

**BEFORE INDEPENDENT HEARING COMMISSIONERS APPOINTED BY THE  
WAIMAKARIRI DISTRICT COUNCIL**

**IN THE MATTER OF**

The Resource Management Act 1991 (**RMA** or  
**the Act**)

**AND**

**IN THE MATTER OF**

Hearing of Submissions and Further  
Submissions on the Proposed Waimakariri  
District Plan (**PWDP** or **the Proposed Plan**)

**AND**

**IN THE MATTER OF**

Hearing of Submissions and Further  
Submissions on Variations 1 and 2 to the  
Proposed Waimakariri District Plan

**AND**

**IN THE MATTER OF**

Submissions and Further Submissions on the  
Proposed Waimakariri District Plan by  
**Momentum Land Limited** and **Mike Greer  
Homes NZ Limited**

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**EVIDENCE OF FRASER COLGRAVE  
ON BEHALF OF MOMENTUM LAND LIMITED  
AND MIKE GREER HOMES NZ LIMITED  
STREAM 10A – AIRPORT NOISE ISSUES**

**DATED 2 FEBRUARY 2024**

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## INTRODUCTION

- 1 My full name is Fraser James Colegrave.
- 2 I hold a Bachelor of Commerce (First-class Honours) degree in Economics from the University of Auckland.
- 3 I am the managing director of Insight Economics, a boutique economics consultancy based in Auckland. Prior to that, I was a founding director of another economics consultancy – Covec – for 12 years.
- 4 I have over 26 years' commercial experience, the last 23 of which I have been an economics consultant. During that time, I have successfully led and completed more than 600 projects across a wide range of sectors. My main areas of expertise are property development, land-use, and retail economics. I have worked extensively in these areas for dozens of the largest public and private sector organisations in New Zealand. In addition, I regularly advise local and central Government on related policy matters, and therefore understand the issues from multiple perspectives.
- 5 Current and recent clients include Auckland Airport, Crown Infrastructure Partners, Fletcher Living, Foodstuffs, Fulton Hogan, Hughes Developments, Kainga Ora, Kiwi Property, Kiwirail, Kmart, New Zealand Productivity Commission, Ngai Tahu Property, Ngati Whatua Orakei, Tauranga City Council, Wellington City Council, Woolworths NZ, and Your Section.
- 6 In 2007/8, I led a consortium of consultants helping Christchurch City Council (CCC) to assess various options for the Urban Development Strategy. In 2013/14, I was commissioned to peer review the Land Use Recovery Plan on behalf of Environment Canterbury. Later I was commissioned by CCC to assess the optimal size and staging of the Halswell Key Activity Centre (KAC).
- 7 Over the last 15 years, I have worked on numerous land use and property development projects across Greater Christchurch, including several in Waimakariri. I am therefore familiar with the economic structure of the district, and its role in the Greater Christchurch sub-region.

- 8 I recently provided expert economic evidence on Selwyn's Proposed District Plan (PDP) for 11 plan changes, plus four other submissions, so understand the housing markets served by the two districts flanking Christchurch City.
- 9 In 2022, I provided evidence in support of Waimakariri District's third KAC.
- 10 I regularly appear as an expert witness on a range of economic matters before Councils, Boards of Inquiry, Independent Hearing Panels, the Land Valuation Tribunal, the Environmental Protection Agency, the Environment Court, the Family Court, and the High Court of New Zealand.
- 11 I have read the Environment Court's Code of Conduct and agree to comply with it. My qualifications as an expert are set out above. The matters addressed in my evidence are 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.

#### **SCOPE OF EVIDENCE & SUBMITTERS REPRESENTED**

- 12 This evidence assesses the economic costs and benefits of enabling future residential development within the airport's noise contours in and around Kaiapoi. It is presented on behalf of both Momentum Land Limited (MLL), and Mike Greer Homes NZ Limited (MGH), but focusses mainly on the MLL land as a case study. However, all substantive conclusions reached in this evidence apply equally.

#### **SUMMARY**

- 13 To set the scene, I first describe MLL's land and its proposed development, which is expected to yield about 700 new homes of varying shapes and sizes, plus supporting commercial activity. Then, I explain how the district's strong and sustained population growth requires an estimated 17,000 extra dwellings over the next 30 years according to the latest figures.
- 14 In addition, most new homes recently built in and around Kaiapoi have been in greenfield areas, with very little intensification of the existing urban area.

This, in turn, reflects the district's young dwelling stock and relatively low land values, which both undermine the financial viability of intensification.

- 15 New greenfield developments like those proposed by MLL and Mike Greer Homes are therefore essential to keeping pace with demand and helping to meet the district's NPS-UD obligations to provide "at least" sufficient capacity "at all times."
- 16 Despite that, the latest 2023 Housing Capacity Assessment (HCA), plus a follow-up report by Formative from 8 December 2023, both suggest that there is already sufficient capacity to meet demand.
- 17 I strongly disagree with the HCA, and the latest Formative report, both of which I consider unreliable bases for decision making. There are several issues, with the most significant being that:
- (a) The 2023 HCA fails to test sufficiency properly i.e. for attached and stand-alone dwellings in new and existing urban areas. While the Formative report does slightly better, it offers very little (if any) relevant information about the assumed sizes, key features, or selling prices of the dwellings that comprise its feasible capacity estimates.
  - (b) These concerns are exacerbated by the nature of plan enabled capacity itself, which is dominated by new medium density housing in existing urban areas. While increasingly important nationally, such dwelling typologies do not reflect local needs and preferences.
  - (c) The feasible capacity estimates in both reports are also based on out-of-date cost data from 2021, which do not capture recent spikes in construction costs – up 32% – nor today's much higher interest rates. Both factors seriously undermine financial viability, so the feasible capacity estimates cited are no longer relevant, nor fit for purpose.
- 18 Overall, I consider the district to face a significant, widespread shortage of feasible capacity to meet demand, with a lot more needed. Both proposals acknowledge and respond to this by providing new master-planned communities at pace and scale.

- 19 However, CIAL seeks to prohibit new noise sensitive activities (NSAs) establishing within its noise contours, including (all or parts of) both the MLL and MGH sites, as it asserts this is necessary to enable unfettered, ongoing airport operations. A suite of supporting reports have been cited, two of which I have reviewed – Airbiz and Property Economics.
- 20 Overall, I place little weight on either report, with both having serious methodological issues. For example, the Airbiz report (i) is unjustifiably anchored to CIAL's highly conservative status quo, (ii) cites a handful of largely irrelevant case studies while ignoring the "Kaiapoi natural experiment", (iii) fails to consider other options for achieving the same purpose, and (iv) overlooks the ICAO's four-pillar model, which applies to CIAL, and where operating restrictions are a last resort in a long list of possible interventions.
- 21 To assist the hearings panel, I identified and considered three options for protecting the airport's future operations from new, nearby NSAs. They are (i) CIAL's proposed relief, (ii) allowing new NSAs between the airport's 50 and 55 dB Ldn contours subject to providing double glazing and mechanical ventilation, and/or (iii) LIM notices and/or no complaints covenants.
- 22 My assessment shows that the district has a significant amount of undeveloped land between the 50 and 55 dB Ldn contours, which can be used for housing without imposing significant risks or costs on CIAL, particularly if double-glazing and mechanical ventilation are required. A LIM notice and/or or no complaints covenant would add a further layer of protection, while freeing up peri-urban land for more valuable uses.
- 23 Consequently, I recommend that new NSAs be allowed up to the 55 dB Ldn airport noise contours (based on annual averaging) subject to providing mechanical ventilation, double glazing, and LIM notices and/or no complaints covenants.

## **STRUCTURE OF EVIDENCE**

- 24 In the remainder of this evidence, I:
- (a) Describe the MLL land and its proposed development as a case study;
  - (b) Explain the district's population and dwelling growth context;

- (c) Assess the need for additional dwelling capacity under the NPS-UD and under relevant PDP criteria;
- (d) Identify the likely economic costs and benefits of the MLL and Mike Greer Homes proposals;
- (e) Assess the impacts of CIAL's proposed prohibition on new NSAs within its noise contours, including the identification and assessment of three options for protecting airport operations; and
- (f) Summarise and conclude.

## CONTEXT

- 25 Momentum Land Limited (**Momentum**) owns rural-zoned land in Kaiapoi that spans about 34.5 hectares, which it wishes to rezone via the PDP to enable about 700 dwellings, plus a small amount of supporting commercial activity.
- 26 The land comprises two discrete blocks, known as the "**North Block**" and "**South Block**" as identified by the yellow outlines in Figure 1 below.

