could assume that each two-yearly flood has a 10 percent chance of wiping out the orchard. Every year, the orchard is exposed to this risk. Over 10 years, the likelihood that the orchard will **survive** is 90 percent to the power of 5 (i.e.,  $10 \div 2$ ), which gives a likelihood of 59 percent. That is, on these assumptions, there is a 41 percent probability that the land owner would lose their horticultural investment. This probability of loss makes the initial investment less valuable and thus significantly impacts its economic viability.
- 3.6 Contrary to Ms Hollis' opinion, flood risk is a real, permanent and long-term constraint on how this land would be used in primary production.
- 3.7 The second statement by Ms Hollis is at paragraph 33:

*I do not consider this evidence is sufficient to clearly demonstrate that the proposal provides significant regional public benefit that could not otherwise be achieved using*

*resources within New Zealand. Neither Mr Kaye-Blake nor Mr Scott have undertaken a detailed analysis of alternative sites (both in the region and elsewhere in New Zealand) that may be available to undertake the proposed gravel extraction, nor a cost-benefit analysis on those sites (as has been undertaken for the application site).*

- 3.8 There are three economic issues with this statement. The first issue is that aggregate is heavy, bulky, and of low value per cubic metre, although it is necessary for modern roads and buildings. As a result, both the location of quarries and control of quarries are important considerations in infrastructure planning and are given policy support in planning instruments including the NPS-HPL and the NPSFM. I have been involved in consulting projects with the New Zealand Transport Agency Waka Kotahi, and they are concerned that local aggregate supplies not become a bottleneck for building infrastructure. They know, as I stated in my primary evidence, *in New Zealand that the price of aggregate doubles when it is hauled 30 kilometres from its source quarry.* It does not make economic sense to talk about an analysis of sites *elsewhere in New Zealand* to provide aggregate for the area around Motueka. For example, we could say that Canterbury has wide, braided rivers and Motueka should get its aggregate from there. It is about 420 kilometres to Christchurch. If every 30 kms adds the cost of the aggregate again, that haulage adds 14 times (1400 percent) to the cost of the aggregate. With that kind of cost escalation, many projects would become unaffordable, suggesting that the Peach Island gravel extraction has significant regional public benefit.
- 3.9 The obvious reply is that, of course, we would not haul aggregate from Canterbury. The structure of the problem remains the same: how far would a replacement source of aggregate be from Motueka, and what cost would be imposed on local building projects to pay for haulage, and finally what is the impact on public benefit?
- 3.10 The second economic issue with the statement by Hollis is that information is expensive to produce. Hollis is asserting that some other gravel extraction PLUS the costs of producing information about it (PLUS the cost of haulage) is of greater value than the current application. For the potential availability of aggregate, I am relying on the evidence of Mr Scott, who provides a discussion

on the topic and a map of aggregate availability, and states, *It cannot be assumed that there will be other, "better" locations.* His finding further suggests that producing information about potentially 'better' sites could be even more difficult, and therefore more expensive, than in an environment rich with options. In this process, submitter witnesses have identified other possible sources, e.g., the upper Motueka River. Mr Corrie-Johnston's supplementary evidence dated 19 December 2022 has addressed why this source is not suitable (and also significantly increases the transport cost and carbon emissions of the source).

- 3.11 The third economic issue with the statement by Ms Hollis is that it fails to understand the information-processing function of markets. The economy can be viewed as a sort of information-processing system in which lots of people obtain and digest lots of information and transmit it through communication and competition. Ms Hollis gives an opinion that some better source of gravel is available that will produce a better result on a cost-benefit analysis (and that the people whose livelihoods depend on doing gravel extraction efficiently and profitably have somehow missed the opportunity). Ms Hollis has not explained why that should be the case or what failure has occurred to produce this sub-optimal result. There are different ways of assessing alternatives. The fact that this business has identified this site among all the others (and retained it for years) looks like information processing (alternatives assessment) to an economist.
- 3.12 In sum, Ms Hollis has made comments relevant to economics but with insufficient understanding of how the economy works. On the topic of land use, the risk of flooding is in fact relevant because it goes directly to the ability to obtain a return from the investment required for higher-value land uses. On the topic of alternative sources of aggregate, Ms Hollis does not account for the actual weight and cost of hauling aggregate and does not appreciate the contribution that market activity can make to good allocation of scarce resources. As a result, the evidence of Ms Hollis does not properly assess the significant regional public benefit. I retain the opinions on economic viability and regional public benefit set out in my primary evidence.

William Kaye-Blake

21 April 2023