Figure 1: Location of the Site



- 27 The North Block is bound by earlier stages of the Beachgrove residential development to the south, existing dwellings to the west, and rural land to the north and east.
- 28 The South Block is bound by Beach Road to the south, residential dwellings to the west, Kaiapoi North School to the north, and an unnamed paper road to the east. It is an anomaly because, despite its rural zoning, it is land-locked by non-rural uses on all sides, which physically and visually separates the site from other rural land nearby.
- 29 Both blocks (**the site**), are zoned Rural under WDC’s Operative District Plan (**ODP**), and Rural Lifestyle under the PDP.
- 30 The entire site also falls within the Kaiapoi Projected Infrastructure Boundary (**PIB**) and is identified as a future residential development area in the Kaiapoi Outline Development Plan. Accordingly, it has already been identified as imminently suitable for future urbanisation.

#### **ABOUT THE MLL PROPOSAL**

- 31 The MLL proposal enables the establishment of between about 695 to 1,045 new dwellings over time. To be conservative in terms of likely economic benefits, I adopt a lower-end (most likely) yield of 700 dwellings, comprising 600 on the North Block, and 100 on the South Block. A small amount of supporting commercial activity is also sought for the North Block.
- 32 MML has produced indicative site plans for the North Block, which enable various lot shapes and sizes up to a maximum of approximately 350m<sup>2</sup>. Table 1 provides further details.

Table 1: North Block Indicative Yield by Lot Type

<b>Lot Type</b>	<b>Description</b>	<b>Lot Size (m<sup>2</sup>)</b>	<b># of Lots</b>	<b>Share of Lots</b>
Type 1	16m x 22m	352	87	15%
Type 2	12m x 22m	264	366	61%
Type 3	10m x 22m	220	109	18%
Type 4 / 5	Higher Density	n/a	38	6%
<b>Total</b>			<b>600</b>	<b>100%</b>

- 33 South Block plans are not as far advanced as for the North Block, but initial work by Saddleback indicates a likely yield range of 96 to 144 dwellings.

## DISTRICT POPULATION & HOUSING CONTEXT

### Population Growth

- 34 Waimak's population has grown rapidly since the late 1990s, particularly after the 2010/11 earthquake sequence. Today, that strong growth continues, with Statistics New Zealand (**Stats NZ**) recently revising upwards its official district population projections. I perceive two key drivers of the district's strong and sustained population growth.
- 35 First, Waimak housing offers better value for money than Christchurch City. While median house prices have historically been similar, homes in Waimak are considerably larger, on average.<sup>1</sup> Consequently, the tide of post-quake relocations from red zoned areas of the city, including into Waimak and Selwyn, has been sustained into the long term. A similar pattern has occurred in Auckland, where high house prices pushed people out of some central areas towards the relatively more affordable rural fringes.
- 36 Second, the Covid-19 pandemic has caused people to reconsider what they really need and want from life, including where they want to live. With the rapid uptake of working from home and the newly emerging "hybrid working model" taking hold, many people are now even more willing to trade off proximity to the city in exchange for living in areas that better meet their day-to-day needs.
- 37 With both trends likely to continue well into the foreseeable future, significant additional capacity will be required to keep pace with growth in housing demand.

### Projected Dwelling Demand

- 38 In 2023, the Greater Christchurch Partnership (GCP) released their latest Housing Capacity Assessment (HCA). Amongst other things, it includes household growth projections for Waimak. They adopt Stats NZ's latest high growth population projections, which are converted to households based on projected future household sizes.

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<sup>1</sup> For example, the average GFA of new dwellings consented over the past five years in Christchurch City is 130m<sup>2</sup> compared to 175m<sup>2</sup> in Waimak.



39 Table 2 presents the resulting projections over the short-, medium- and long-terms.

Table 2: Waimak District Household Demand Projections (from 2023 HCA)

<b>Timeframe</b>	<b>Urban Areas</b>	<b>Rest of District</b>	<b>Total</b>
Short Term (2022-2025)	1,829	936	2,765
Medium Term (2022-2032)	4,682	2,432	7,114
Long Term (2022-2052)	11,308	5,688	16,996

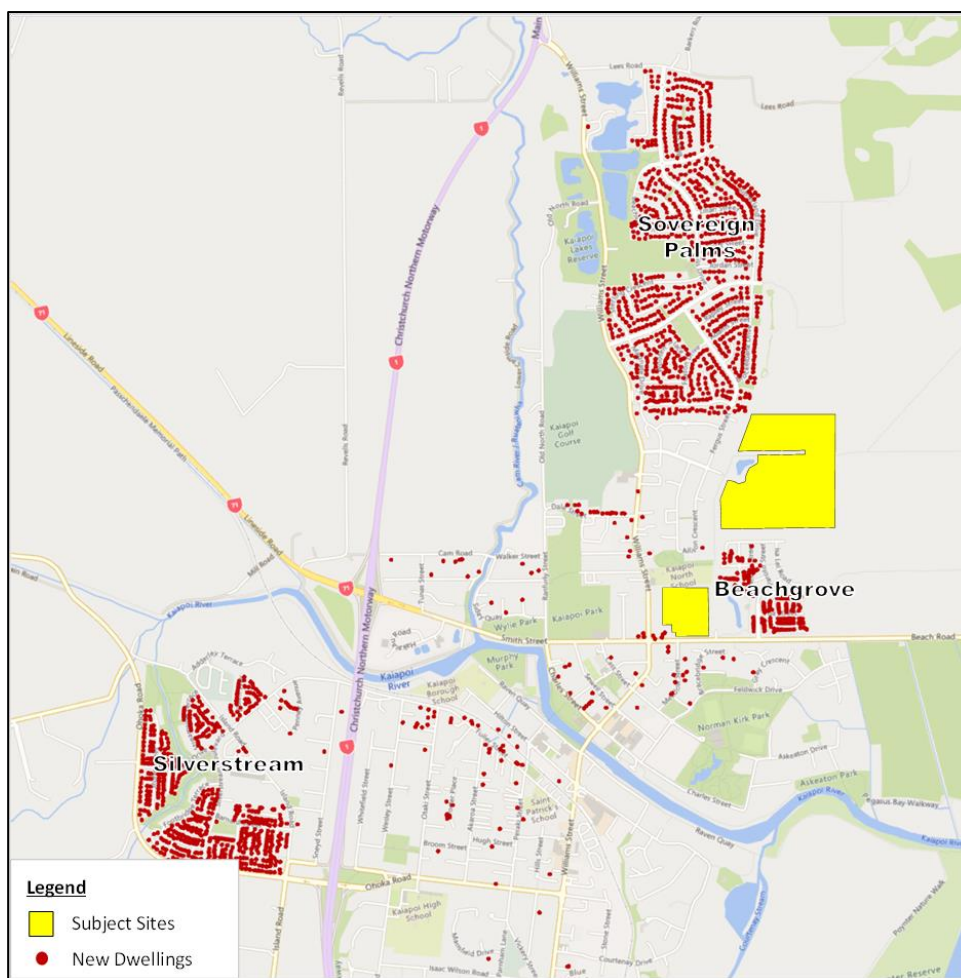
40 According to Table 2, the number of households in the district's urban areas will increase by just over 11,300 between 2022 and 2052, or nearly 17,000 when the district's rural areas are also included.

41 The report also mentions the changing demographics of the district, with declining household sizes reflecting a greater share of older families, as well as changing family structures. This, in turn, will alter the types and sizes of dwellings required in future. However, according to Core Logic, the average dwelling in Kaiapoi currently has 180m<sup>2</sup> of floorspace on a 710m<sup>2</sup> section, with an average of 3.3 bedrooms. This is likely to exceed the requirements of many future households, so a range of smaller dwellings is needed to increase choice and promoted affordability.

### **Recent Development Patterns**

42 For additional context, I used Core Logic's Property Guru tool to identify all Kaiapoi dwellings built and sold since 2010. These are illustrated by the red dots in the map below, with the site overlaid for context.

Figure 2: Location of New Dwellings Built and Sold Since 2010 in Kaiapoi



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44 Figure 2 shows that virtually all dwellings built and sold in Kaiapoi recently were in three greenfield areas on the edge of the township.

45 This differs from many other urban areas of New Zealand, where new dwellings tend to also include a higher share of subdivision or redevelopment within existing urban areas. This situation likely reflects the challenge of making intensification in provincial areas like Kaiapoi financially viable.

46 Herein lies an issue for the district, and for Kaiapoi more specifically. Currently, there is little greenfield land available for development, with the consented stages of Beachgrove the only significant undeveloped land left in Kaiapoi.

47 As at late 2023, Stages 1-4 had been developed and Stages 5 and 6 were selling. Along with future stages, these will provide around 300 further lots to

be developed, after which there will be no more greenfield land to accommodate ongoing growth in demand for living in Kaiapoi.

48 Accordingly, new urban areas like the site need to be enabled as soon as possible to keep pace with demand for new dwellings well into the long term.

## **NEED FOR THE PROPOSALS UNDER THE NPS-UD**

### **About Housing Capacity Assessments (HCAs)**

49 The NPS-UD came into effect in August 2020. It requires Councils in high growth areas to provide “at least” sufficient development capacity “at all times” to meet expected future demand for additional dwellings well into the long-term.<sup>2</sup>

50 The NPS-UD also imposes strict monitoring and reporting requirements, which vary depending on the extent of growth pressures experienced. The strictest requirements are imposed on Councils in Tier 1 urban environments, where capacity shortfalls have historically been the most acute.

51 Waimak comprises part of the Greater Christchurch Tier 1 urban environment and must therefore complete a detailed Housing Capacity Assessment (HCA) every three years. It brings together a raft of information about dwelling supply and demand to ensure that enough capacity is provided.

52 Dwelling capacity is expressed in several different ways to ensure that a comprehensive picture of future supply emerges. These include:

- (a) **Plan-enabled capacity** – which equals the maximum theoretical capacity enabled if every residential site is fully cleared and rebuilt to its maximum potential (in terms of dwelling yield).
- (b) **Infrastructure-ready capacity** this is the element of plan-enabled capacity that is, or can/will be, serviced with necessary infrastructure like roading and three waters.

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<sup>2</sup>Policy 2, National Policy Statement on Urban Development 2020, May 2022, p.11.

- (c) **Likely realisable capacity** this is the proportion of infrastructure-ready capacity that can reasonably be expected to be realised based on current/historic development patterns.
- (d) **Feasible capacity** this is the proportion of realisable capacity that is deemed commercially viable based on expected development costs and revenues. For the short-medium (10 year) term, this must incorporate current costs and revenues, while long-term feasibility can also factor in expected changes in both variables over time.

53 The NPS-UD allows Councils to use “any appropriate method” for estimating capacity that is feasible and likely to be realised, but the methods, inputs and assumptions must be outlined and justified. The results must also be reported for existing and urban areas, plus standalone versus attached dwellings.

#### **Findings of the 2021 and 2023 HCAs**

- 54 In 2021, the GCP produced an HCA for its three partner Councils. It concluded that there was sufficient capacity to meet demand in most areas, except Selwyn, where significant shortfalls were projected.
- 55 In 2023, a new HCA was released. It aimed to update the 2021 HCA to reflect new plan enabled capacity associated with new Medium Density Residential Standards (**MDRS**), plus the application of policy 3 of the NPS-UD.
- 56 Unsurprisingly, the 2023 HCA identified even greater capacity to meet demand than the 2021 version, mostly due to higher density options enabled by the MDRS and the NPS-UD.
- 57 This is illustrated in **Table 3**, which compares the findings of the 2021 and 2023 HCAs for both Waimak and the GCP in total. The profound impacts of the MDRS and NPS-UD on plan enabled capacity are evident, jumping from 236,000 over the long term in 2021 to almost 742,000 now. However, feasible and realisable capacity changed very little, which indicates that much of the new plan enabled capacity unlocked by the MDRS and the NPSUD will not be delivered, at least not over the 30-year horizon of the 2023 HCA (i.e. to 2053).

Table 3: Summary of 2021 and 2023 HCAs by Council and NPS-UD Timeframe

	2021 HCA			2023 HCA		
<b>Waimakariri District</b>	<b>Short-term</b>	<b>Med-term</b>	<b>Long-term</b>	<b>Short-term</b>	<b>Med-term</b>	<b>Long-term</b>
Plan-enabled	2,273	2,273	12,192	79,345	79,345	79,345
Infrastructure-ready	n/a	n/a	n/a	14,914	14,914	14,914
Realisable	2,273	2,273	12,192	15,234	15,234	15,234
Feasible	2,273	2,273	12,192	5,950	5,950	14,450
<b>GCP Totals</b>	<b>Short-term</b>	<b>Med-term</b>	<b>Long-term</b>	<b>Short-term</b>	<b>Med-term</b>	<b>Long-term</b>
Plan-enabled	218,685	220,559	236,234	731,369	731,369	741,899
Infrastructure-ready	n/a	n/a	n/a	130,981	130,981	131,936
Realisable	98,879	100,854	116,529	131,301	131,301	132,256
Feasible	108,845	110,719	126,394	111,500	111,500	132,550

### **Problems with the 2023 HCA**

#### *Failure to Properly Test Sufficiency*

58 In my view, the 2023 HCA is only a *partial* update to the 2021 HCA, not a full refresh, with large parts of the 2021 version carried forward to the 2023 one verbatim. Consequently, I do not consider the 2023 HCA to provide an accurate picture of the **current** supply/demand situation, nor does it meet NPS-UD reporting requirements.

59 Critically, the 2023 HCA does not test sufficiency for different dwelling types in new and existing locations as required. Instead, it simply tests sufficiency in aggregate for each Council across all dwelling types and all areas. This, in my view, almost invariably masks a material shortfall for stand-alone dwellings in new urban areas, which are consistently in high demand.

#### *Plan Enabled Capacity does not Meet Local Housing Demand*

60 As already noted, the 2023 HCA's plan enabled capacity figures almost exclusively represent attached/medium density housing enabled by the MDRS. While that is fine, at least in theory, these new housing typologies do not match local needs and preferences.

61 While I agree that medium density typologies like duplexes and terrace houses are increasingly important pieces of the future housing puzzle, at least nationally, there is little demand for them currently in the district. This is demonstrated by building consent data, where standalone homes accounted for more than 92% of new district homes consented over the last 10 years.

62 Thus, while the MDRS may have provided unparalleled boosts in *plan enabled* capacity, much of it fails to meet local housing needs and preferences, so is unlikely to be realised and therefore contribute to future market supply any time soon.

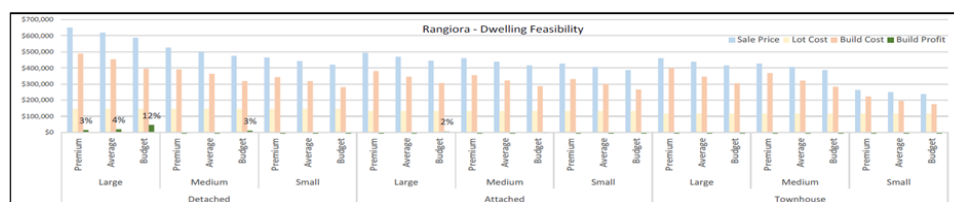
*Cost Information is Way Out of Date*

63 In addition, the 2023 HCA uses out-of-date cost data from early 2021 to estimate feasibility despite acknowledging that “the costs of some construction materials has increased significantly and therefore the feasibility of some developments may have changed.”<sup>3</sup>

64 Indeed, a lot has happened since early 2021, with financial viability severely challenged by a ‘perfect storm’ of (i) higher construction costs, which are up 32% since 2021, (ii) elevated interest rates, and (iii) a recent stagnation of house prices. Together, these recent market changes have fundamentally reshaped development feasibility, but they are not captured in the 2023 HCA, which I consider to seriously limit its validity.

65 Not only that, but a separate feasibility report supporting the 2021 HCA for Waimak revealed that no dwellings were financially feasible to develop in Rangiora over the 10-year period to 2031 under the NPS-UD’s recommended developer margin of 20%. This is shown in the summary of estimated costs, revenues, and margins for different dwelling types, sizes and build qualities below.

Figure 3.2: Summary Results of Dwelling Feasibility Model – Short and Medium Term (Current scenario)



66 While not easy to read at this resolution, this screenshot shows that virtually every combination of dwelling type, size, and build quality in Rangiora was not financially feasible over the short-medium (10-year) term.

<sup>3</sup> Greater Christchurch Partnership. (2023). *Greater Christchurch Housing Development Capacity Assessment*. Appendix 2, p.69, point 5.

- 67 Only large, budget detached dwellings were estimated to achieve a developer margin of more than 10%, but this is still well below the recommended value of 20%. Oddly, contrary to the facts, the report concluded that “most dwelling types that were tested in the dwelling feasibility model are currently feasible.”
- 68 Fast-forward to 2024, where construction costs have spiked upwards, as has the cost of financing, and it becomes clear that very little – if any – of the 2023 HCA’s plan enabled capacity is likely to be financially viable in the foreseeable future.

### **Comments on Formative’s December 2023 Report**

- 69 In late 2023, Formative released an updated dwelling supply and demand assessment for Waimak. Its results closely resemble the district’s figures in the 2023 HCA, but with slighter higher capacity now.
- 70 While this report includes more detailed sufficiency testing than the 2023 HCA, it oddly continues to rely on cost data from 2021 (see footnotes 24/25 of the Formative report). That information is now firmly obsolete, and so too is any analysis that relies on it to test development feasibility.
- 71 Another shortcoming of the latest Formative report is its failure to disclose any relevant information about the assumed selling prices, and hence affordability, of new homes purported to represent feasible capacity.
- 72 In my experience, this lack of price and affordability reporting is likely to reflect a significant mismatch between the assumed selling prices of ‘feasible’ dwellings and households’ ability to afford them, particularly in today’s high interest rate environment.
- 73 The new report also continues to adopt an inordinately low margin for building developers of only 7% compared to a recommended value of at least 20%. This, in turn, reflects an ongoing conflation of Net Profit After Tax (**NPAT**) and developer margin in Formative’s analysis, which I have pointed out several times before, including recently in Selwyn.
- 74 In addition, the new Formative report seeks to justify its inordinately low profit margin assumptions by arguing that builder profits are systematically boosted

by unspent contingencies.<sup>4</sup> However, I am not aware of any credible research or analysis to support that, with my professional experience suggesting that contingencies are usually exhausted, with cost overruns still occurring.

- 75 The international literature also does not support Formative's view. In fact, a recent review of cost overruns across hundreds of construction projects globally<sup>5</sup> found that most went well over budget. It identified 175 different causes, grouped into 10 key internal and external factors. However, it provides no evidence to support the unusual view that cost contingencies are seldom fully spent, as Formative oddly claim.
- 76 Overall, for the reasons just noted, I place little (if any) weight on this assessment for determining whether additional supply is required to provide "at least" enough capacity "at all times" to meet demand.

#### **HCA Summary and Conclusion**

- 77 Recent reporting for the district, including the 2023 HCA, suggest that sufficient capacity is already being provided. However, as noted above, these conclusions are based on out-of-date cost data and unsubstantiated assumptions that limit their reliability. Consequently, I do not believe the district has enough capacity to meet demand, with a lot more needed.
- 78 Interestingly, the Independent Hearings Panel for Plan Change 31 (PC31), which seeks to rezone 156 hectares of farmland in Ohoka, reached a similar conclusion. It found that WDC has "likely overestimated development capacity in the District and there is a real risk that a shortfall exists in the medium term."<sup>6</sup>
- 79 The proposals help to plug this looming gap in feasible capacity by providing quality, master-planned housing that is in step with market demand and able to be realised at both pace and scale.

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<sup>4</sup> See footnote 29 on page 26 of the Formative Report

<sup>5</sup> <https://www.ijimt.org/vol8/717-MP0022.pdf>

<sup>6</sup> Independent Hearings Panel. Private Plan Change RCP031 Decision Report. Paragraph 92.



## ASSESSMENT AGAINST PDP CRITERIA

80 As illustrated above, the site falls within the Kaiapoi “Future Development Area”, where urban development can be enabled prior to rezoning via a bespoke planning process.

81 To be eligible for early development via that mechanism, land in future development areas must satisfy various criteria, one of which is that the<sup>7</sup>:

“Development will provide additional residential capacity to help achieve or exceed the projected total residential demand as identified in UFD-01 (for the medium term) as indicated by the most recent analysis undertaken by Council in accordance with the NPS-UD and published on the District Council website.”

82 UFD-01 is an objective in the Strategic Directions section of the PDP relating to urban form and development. It states that sufficient feasible development capacity for residential activity must be maintained to meet specific housing bottom lines, including the ever- changing demographic profile of the district. These bottom lines are shown in the table below.

Table 4: Housing Bottom Lines

Term	Timeframe	Development Capacity	Bottom Lines
Short to Medium Term	(2022-2032)	Residential Units	5,600
Long Term	(2032-2052)	Residential Units	7,650
30 Year Time frame	(2022-2052)	Residential Units	13,250

83 Given that the district is unlikely to be meeting its obligations to provide at least sufficient capacity under the NPS-UD, I consider the proposal to clearly satisfy criterion (1)(a) for early release in the Kaiapoi Development Area too.

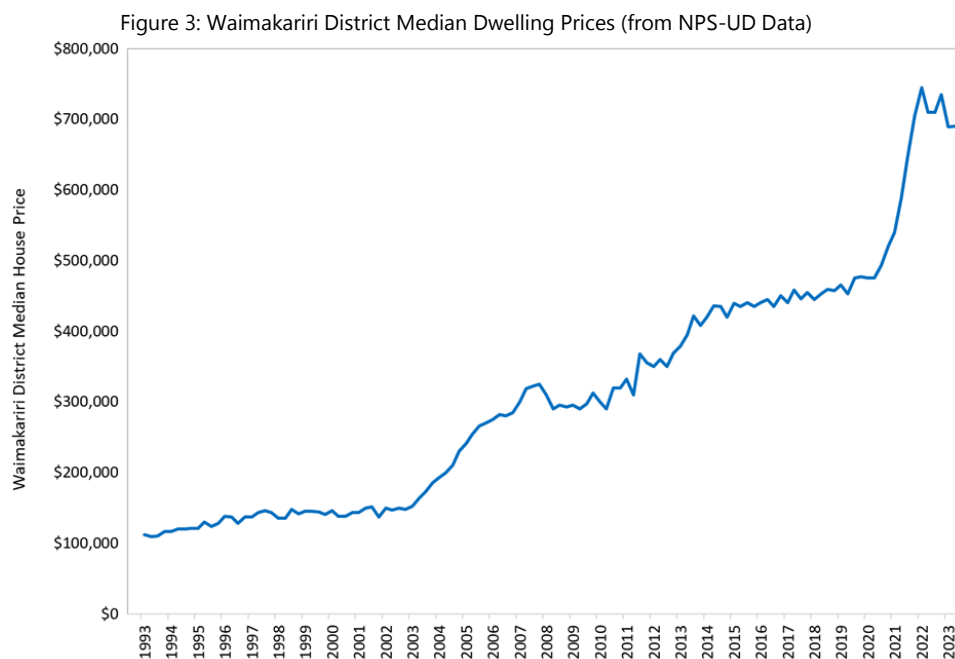
## ECONOMIC COSTS AND BENEFITS OF PROPOSALS

### Boost in Market Supply / Restoring Supply of Residential Land

84 The proposals will provide a substantial, direct boost in the district’s dwelling capacity, thereby helping to narrow the gap between likely future supply and demand. All other things being equal, this supply boost will help the market to be more responsive to growth in demand, thereby reducing the rate at which district house prices grow over time (relative to the status quo).

<sup>7</sup> DEV-K-S1 Certification for Kaiapoi Development Area - Criterion (1)(a)

85 Although district housing was historically quite affordable compared to other parts of New Zealand, that has changed. The latest data published under the NPS-UD show that the median district dwelling price increased by 32% in the three years to September 2023, even despite the recent price correction. Figure 3 plots the trend in median dwelling prices over time for context.



86 These higher prices are undermining affordability, with the latest Core Logic report (from June 2023<sup>8</sup>) revealing that the average district house price is now 7.4 times average household incomes. This is well above the established benchmark for affordability which is a ratio of only three.

87 In addition, that Core Logic report shows that it now takes nearly 10 years to save the deposit for a new home in Waimakariri. Thus, not only are house prices themselves increasingly unaffordable, but the task of saving a deposit is also an onerous one that is beyond the financial means of many households.<sup>9</sup>

88 In my view, and from both an economic and NPS-UD perspective, the proposals are a very significant boost in capacity for the Waimakariri district.

<sup>8</sup> Accessible here <https://www.corelogic.co.nz/news-research/reports/housing-affordability-report>

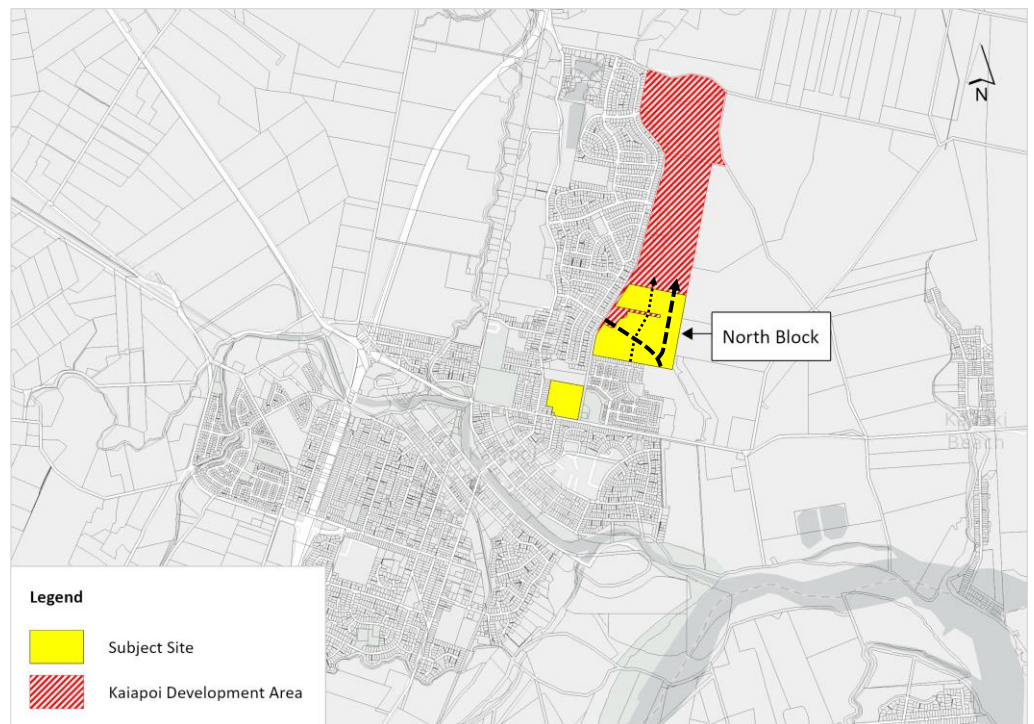
<sup>9</sup> I note that recent interest rate rises will make this task easier than when the Core Logic report was published, but will still take many years and thus remain insurmountable for many would-be home buyers.

**Unlocks Future Development Potential**

89 Not only will the MLL proposal boost dwelling supply in the short-medium term, but it will also unlock further (adjacent) long-term potential.

90 This is because future development of the North Block provides direct connectivity to the rest of the Kaiapoi Development Area to the north. This is demonstrated in Figure 4 below, in which the black dashed lines represent indicative future roading connections.

Figure 4: Future Development Potential Unlocked by Proposal



**Helps Provide for a Range of Housing Typologies**

91 The NPS-UD requires high growth areas, like Waimak, to not only provide adequate capacity to meet future demand, but to also provide a range of housing choices to meet a wide range of needs and preferences. This is shown in the excerpt below, which displays the first part of policy 1 of the NPS-UD:

Table 5: Policy 1(a)(i) of the NPS-UD

<p><b>2.2 Policies</b></p> <p><b>Policy 1:</b> Planning decisions contribute to well-functioning urban environments, which are urban environments that, as a minimum:</p> <p>(a) have or enable a variety of homes that:</p> <p>(i) meet the needs, in terms of type, price, and location, of different households; and</p>
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92 The MLL proposal helps give effect to this directive by providing for a range of lot sizes, which will enable the development of a variety of dwellings over time.

93 Importantly, this includes sections that are considerably smaller than the existing Kaiapoi residential stock. In fact, the average individual section size proposed<sup>10</sup> is around 275m<sup>2</sup>, compared to a current average of 710m<sup>2</sup> for Kaiapoi overall. This difference in section sizes is illustrated in the chart below, where existing sections are depicted in dark blue, and those proposed by the submission are in light blue.



94 Accordingly, not only does the proposal make a significant contribution to Kaiapoi, specifically, and the district overall, but it also gives effect to Policy 1.

**Critical Mass to Support Greater Local Retail / Service Provision**

95 The Site is located close to both the Kaiapoi Town Centre, and the emerging ‘Waimak Junction’ large format retail centre. As the development unfolds and fills up with new residents, increased critical mass will be created to support a wider range of local services at those nearby locations. This is important,

<sup>10</sup> Excluding lot Types 4 and 5 (higher density and mixed use) and assuming an average lot size of approximately 315m<sup>2</sup> for the South Block.

because the district is currently reliant on Christchurch City for everyday household goods and services.

- 96 In fact, detailed Marketview (electronic transaction) data provided to me by the Council during another project showed that about 40% to 45% of all district resident spending on core retail goods and services leaked out to Christchurch City in 2019.
- 97 The development, along with existing residents and the future residents of other growth areas, will provide critical mass to gradually improve the viability of local service provision. As a result, it will reduce the need to commute to the city, thereby reducing fossil fuel use, reducing harmful emissions, and reducing the scope for motor accidents.
- 98 To demonstrate this, I estimated likely future spending originating onsite at full build-out based on regional average spending patterns from the latest Household Economic Survey. The results are tabulated below and reflect total annual spending by 700 new households. However, to be conservative, they ignore ongoing growth in annual household incomes over time.

Table 6: Projected Future Spend Originating Onsite

<b>Expenditure Group</b>	<b>Annual Spend per Household</b>	<b>Total Annual Spend (\$ millions)</b>
Food	\$12,250	\$8.6
Alcoholic beverages, tobacco	\$1,650	\$1.2
Clothing and footwear	\$2,400	\$1.7
Housing and household utilities	\$15,500	\$10.9
Household contents and services	\$2,350	\$1.6
Health	\$2,050	\$1.4
Transport	\$10,700	\$7.5
Communication	\$1,850	\$1.3
Recreation and culture	\$6,550	\$4.6
Education	\$1,050	\$0.7
Miscellaneous goods and services	\$6,350	\$4.4
Other expenditure	\$7,800	\$5.5
<b>Total Household Expenditure</b>	<b>\$70,500</b>	<b>\$49.4</b>

- 99 Table 6 shows that future residents of the MLL proposal may spend nearly \$50 million per annum on various household goods and services. A high proportion of this is expected to occur nearby, either at the Kaiapoi Town Centre, or at Waimak Junction. Accordingly, future development of the land will provide significant commercial support for Kaiapoi businesses.

### Infrastructure Efficiency

100 While growth is widely considered an important policy target, it also carries significant costs. For councils, one of the most pressing costs of growth is the need to provide local infrastructure, such as water, wastewater, and roads.

101 Fortunately, the site is adjacent to developed land, and is also located within the Kaiapoi PIB. As a result, the proposed development is likely to achieve high levels of infrastructure efficiency. This, in turn, avoids unnecessary financial risks and costs for the Council while also helping to keep the costs of new homes as low as possible.

### One-off Economic Stimulus

102 Constructing the 700 new homes and supporting commercial facilities enabled by the MLL proposal will generate significant one-off economic impacts. I quantified these using a technique called multiplier analysis, which traces the impacts of additional economic activity in one sector – such as construction – through supply chains to estimate the overall impacts.

103 These impacts include:

- (a) **Direct effects** – which capture onsite activities directly enabled by the project, plus the impacts of businesses that supply goods and services directly to the project; plus
- (b) **Indirect effects** – which arise when businesses working directly on the project source goods and services from their suppliers, who in turn may need to source good/services from their own suppliers, and so on.

104 These economic effects are usually measured in terms of:

- (a) **Contributions to value-added (or GDP)**. GDP measures the difference between a firm's outputs and the value of its inputs (excluding wages/salaries). It captures the value that a business adds to its inputs to produce its own outputs.
- (b) **The number of FTEs employed**. This is measured in terms of full-time equivalents, which includes both part-time and full-time workers.
- (c) **Total wages and salaries** paid to workers.

- 105 Table 7 shows the estimated costs of developing the land and constructing the 700 or so new dwellings enabled.

Table 7: One-Off National Economic Impacts of Construction

<b>Planning/Design/Consent</b>	<b>Direct</b>	<b>Indirect</b>	<b>Total</b>
Employment FTEs – 1 year	60	30	90
GDP \$m	\$8	\$4	\$12
Wages/Salaries \$m	\$5	\$2	\$7
<b>Site Preparation</b>			
Employment FTEs – 1.5 years	115	140	255
GDP \$m	\$27	\$30	\$57
Wages/Salaries \$m	\$13	\$14	\$28
<b>Construction</b>			
Employment FTEs – 5 years	70	220	290
GDP \$m	\$53	\$142	\$194
Wages/Salaries \$m	\$22	\$71	\$94
<b>Project Totals</b>			
FTE-years	585	1,335	1,920
GDP \$m	\$88	\$175	\$263
Wages/Salaries \$m	\$40	\$88	\$128

- 106 In summary, future construction activity enabled could boost national GDP by \$263 million, including flow on effects, generate employment for 1,920 FTE-years, and generate \$128 million in household incomes. Assuming (say) a 7-year construction period, these translate to annual impacts of \$40 million in GDP, employment for 275 people, and \$18 million in household incomes.

### **Foregone Rural Production**

- 107 The main potential economic cost of the proposal is forfeiting the land for alternative uses, such as ongoing rural production, with.
- (a) The North Block forming part of a larger area farmed by the Moore family since the 1930s for dairy and dry-stock beef/sheep; and
- (b) The South Block is currently used for low productivity stock grazing.
- 108 MML engaged Dunham Consulting to assess the site's future rural productive potential absent the proposed development. The most likely use of the North Block was beef grazing plus the sale of hay or baleage, with sheep and beef grazing on the South Block. Other potential uses were precluded by wet soils, with the site's adjacency to the existing urban area also a constraint.
- 109 Dunham estimated both blocks to operate just above breakeven on an annual cashflow basis, but with little prospect of recouping any capital invested, which ultimately renders it financially unviable.

110 For completeness, though, I quantified the opportunity cost of not using the Site for the most likely uses identified by Dunham per block, namely:

- (a) Sheep & beef farming; and
- (b) Grain production.

111 Table 8 shows the estimated economic activity foregone if the site's full 34.5 hectares were used for rural production. It overlays regional (if available) or national productivity ratios per hectare to the block-level rural land uses identified by Dunham.

Table 8: Estimated Annual Rural Production for the Site (34.5 hectares)

Productive Use	Output \$	GDP \$	FTEs	Wages \$
Grain	160,000	56,000	1.0	48,000
Sheep & Beef	59,000	25,000	0.1	3,000
<b>Average</b>	<b>110,000</b>	<b>41,000</b>	<b>0.5</b>	<b>26,000</b>

112 Taking the average from Table 8 above, the site could theoretically sustain the following annual economic activity if used solely for rural production:

- (a) Output/revenue of \$110,000;
- (b) GDP of \$41,000;
- (c) Employment for 0.5 FTEs; and
- (d) Wages and salaries of \$26,000.

113 These values are negligible, not even sustaining one FTE of employment. By comparison, the proposed development could sustain employment for about 275 people for seven years during construction alone. In addition, the small amount of supporting commercial activity proposed would sustain significantly more full-time employment than rural production foregone.

114 Overall, I consider the opportunity costs of foregone rural production to be immaterial from an economic perspective.

## IMPACTS OF NEW AIRPORT NOISE CONTOURS

### Context

115 Christchurch International Airport Limited (**the airport** or **CIAL**) is the second largest airport in New Zealand and is one of three explicitly identified in the



Airport Authorities Act 1966.<sup>11</sup> This recognises its strategic importance, particularly to Canterbury and the South Island.

- 116 Like all airports, flights to and from CIAL generate noise. Prolonged exposure to a high level of airport noise can have adverse health effects, mainly in the form of annoyance. In some cases, over time, this annoyance can manifest in reverse sensitivity. i.e. complaints being lodged about (perceived) noise impacts.
- 117 CIAL is concerned that heightened reverse sensitivity risks could arise if new noise sensitive activities (NSAs) activities – like residential dwellings – are allowed within its noise contour. To avoid that prospect, and to enable the airport’s ongoing, unfettered operation, CIAL wishes to prohibit new NSAs locating within its noise contours. Those contours are currently under review by Environment Canterbury (ECan).
- 118 CIAL cite a suite of documents in support of its position, which I review below before providing an independent analysis of the likely costs and benefits of CIAL’s position relative to other plausible options for achieving the same purpose.

### **Steps in Analysis**

- 119 Below, I:
- (a) Identify the broad costs and benefits of CIAL’s position;
  - (b) Review the latest evidence cited in support of it;
  - (c) Identify other possible options for achieving the same outcomes;
  - (d) Evaluate those options to identify the preferred one from my economic perspective; then
  - (e) Summarise and conclude.

### **Economic Costs & Benefits of CIAL’s Position**

- 120 Restricting new NSAs within CIAL’s contours, whether the operative or proposed draft ones, will have far-reaching effects. However, the most significant effects are likely to be:

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<sup>11</sup> <https://www.christchurchairport.co.nz/globalassets/about-us/who-we-are/financial-reports/2023-statement-of-intent.pdf>

- (a) The opportunity cost of foregoing development for NSAs within the noise contours, which span significant areas; and
- (b) Potential consequent effects on land market competition and capacity sufficiency.

121 However, CIAL asserts that its proposed relief will avoid adverse health and amenity effects from people who would otherwise live inside the contour, while enabling its unfettered growth and operation over time.

### **Review of Latest Evidence - Airbiz Report**

122 Airbiz has provided a report that seeks to safeguard CIAL from reverse sensitivity via its proposed new noise contours.<sup>12</sup> The report notes that the relevant New Zealand standard (NZS 6805) recommends a minimum outer control boundary (OCB) of 55dB Ldn, but that CIAL has adopted a more conservative (50dB Ldn) contour, which covers more land.

123 The report advocates for a highly precautionary approach to managing the possible adverse effects of “urban development encroachment”, which it describes as a “lose-lose” situation that is “irreversible.” It opines that: <sup>13</sup>

“As well as exposing communities to additional aircraft noise, reduced land-use protection often results in reverse sensitivity issues that can impact the ability to operate an airport efficiently, often leading to operating restrictions at the airport and significant impacts on airport users and the communities they serve.

To specifically highlight this risk, this report includes an explanation of how the potential loss of existing levels of land-use protection could lead to restrictions on the airport, a reduced ability to operate the airport efficiently and negative impacts on existing operations.

In addition, this report examines international examples of approaches to land-use protection in the vicinity of airports and considers how, when these have not been implemented appropriately, they have resulted in constraints to airport operations.”

124 Below, I comment on several issues arising from this report and its apparent implications for current and potential future land use around CIAL.

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<sup>12</sup> Airbiz, Air Noise Contours: Outer Control Boundary and Airport Safeguarding at Christchurch International Airport, 2022.

<sup>13</sup> Ibid, page 2.

*Anchored to Existing Overly Conservative Position*

125 First, the Airbiz report is unjustifiably anchored to CIAL’s highly conservative status quo, which the report admits defies common practice, both here and overseas. It laments potential relaxations of existing safeguards, despite minimum standards still being met. The report warns at paras 20 and 22 that:

“Relaxation of existing airport safeguards, or insufficient safeguarding itself, can lead to ‘reverse sensitivities’ where effected populations lobby to restrict current or future [airport] operations... Any loosening or relaxation of land-use controls will be irreversible.”

126 There is no debate that airport operations should not be unduly compromised, but these statements fail to recognise that CIAL is the only airport in NZ with a 50dB OCB, and that it is also an outlier globally.<sup>14</sup>

127 CIAL’s current (50dB Ldn) OCB therefore appears out-of-step with common/best practice, and it sterilises large tracts of land beneath it. The proposed new 50dB Ldn contours – particularly those remodelled using the busiest 3-month period – exacerbate this, even encroaching onto land specifically identified as suitable for development within Kaiapoi’s PIB.

128 Also, relevantly, the Airbiz report reveals that CIAL’s current and proposed OCBs both reflect noise metrics that are no longer deemed best practice globally to measure annoyance, with para 42 stating that:

“[various other metrics being used internationally are] now becoming more generally accepted to inform individuals in environmental studies (including evaluation of flight path changes) as they experience noise, rather than the more technically complex, community aggregated response, which guide land use policy decisions.”

129 Despite that, the Airbiz report continues to advocate for an unusually conservative 50db OCB based on the 3 worst months per year, not the current annual average approach.

*Invokes Irrelevant & Inconclusive Case Studies*

130 The Airbiz report also relies on five international case studies to justify prohibiting new NSAs within CIAL’s proposed new noise contours. However,

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<sup>14</sup> For example, para 48 of the Airbiz report notes that the OCB is set at 55dB everywhere else in New Zealand, with the international equivalents of OCBs also generally set above 50dB (usually 55dB).

the sample of case studies is small, they are not highly relevant, and their results are largely inconclusive. I elaborate briefly below.

- 131 The **first case study** is Melbourne Airport, where the late introduction of appropriate safeguards is alleged to have “allowed urban encroachment around what was originally developed as a new greenfield airport”<sup>15</sup> resulting in “pressures for operational restrictions.”<sup>16</sup>
- 132 With respect, this example is not comparable to the situation at CIAL, nor instructive. The issues at Melbourne airport reflect a 22-year gap between its opening and when land use controls on adjacent activities were introduced, giving a two-decade window for wholly unfettered encroachment. This is not the case at CIAL, and the case study provides no concrete evidence of binding adverse effects on airport operations as a result. Instead, that unfettered 22-year encroachment is identified only as a factor influencing planning for a third runway yet to be built.
- 133 The people calling for curfews in this case study were also located far outside the OCB, with an article cited in a footnote of the Airbiz report revealing that the most vocal complainant lived 16 kilometres from the airport.<sup>17</sup>
- 134 The **second case study** is Calgary Airport, and addressed the effects of increased flight movements over new airspace on a new runway. This also does not reflect the situation at CIAL and, like the previous case study, it provides no evidence of adverse effects caused by new NSAs establishing within airport noise contours, which is the key issue at hand here.
- 135 The **third case study** is Brisbane Airport, where new residential development is allowed within the equivalent of its OCB (subject to noise insulation), and whose noise contours has shrunk over time due to quieter aircraft, despite higher annual movements. However, again, the issues cited in this case study relate to the impacts of a new runway, not ongoing operations at a relatively mature airport like CIAL. Also, again, no binding constraints on operations are identified, with allusions only to “political pressure from residents’ groups for

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<sup>15</sup> Ibid, page 11.

<sup>16</sup> Ibid, page 11.

<sup>17</sup> <https://brimbanknorthwest.starweekly.com.au/news/runway-concerns-mount/>

operational restrictions to be imposed due to noise since the runway opened in 2020.”<sup>18</sup>

- 136 The **fourth case study** is Schiphol Airport, which is the busiest in the Netherlands (and one of the busiest airports in the world). With 80 million passengers carried annually, the situation at Schiphol bears no practical resemblance to CIAL, so this case study is similarly misplaced. Also, again, the issues there related to the opening of a new runway, yet still no binding impacts on airport operations were cited as a result.
- 137 The **fifth case study** is Toronto Airport, which carries 50 million passengers annually. It merely demonstrates that “many of the community responses came from locations outside the revised contour.” Again, this does not demonstrate the need to prohibit new NSAs within the 50dB Ldn OCB of CIAL.

*Ignores the Kaiapoi ‘Natural Experiment’*

- 138 Not only do the five case studies above shed little light on the case at hand, but there is also a notable lack of reference in the Airbiz report to the Kaiapoi ‘natural experiment’. As most readers will be aware, Kaiapoi was granted an exemption following the earthquakes, which enabled about 2,000 new homes to be built inside CIAL’s OCB. In my view, this is the most relevant and informative case study upon which to assess the likely impacts of enabling new NSAs nearby, so why was it not addressed?<sup>19</sup>
- 139 I suspect that it does not support CIAL’s position, because enabling new NSAs in Kaiapoi has not caused reverse sensitivity-induced restrictions on airport capacity or operations. That should not be a surprise, though, because New Zealand is a signatory to the International Civil Aviation Organisation (ICAO), whose overarching policy on noise is the **Balanced Approach to Aircraft Noise Management**. That approach, which is described in the Airbiz report, comprises the four pillars summarised in the table below (along with Airbiz’s commentary).
- 140 Clearly, operating restrictions like curfews are the final step in a long line of potential noise management approaches, and are therefore highly unlikely to occur if the airport is protected from urban growth inside of the 55 Ldn

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<sup>18</sup> Ibid, page 14.

<sup>19</sup> The five case studies also ignore the fact that a significant part of Christchurch City, stretching up Memorial Avenue through Avonhead, Fendalton, and Riccarton, are inside of the 50, 55, and even 65 dB contours, but have not resulted in curfews being placed on Christchurch Airport.

contour, in line with the New Zealand Standard. Alternatively, land-use planning and management for urban growth inside of the 55 Ldn contour could include such measures as double glazing and/or mechanical ventilation, to minimise complaints and avoid the possibility of curfews being placed on the airport.

Figure 3: ICAO Balanced Approach to Noise Management

ICAO Balanced Approach Pillar	Pillar Role and Process	Potential Significance of Impact on Airport Operations
Reduction of Noise at the Source	Technology-driven and dependant on airlines introduction of new technologies.	Low
Land-Use Planning and Management	Pro-active safeguarding of the airport and community in order to have the most significant and lasting benefits over the long term. It is important to prevent sensitive areas against the adverse impacts of aircraft noise through land use controls around the airport, despite changes in operations/growth.  Compatible land-use planning and management is also a vital instrument in ensuring that the gains achieved by the reduced noise of the latest generation of aircraft are not offset by further residential development around airports <sup>3</sup>	Med
Noise Abatement Operating Procedures	Reactive mitigation of aircraft noise impacts through the modification of operating procedures to minimize aircraft noise over residential areas.	
Operating Restrictions	The final remedy if the other measures are not effective or not available. May include curfews, caps or other restrictions. These almost inevitably restrict capacity and airline connectivity options. Restrictions can be self-imposed or be the result of community/political pressure forcing regulatory restrictions.	High

141 Despite this unequivocal hierarchy, the Airbiz report oddly warns that:

“Inadequate protection can, and will often, lead to the creation of reverse sensitivity issues and constraints on air services operations, capacity and creation of hazards which could pose a risk to operational safety.”

142 I do not understand the basis of this concern, and I see no justification for the Airbiz report to ignore the hierarchy and focus on operating restrictions without also discussing the preceding steps/options in it

*Failure to Consider Other Options*

143 Finally, I note that Airbiz’s report fails to meet the requirements of a basic section 32 analysis under the RMA, because it does not consider other options for achieving the same outcomes. Instead, it presumes that avoiding NSAs within the airport’s OCB is the only option available, thereby ignoring other common approaches, such as requiring noise mitigation measures for new NSAs, putting a notice on the LIM, and/or the waiving of rights via “no complaints covenants.”

### Review of Latest Evidence - Property Economics Report

- 144 Property Economics (PE) has provided a report that seeks to demonstrate the need for Airbiz's precautionary approach from an economic perspective.<sup>20</sup> It begins by helpfully describing the scope and nature of CIAL's daily operations, listing its unique attributes, introducing the concept of noise contours, and delineating the key components of CIAL's economic impacts.
- 145 Having set the scene, Section 3 quantifies CIAL's contribution to economic wellbeing. It concludes that:
- (a) The airport contributes more than \$4.7 billion annually to the South Island economy; and
  - (b) In the year ended March 2020, the airport created more than 28,000 jobs within the region, constituting over 10% of regional employment.
- 146 These headline figures are very large compared to the size and value of the airport's operations. For example, the estimated contribution of \$4.7 billion to the South Island economy is more than thrice the total value of freight conveyed. Similarly, the airport's supposed contribution to employment of more than 28,000 people is 140 times the number of people directly employed by CIAL (which is stated in the PE report as being just over 200 people).
- 147 This apparent disconnect between the size of the airport and its estimated economic contribution reflects the report's methodology of attributing the full value of all freight and passengers passing through CIAL to the airport itself.
- 148 I have encountered this issue before. For example, in 2013 I was commissioned by Auckland International Airport to provide revised estimates of its economic impacts because the prior estimates were plagued by the same problem. Shortly thereafter, I was also commissioned to assess the economic impacts of Palmerston North Airport.
- 149 I am not suggesting that airports are not critical pieces of the economic puzzle, because they are. Rather, my point is that any economic assessment should not seek to attribute the full value of any supply chain to just one part of it, as appears to be the case in the PE report. That is akin, for example, to

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<sup>20</sup> Property Economics, Potential Economics Impacts of Operational Constraints on Christchurch Airport, May 2022.

attributing the full value of New Zealand's dairy sector to the trucks that carry milk to and from processing plants. Clearly, that would be nonsensical, and so too is attributing the full value of tourism and freight to just airports without also acknowledging the integral roles of airlines, hotels, rental car companies, tourism attractions, and so on.

150 Having estimated the supposed economic impacts of CIAL absent any restrictions, Section 4 of the PE report then addresses potential impacts of reverse sensitivity. It proffers that "there is a direct link between management through land use planning and the level of economic contribution provided by efficient operations at CIAL." It further opines that "a key consideration regarding the extent of this management is measuring the level of vulnerability of CIAL's operations against the opportunity cost of restricting other activities."

151 I agree that the trade-off between protecting the airport's operations on one hand, and enabling NSAs to establish nearby, is the crux of the matter. However, somewhat oddly, the PE report provides no further discussion on that critical balancing act. Instead, it appears to presume that CIAL's needs and wants have top priority and effectively act as a veto against any further residential development or intensification within the 50 dB Ldn contour. The report doesn't contain any discussion of the opportunity costs of restricting other activities, particularly the costs of sterilising land by preventing growth in Kaiapoi, which I consider a material omission.

152 The PE report also resiles from estimating (or even considering) the likelihood of reverse sensitivity effects arising and the potential impacts of that on the airport's future operations, as feared by CIAL. Instead, section 5 of the PE report skips that step and moves straight to quantifying the potential adverse economic effects of a hypothetical night-time curfew (from 11pm to 6am), which the report acknowledges would mainly affect just low-value freight movements.

153 To estimate the potential impacts of a curfew, the report compares its unconstrained estimates of the annual value created by the airport with the likely value if an 11pm to 6am curfew was imposed. Several assumptions are made to operationalise the analysis, most of which cannot be independently verified. In any case, I consider the results of this exercise unreliable because



they are couched in terms of the report's hyper-inflated estimates of unconstrained airport value, which I have already addressed.

154 Consequently, with respect, I do not consider the PE report a sound basis for evaluating the likely economic risks of a curfew on airport activity, let alone the likely impacts of allowing new NSAs to establish nearby (which are unlikely to cause a curfew in the first place anyway, if the New Zealand Standard of an OCB of 55 dB Ldn is used).

### **Other Options for Achieving the Same Outcomes**

155 Prohibiting new NSAs within the airport's noise contour is only one way of managing the adverse health and amenity impacts of prolonged exposure to aircraft noise (and the consequent risk of reverse sensitivity impinging on future airport operations).

156 Other options to manage these effects include:

- (a) Requiring new NSAs to mitigate adverse health and amenity effects via building layout or design, such as requiring double glazing and mechanical ventilation (at their own cost); and/or
- (b) The imposition of "no complaints" covenants (and/or placing a notice on the LIM that a site is within an airport noise contour).

157 Below, I briefly compare the likely economic costs and benefits of these options to CIAL's proposed relief to identify the best approach from my perspective.

### **Options Assessment**

#### *Option 1: Prohibit New NSAs within Contours (CIAL Position)*

158 While this option is expected to mostly avoid the adverse health and amenity effects of prolonged noise exposure within the contour, it does not protect people outside it. In addition, this option comes at a significant opportunity cost, because foregoing new NSAs within the contour relegates land to low-value rural uses instead.<sup>21</sup>

159 To demonstrate this opportunity cost, I used GIS to extract parcel-level data for all district properties located between the Operative 50 & 55dB contours.

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<sup>21</sup> For example, rural land values are often less than \$10/m<sup>2</sup>, while residential land values are often several hundred dollars per square metre.

Table 9 summarises the results, where there are 4,885 properties spanning nearly 3,000 hectares with more than \$2 billion of land value.

Table 9: Summary of Waimak Properties between Operative 50 & 55dB Contours

Type	Properties	Hectares	LV \$m	CV \$m
Business	343	58	\$465	\$589
Residential	3,987	370	\$1,345	\$2,524
Rural	555	2,557	\$266	\$531
<b>Total</b>	<b>4,885</b>	<b>2,986</b>	<b>\$2,077</b>	<b>\$3,644</b>
% by Type	Properties	Hectares	LV \$m	CV \$m
Business	7%	2%	22%	16%
Residential	82%	12%	65%	69%
Rural	11%	86%	13%	15%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

- 160 86% of the land within the contours is currently zoned/used for rural purposes. Even if just a small proportion of that could otherwise be developed for new NSAs, CIAL's position imposes huge opportunity costs. When the proposed new Outer Envelope contours are considered instead of the operative ones, these opportunity costs are higher still.
- 161 In addition, CIAL's position may undermine the provision of sufficient capacity to meet future housing and business needs. Recent reporting for PC14 illustrates the magnitude of the situation, at least in Christchurch City.<sup>22</sup> It estimates that the airport noise Qualifying Matter (QM) – which is based on the proposed new contours – reduces plan enabled capacity in the city by 29,860 dwellings, and feasible capacity by 9,000 dwellings.
- 162 On the other side of the ledger, this option avoids the cost of installing mitigation measures in new buildings to reduce noise, and it may also be somewhat simpler administratively for Councils.

#### *Option 2: Mechanical Ventilation and Double Glazing*

- 163 This option would require new NSAs within the 50 dB Ldn contour to install mechanical ventilation and double glazing, at their own expense, to manage the adverse health and amenity effects of exposure to aircraft noise, except when outdoors. Like the airport's proposed relief, this would also reduce the scope for reverse sensitivity, at least within the 50 dB Ldn contour, but not to the same degree. For example, this option would not mitigate the effects of

<sup>22</sup> Plan Change 14, Section 32: Appendix 1 Christchurch City Council Updated Housing Capacity Assessment, February 2023.

noise exposure when outdoors inside the 50 dB Ldn contour. Nor, like CIAL's proposal, would it affect the risk of reverse sensitivity from people living further away.

- 164 Critically, though, this option avoids the opportunity cost of foregoing residential development within the noise contour provided that new homes have mechanical ventilation and double glazing. Obviously, those features come at a cost, but some homes may have had them anyway, so the overall cost impact of this option is unclear.
- 165 Further, any additional upfront costs for mechanical ventilation and double glazing will likely be capitalised in the value of dwellings. In that way, they are better described as investments, not out-of-pocket costs, *per se*. Installing such features will also have other benefits, too, like making homes warmer, healthier, drier, and more energy efficient.
- 166 Overall, this option imposes costs on new homes by requiring noise mitigation measures, but these will have wider benefits anyway, plus this option enables affected land to be put to much higher and better uses (thereby avoiding the opportunity costs of the previous option).

*No Complaints Covenants and/or LIM Notices*

- 167 This option does not manage the adverse health and amenity impacts of prolonged noise exposure, but it does presumably prevent reverse sensitivity effects from affecting airport operations. In addition, like the previous option, it avoids the opportunity cost of foregoing land for residential purposes, while also avoiding the upfront costs of double glazing and mechanical ventilation.

**Preferred Option Overall**

- 168 Option 1, which avoids new NSAs within the CIAL's proposed 50 dB Ldn contour, is not preferred because it sterilises the land within it and therefore imposes very high opportunity costs. At the same time, it does not mitigate the risk of complaints from people who live further away, which was noted in some of Airbiz's case studies. In addition, I consider the overall risk of a curfew to be low if adverse effects are properly managed, particularly given the four-pillar approach to noise management to which all New Zealand airports are a signatory. In my view, Option 1 fails to balance the need for airport protection

against the need to enable residential development in (otherwise) appropriate locations within its contours.

169 The second and third options, conversely, avoid the opportunity costs of sterilising land within the contour, while also largely (if not entirely) protecting the airport from the potential risks of a curfew. Accordingly, I consider them more appropriate than CIAL's proposed relief.

170 That said, a no complaints covenant and/or LIM notice alone may be insufficient, because it does not avoid the adverse health and amenity effects that form the crux of the issue in the first place. Consequently, I consider that a mixture of the second and third options is likely to strike the best balance between enabling residential development to occur while managing adverse effects and ensuring the ongoing growth and operation of the airport. Thus, overall, I recommend that a combination of options 2 and 3 be adopted instead of avoiding new NSAs within the contour, as preferred by CIAL.

### **Summary & Conclusion on Airport Noise**

171 The discussion above has considered the rationale for, and likely impacts, of avoiding new NSAs with the airport's proposed new contours. It has shown that the underlying evidence base is not strong, and that the case for maintaining CIAL's highly conservative approach is not economically justified.

172 Like anything, this is a balancing act. On the one hand, there are economic benefits for CIAL in reaching its full potential but, at the same time, local authorities are required to enable sufficient land for future development.

173 Waimak still has a significant amount of land between the 50 and 55 Ldn contours which can be used for housing development without imposing significant risks or costs to CIAL, particularly if there are requirements for new NSAs to have double-glazing and mechanical ventilation. The NPS-UD puts the onus on local authorities to provide at least sufficient housing and business land capacity to meet expected demand over the long term, which should enable people to have affordable housing options.

174 This balance is particularly important now that large areas of land in Greater Christchurch can no longer be used for residential purposes post-earthquake due to red-zoning and/or is at danger of sea-level rise due to climate change.

For example, a Foundation Report underlying the sub-region's Draft Spatial Plan (DSP) concludes that:<sup>23</sup>

"Greater Christchurch is the most exposed urban area in Aotearoa New Zealand to coastal inundation and flooding due to climate change, and this will affect some of the most vulnerable communities more significantly."

175 Similarly, the DSP Urban Form Scenarios Report notes that:<sup>24</sup>

"The evaluation also concluded that avoiding natural hazards, particularly related to climate change, suggests that significant growth should be focused away from areas vulnerable to coastal inundation."

176 Faced with that clear directive, it follows that future growth will generally be focussed to the west, where the airport noise contours fall. However, if appropriate measures are put in place to minimise the adverse effects of prolonged exposure to noise, the risk of reverse sensitivity affecting airport operations seems very low indeed, particularly given the four-pillar model. Consequently, I recommend that new NSAs be allowed up to the 55 dB Ldn airport noise contours (based on annual averaging) subject to providing mechanical ventilation, double glazing, and LIM notices and/or no complaints covenants.

## **CONCLUSION**

177 This evidence has assessed the economic costs and benefits of enabling future residential development within the airport's noise contours in and around Kaiapoi. It has found that significant additional capacity is required to meet future housing demand, with large master-planned developments like the proposals being integral parts of the solution.

178 Given the significant and enduring economic benefits of the proposals, and noting the absence of material economist risks or costs to third parties – including CIAL – I strongly support them on economic grounds.

Fraser Colegrave

2 February 2024

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<sup>23</sup> Greater Christchurch Spatial Plan Foundation Report, April 2022, page 22.

<sup>24</sup> Greater Christchurch Spatial Plan Urban Form Scenarios Evaluation Report, December 2022, page 12.